

THE TIME PERSPECTIVES OF THE DARK TETRAD IN MALES AND FEMALES: PRELIMINARY FINDINGS OF SEX DIFFERENCES IN SADISM

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ABSTRACT

Objectives. Understanding the relationship between the time perspectives and the Dark Tetrad can shed light on some of the mechanisms underlying these personality traits, and exploring potential sex differences in these relationships can contribute to a more nuanced understanding of the Dark Tetrad and its implications for both males and females. The previous studies produced valuable knowledge on the relationships between different time perspectives and the Dark Triad traits (Machiavellianism, psychopathy, and narcissism), but they mainly neglected sex differences and have not considered sadism. This study aimed to explore Dark Tetrad and time perspectives association in males and females separately. **Sample and settings.** The sample included 350 participants (170 males and 180 females, aged 18 to 69) who completed the Short Dark Triad, the direct sadism scale from Varieties of Sadistic Tendencies, and Zimbardo Time Perspective Inventory.

Hypotheses. It was assumed that Dark Tetrad traits would relate positively with the present-time perspectives in both sexes but stronger in males.

Statistical analyses. After exploring the correlations at the baseline level, sex differences were examined by moderation analysis, followed by separate multiple regressions for both sexes.

Results. The Dark Tetrad traits were mainly associated with present orientation in both sexes,

with differences based on participants' sex. Narcissism was more strongly related to the present hedonistic perspective in females, and psychopathy more strongly to the present fatalistic in males. Notably, sadism exhibited striking differences. In males, sadism was only related to the present fatalistic perspective, whereas in females, it was associated with present-hedonistic and past negative perspectives. This study provided initial insights into the time perspective of sadism, highlighting a potentially greater role of negative early-life experiences in females.

Limitations. Sample characteristics, correlational design, single-measure dark traits assessment, and the lack of early-life events measure were discussed.

key words:

time perspectives,
Dark Triad,
Dark Tetrad,
sex differences,
sadism

ključová slova:

časové perspektivy,
temná triáda,
temná tetráda,
pohlavní rozdíl,
sadismus

INTRODUCTION

The Dark Tetrad

The Dark Tetrad is an “umbrella” construct of four socially aversive traits: Machiavellianism, narcissism, psychopathy, and sadism. Since Paulhus and Williams (2002) introduced the Dark Triad (i.e., Machiavellianism, narcissism, and psychopathy), the

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research literature in this area started to increase due to the importance of dark traits in norm-violating behavior. *Machiavellianism* refers to manipulative tendencies, pragmatic and goal-oriented thinking, followed by disregard and relativization of morality. *Narcissism* is characterized by grandiosity, entitlement, domination, and a pronounced sense of superiority rooted in an unrealistic self-image. *Psychopathy* frames the characteristics of callousness, lack of empathy and remorse, and disinhibited behavior. Seven years after, Chabrol et al. (2009) proposed the inclusion of sadism as the fourth trait to form the Dark Tetrad construct. *Sadism* is characterized by the tendency to enjoy inflicting physical, sexual, or emotional pain, as well as by the tendency to control, humiliate, and punish others. Although certain features of sadism could be found in other traits, empirical findings indicated that sadism is irreducible to the Dark Triad (Međedović & Petrović, 2015; Paulhus, 2014).

Despite the differences, the Dark Tetrad traits have some characteristics in common. First, these traits tend to be more pronounced in men than women (Muris et al., 2017; Sest & March, 2017). Second, Dark Tetrad traits are associated with self-related and other-related adverse outcomes such as procrastination (Hughes & Adhikari, 2022) and delinquent behavior (Chabrol et al., 2009). Moreover, according to a recently published meta-analysis (Bonfá-Araujo et al., 2022), Dark Tetrad traits are related to personality functioning difficulties in general. Third, all the traits are associated with exploitation and short-term mating (Book et al., 2016). Note that these features are specific to the fast life strategy, which according to life history theory (LHT), arises as an adaptive response to harsh and unpredictable socioecological conditions (Brumbach et al., 2009). Under such conditions, individuals earlier achieve reproductive maturity, produce more offspring, are short-term focused (on exploiting resources for survival and reproduction), and invest less in social relations. Those conditions subsume a variety of factors of great importance for development, including poverty and single parenting (i.e., demographic factors), neglectful or abusive parenting, and the presence of psychopathology in parents, such as depression in mothers or alcoholism in fathers (i.e., relational/psychological factors). They are shown to be predictive of a broad set of unfavorable outcomes in offspring, including promiscuous sexual behavior, relationships instability, and antisocial behavior (see Belsky, 2010; Goodman & Brand, 2008). Note that these outcomes are some of the behavioral manifestations that could be found in the Dark Triad/Tetrad (Bonfá-Araujo et al., 2022; Book et al., 2016). Moreover, some scholars argue that Dark Triad traits can be seen as indicators of fast life strategy (e.g., Gladden et al., 2009), while there are some findings that sadism is also related to this strategy (Davis et al., 2019).

The Time Perspective

In the broadest sense, time perspective refers to individual differences in orientation toward time. It can be considered as a process (which is often unconscious), or as a trait, given the relative stability in one's orientation toward the past, present, or future (Zimbardo & Boyd, 1999). Considering time perception as a dynamic force that influences emotions, behavior, and motivation, Zimbardo and Boyd postulated five time perspectives. *Past-positive* perspective refers to a warm, sentimental, and nostalgic attitude toward the past. In contrast, the *past-negative* perspective subsumes an aversive attitude toward the past. Although seemingly contrasted, these two perspectives are not mutually exclusive: individuals could be strongly oriented toward the past, thus having a positive attitude in general, followed by aversive attitudes toward some experiences. *Present-hedonistic* perspective is characterized by hedonistic and

often risky behavior. Individuals with emphasized present-hedonistic orientation are usually not concerned too much about the future and possible consequences of their behavior; instead, they seek immediate pleasures and avoid planning and long-term efforts. *Present-fatalistic* perspective refers to pessimistic attitudes toward life. This orientation is rooted in the consideration that everything or almost everything is pre-determined and, consequently, there is not much one can do to change the future. Lastly, the *future* perspective could be described as the tendency to plan and focus on future achievement. Individuals with an emphasized orientation toward the future are usually able to resist temptations and renunciate present pleasures to achieve their long-term goals.

Time Perspectives of the Dark Triad Traits and Sex Differences

Birkás and Csathó (2015) were the first to show individuals high in the Dark Triad traits are mainly present-oriented. Besides, they were the only ones to regress each of the Dark Triad traits on the time perspectives and report that orientation toward time accounted for the most variance in psychopathy, with the greatest unique contribution of the present-hedonistic dimension. Later studies mainly replicated their correlational findings and indicated that the relationship between the Dark Triad traits and present orientation could be seen as the most consistent across samples (see Garcia et al., 2018; Jonason et al., 2018). However, the most substantive inconsistencies were observed in studies that employed separate analyses for males and females. For example, the positive association of Machiavellianism with present-hedonistic in males only (Stolarski et al., 2017), or a negative relation between psychopathy and past-positive perspective that emerged only in females (Moraga et al., 2017). That approach seems justified due to the sex differences in the dark traits and the differential relations of these traits with relevant outcomes. Previous research showed males, consistently achieving higher scores on the Dark Triad traits (e.g., Dinić & Wertag, 2018; Jonason & Davis, 2018; Szabó & Jones, 2019), are more likely to be present-oriented (Zimbardo et al., 1997), while females are more likely to be future-oriented (Ely & Mercurio, 2011). Furthermore, there is some evidence that particular dark traits could be diversely associated with relevant variables in males and females. For example, high psychopathy facilitates negative environmental attitudes in males (Mertens et al., 2021), narcissism is more strongly related to intimate partner violence in males (Kiire, 2017), while Machiavellianism is associated with planning positively in males but negatively in females (Szabó & Jones, 2019).

The Present Study

In line with the findings mentioned above, we hypothesized that the Dark Triad traits would relate positively with the present time perspectives in both sexes but stronger in males. Even though there are no earlier studies relating sadism with the time perspectives, we hypothesized the same for this trait, relying upon the sex differences in sadistic tendencies (Sest & March, 2017) and time perspectives (Zimbardo et al., 1997), and the common features of the Dark Tetrad traits (Book et al., 2016). For clarification, herein we outline that our hypothesis is composite – on the one hand, it captures the assumption that sadism will be mainly related to present-oriented perspectives, which was previously found for the Dark Triad traits; on the other hand, the hypothesis subsumes the assumptions of the differences in associations between these variables (i.e., stronger associations in males) which also stands true for sadism.

METHOD

Participants and Procedure

The sample consisted of 350 participants in total ($M_{\text{age}} = 27.19$, $SD_{\text{age}} = 9.16$, aged 18 to 69), that is, 170 males ($M_{\text{age}} = 26.99$, $SD_{\text{age}} = 7.90$, aged 18 to 56) and 180 females ($M_{\text{age}} = 27.37$, $SD_{\text{age}} = 10.18$, aged 18 to 69). Before starting data collection, we determined the lower bound of the sample size. We employed power analysis ($\alpha = .05$, $1 - \beta = .80$) using G*Power (Faul et al., 2007) to identify the sample for regressing the traits of the Dark Tetrad on five time perspectives to explain at least 11% of the criteria reported by Birkás and Csathó (2015). Power analysis indicated the required sample of at least 141 participants. In addition, we considered that the number of participants should not be less than in Stolarski and colleagues' (2017) study, where the sex ratio was roughly equal (161 males, 167 females). The data was collected online, and the participants were recruited through invitations on social networks. All participants joined the study anonymously and voluntarily and provided informed consent. The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of the Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia. Since our study relied upon and aimed to extend the findings from the previous ones, we find it necessary to outline herein that our sample was, to a great extent, similar to those used in earlier studies that addressed these relations using the Dark Triad (see Birkás & Csathó, 2015; Garcia et al., 2018; Jonason et al., 2018; Moraga et al., 2017; Stolarski et al., 2017). As in other studies, our sample was also non-probabilistic/convenient, similar in terms of age (i.e., males and females being, respectively, 77.6% and 75.6% aged from 18 to 30; 17.6% and 18.9% aged from 31 to 45; 4.7% and 5.6% aged 46 and over), and consequently produced comparable mean scores and distributions of the variables we examined. However, unlike the previous studies that included around 30% to 40% of males (except for Stolarski et al., 2017), our sample was sex-balanced (48.57% males).

Measures

The Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999, for Serbian translation see Nedeljković, 2012) was used to assess past, present, and future time perspectives. The ZTPI, a 56-item measure, includes five time dimensions: past-positive ($M = 3.27$, $SD = 0.76$), past-negative ($M = 3.01$, $SD = 0.86$), present-hedonistic ($M = 3.36$, $SD = 0.60$), present-fatalistic ($M = 2.67$, $SD = 0.70$), and future perspective ($M = 3.33$, $SD = 0.57$). Cronbach's alphas were .77, .84, .78, .73, and .69, respectively.

The Short Dark Triad (SD3; Jones & Paulhus, 2014, for Serbian translation see Dinić et al., 2018), a 27-item measure, was used to assess Machiavellianism ($M = 3.02$, $SD = 0.77$), narcissism ($M = 2.93$, $SD = 0.68$), and psychopathy ($M = 2.09$, $SD = 0.72$). In addition to the SD3, we used a 7-item direct sadism ($M = 1.78$, $SD = 0.65$) subscale from the *Varieties of Sadistic Tendencies* (VAST; Paulhus & Jones, 2015, for Serbian translation see Dinić et al., 2020) to form the Dark Tetrad. Cronbach's alphas were .78, .66, .74, and .67, respectively.

A five-point Likert-type scale (from 1 = *strongly disagree* to 5 = *strongly agree*) was used for all measures. The scores were calculated as the mean of responses on corresponding items.

RESULTS

First, we examined sex differences in the time perspectives, whereby we found that males ($M = 3.26$, $SD = 0.54$) tend to be somewhat less future-oriented ($t_{(348)} = 2.05$,

$p < .05$) than females ($M = 3.39$, $SD = 0.60$), while no differences were observed in other time perspective dimensions. However, the results showed that males achieved considerably higher scores in the Dark Tetrad (see Table 1). Prior to proceeding with analyzing the relationship between the variables we were focused on, we employed Box's M test to check whether covariance matrices are equal in males and females. The covariations between the variables (Box's $M = 72.20$, $p = .009$) could be considered equal across sexes according to Huberty and Petoskey's (2000) guideline (i.e., $p < .005$); therefore, we interpreted the results separately for males and females.

Table 1 The Dark Tetrad Sex Differences and Correlations with Time Perspectives

Variable	Machiavellianism		Narcissism		Psychopathy		Sadism	
	Males	Females	Males	Females	Males	Females	Males	Females
Future	.08	.19**	-.02	.04	-.03	-.01	.01	.02
Present-Fatalistic	.54**	.32**	.13	-.02	.49**	.24**	.21**	.07
Present-Hedonistic	.37**	.31**	.31**	.41**	.44**	.42**	.07	.27**
Past-Positive	.19*	-.07	.27**	-.10	.16*	-.14	-.04	-.17*
Past-Negative	.37*	.33*	-.08	-.09	.26*	.33*	.11	.29**
M	3.16	2.89	3.01	2.86	2.29	1.90	1.95	1.63
SD	0.74	0.79	0.65	0.70	0.72	0.68	0.66	0.61
t	3.30**		2.11*		5.31**		4.74**	

Note. * $p < .05$, ** $p < .01$

The results of correlation analysis (see also Table 1) showed that Dark Tetrad traits are mostly associated with present-oriented, somewhat related to past-oriented perspectives, and almost unrelated to future perspective (except for a positive correlation of Machiavellianism in females). Present-hedonistic orientation was the only consistently related to all Dark Triad traits (positively). Similarly, present-fatalistic and past-negative dimensions were also positively associated with Machiavellianism and psychopathy in both sexes. However, the results showed that the past-positive dimension is positively related to Dark Triad traits in males and negatively to sadism in females. Interestingly, sadism was also positively associated with present-hedonistic and past-negative in females only, and with present-fatalistic orientation in males only.

We conducted multiple linear regressions with each trait as a criterion variable to explore the unique contribution of time perspective dimensions in explaining the Dark Tetrad traits. Since we were interested in sex differences, we first examined, in a whole sample, whether sex moderates the relations between time perspectives and dark traits. For that purpose, we created new interaction variables using sex and centered values of each time perspective and included them in the second step of the regressions. There was no significant interaction effect in the case of Machiavellianism. We found significant interactions of sex with present-hedonistic in predicting narcissism ($\beta = .14$, $p < .05$) and sadism ($\beta = .14$, $p < .05$), with present-fatalistic in predicting psychopathy ($\beta = .16$, $p < .01$) and sadism ($\beta = .19$, $p < .05$), with past-negative in predicting sadism ($\beta = .13$, $p < .05$), and near-significant interaction with

past-negative perspective in predicting psychopathy ($\beta = .10, p = .06$). Due to the significant interactions, we analyzed the regression models for males and females separately (Table 2).

Table 2 Regression Coefficients for Time Perspectives Predicting the Dark Tetrad Traits

Variable	Machiavellianism (β)		Narcissism (β)		Psychopathy (β)		Sadism (β)	
	Males	Females	Males	Females	Males	Females	Males	Females
Future	.12	.27**	-.01	.07	.02	.03	.05	.01
Present-fatalistic	.43**	.24**	.02	-.13	.40**	.06	.27**	-.11
Present-hedonistic	.16*	.26**	.27**	.49**	.32**	.42**	.03	.32**
Past-positive	-.07	-.13	.13	-.02	-.16	-.20**	-.16	-.18*
Past-negative	.12	.15	-.16	-.12	-.01	.19*	-.03	.24**
R^2	.34	.27	.13	.22	.31	.28	.06	.18
F	16.66**	12.66**	5.10**	9.75**	14.50**	13.70**	2.18	7.64**

Note. R^2 = the proportion of the variance explained by predictors; * $p < .05$, ** $p < .01$

It is important to note that the assumptions for regressions were met. All the variables had skewness (up to 1.4) and kurtosis (up to 2.6) in a range of acceptable values of multivariate analyses (Hair et al., 2014). The multicollinearity was not observed (VIF ranged up to 1.78). The inspection of scatterplots indicated the linearity of relationships between the predictors and criteria. Also, the standardized residuals were normally distributed.

The regression analyses mostly confirmed the results of correlation analysis, although certain time perspective dimensions failed to have a unique contribution despite their significant correlations with the dark traits. Machiavellianism in males was predicted by present-fatalistic and present-hedonistic orientations, while in females, there was a significant contribution of future alongside the present-oriented perspectives. Narcissism was predicted positively by present-hedonistic orientation in both sexes. Notably, the present-hedonistic orientation contributed more strongly to narcissism prediction in females than males (even though the contribution was significant for both sexes). In males, psychopathy was predicted by both present-oriented dimensions, while sadism was predicted by the present-fatalistic perspective only. In females, these two traits were predicted by present-hedonistic and past-negative orientation positively, while past-positive orientation contributed negatively.

DISCUSSION

The results indicated that the Dark Tetrad traits have the strongest relations with present-oriented perspectives, partially supporting our hypothesis. However, the results have not confirmed our assumption that these associations will be stronger in males. Conversely, some associations between certain time perspectives and dark traits were somewhat stronger in females (e.g., present-hedonistic with narcissism) or significant only in females (e.g., present-hedonistic with sadism). All associations between time perspectives and dark traits are discussed with a particular focus on each trait and sex differences in the following paragraphs.

The results showed that Machiavellianism in males is probably rooted in a present-fatalistic perspective, whereby this trait in females is likely to rely upon both present-oriented perspectives and considerations about the future as well. This result is somewhat in line with Stolarski et al. (2017) findings that Machiavellianism is related to present-fatalistic orientation only in males and present-hedonistic only in females. However, this result is not consistent with results that both males and females high in Machiavellianism are less future-oriented (Stolarski et al., 2017) nor with finding that this trait is associated with planning in the opposite direction – positively in males and negatively in females (Szabó & Jones, 2019). One of the possible explanations is that females, since they tend to exhibit higher levels of purpose in life (Xi et al., 2022), could have more pleasant experiences in the present and therefore be more future-oriented, even though they are high in Machiavellianism. Following that interpretation, we could assume that males, who are also less future-oriented, are likely to have a “here-and-now” mindset as dominant and are ready to take advantage of current opportunities. Even though we stressed the differences in regression analyses, we need to note that there was no significant interaction between time perspectives and sex in predicting Machiavellianism. Previous findings (e.g., Szabó & Jones, 2019) indeed support the consideration that males and females high in Machiavellianism could essentially differ concerning planning. Similarly, there is evidence that Machiavellianism is more strongly associated with an external locus of control in males than in females (Aldousari & Ickes, 2021). Although our results showed that males high in Machiavellianism have a more pronounced fatalistic view of the present, while females are more future-oriented, we still find these findings somewhat vague – they need to be supported and additionally clarified by further research.

Narcissism associations with time perspectives were relatively consistent. It was related to present-hedonistic and unrelated to other perspectives in both sexes, except for a positive relation to the past-positive perspective in males only. The association with the present-hedonistic perspective results aligns with findings that fast life strategy fosters risk-taking and sensation-seeking behaviors (Mishra et al., 2017). Moreover, this time perspective was the only significant predictor of narcissism in Birkás and Csathó’s (2015) study, just as in our research. However, a significant moderation that makes this association stronger in females seems surprising at first glance. Yet, two previous studies that assessed this relation separately for males and females reported similar findings. Moraga et al. (2017) reported no significant moderation, but the correlation was positive and somewhat stronger in females. Stolarski et al. (2017) reported that this association is positive in females but non-significant in males. We could assume that different social feedback could influence this association. More precisely, we assume that females are more likely to get positive feedback (in particular from males) on their impulsive, liberated, or risky behavior and be perceived as more spontaneous and attractive, which could boost their sense of grandiosity. Of course, we find it necessary to outline that this is only an assumption, so future research is needed to clarify this difference. A positive association between narcissism and past-positive perspective that was significant only in males might be less challenging to understand, but not less important. Therefore, that finding also deserves consideration. There are relatively consistent findings that permissive parenting, in the broadest sense, is associated with narcissism (Kılıçkaya et al., 2021). However, some findings suggest that a low level of parental monitoring is somewhat stronger associated with narcissism in males (Horton et al., 2006). Therefore, it is plausible to assume, in line with the social role theory, that parents are likely to encourage independence more in boys to make them more agentic, which can foster narcissism in males to be higher

and associated with a pleasant view of the past (Grijalva et al., 2015). It is important to note that Moraga et al. (2017) reported the same findings on this relation in males and females as in our study, while Stolarski et al. (2017) reported a non-significant association between these variables in both sexes.

Following the standpoint of the Life History Theory (Brumbach et al., 2009), we can clarify relations between past-oriented perspectives and psychopathy that are somewhat opposed to relations between recollection of the past and narcissism. Notably, the association of psychopathy with an aversive look at the past was considerably stronger than the association with the present-hedonistic perspective (that was significant only in males) and is consistent in males and females. According to the LHT, adverse experiences in childhood could facilitate the development of socially aversive traits and behaviors (Brumbach et al., 2009). This result is in line with previous findings and could be considered one of the most stable associations between psychopathy and time perspectives. In addition, the association with both present-oriented perspectives was expected, which is also in line with previous research (Garcia et al., 2018; Jonason et al., 2018). Needless to say, those associations probably arise from an erratic lifestyle in psychopathy and the tendency to act risky and impulsive. This mainly stands true for the association with a hedonistic orientation toward the present but is also attributable to the present-fatalistic perspective. Specifically, we assume that the belief “things will be the same whatever I do” could facilitate reckless behavior in individuals with high psychopathy. Furthermore, that effect could be stronger in males due to cultural differences in favoring certain behaviors in regard to sex (e.g., the community being more tolerant toward disinhibited behavior in males). This assumption is supported by regression analysis results, where both present-oriented perspectives had a unique contribution in predicting psychopathy in males.

We observed the similarity between psychopathy and sadism in the way they are associated with the time perspectives. Notably, the present-fatalistic perspective was the only dimension associated with sadism in males. Therefore, we can assume that cultural bias of greater tolerance of undesirable behavior in males is likely to have the same role in supporting sadistic behavior. On the other hand, sadism in females was associated with the time perspectives in the same way as psychopathy – positively with the present-hedonistic and past-negative orientations and inversely with positive recollections of the past. One could note that both sadism and psychopathy in females are more strongly reliant on present-hedonistic and past perspectives, contrary to males, where psychopathic and sadistic features are likely to be more strongly supported by a resigned view of the present. Hence, this finding deserves clarification. First, there is sizeable evidence that psychopathy is genetically influenced (Viding & McCrory, 2012), while the findings on the heritability of sadism are somewhat vague (Foulkes, 2019). Second, adverse childhood experiences (e.g., maltreatment) are the risk factor for developing antisocial or abusive behavior (Vizard et al., 2007). Therefore, according to the passive gene-environment correlation (Jaffee & Price, 2008), individuals with such genotypes exposed to maltreatment in childhood are more likely to display such behaviors. Although the effect of adverse childhood experiences should be the same for males and females, some findings suggest that those experiences could play a greater role in the development of psychopathology and delinquent behavior in females (Herrera & McCloskey, 2001; McCabe et al., 2002). We can assume that the negative recollections of the past are indeed the consequence of adverse events. In that case, we could attribute the relation of an aversive look at the past with psychopathy and sadism in females to the potential impact of negative experiences on developing these two dark traits. Following that way of thinking, we

could assume that the relation of the present-hedonistic perspective with psychopathy and sadism in females depicts the tendency to compensate for the bad experience in the past by pleasure-seeking in the present.

Limitations and Recommendations for Future Research

In the end, we need to address the advantages and, more importantly, the limitations of our study. Our study provided evidence of differences in time perspectives of the Dark Tetrad in males and females. Of course, these differences could have been noted, to some extent, in correlation analyses. Still, we consider the approach to performing separate regression analyses for males and females as a great advantage since they provided a more nuanced and comprehensive insight into the time perspective contribution to explaining the Dark Tetrad traits in both sexes. Some researchers have already applied similar approaches to clarify associations between dark traits and relevant phenomena in males and females (e.g., Lyons et al., 2022; Szabó & Jones, 2019) that gave fruitful insights into sex differences. Therefore, we highly recommend employing separate analyses in future studies on dark traits. Despite the clear advantage compared to similar studies, the limitations must be considered carefully. First, our sample comprised individuals with low levels of psychopathy and sadism. In other words, we were unable to capture a broad range of variance along the continuum of these traits. Therefore, the generalization of our findings is limited. Future studies should be conducted in samples that include individuals likely to have elevated psychopathy and sadism (e.g., those with a criminal history, conduct disorders, and anti-social behavior). Second, we used only one measure per trait for the Dark Tetrad. Consequently, since the existing measures vastly differ in their coverage of the dark traits features, single-measure use could influence the results. Notably, we must outline that all previous studies on time perspectives and the Dark Triad relations employed the same measures used in our research, except for Stolarski et al. (2017), which used Dirty Dozen instead of Short Dark Triad. Even so, the findings on these relations were not entirely congruent across studies. Of course, we are aware that sample characteristics or cultural differences (for details, see Luo et al., 2022) may influence the results. Nevertheless, we highly encourage using a multi-measure approach in future studies (particularly for dark traits). Third, although we interpreted the results regarding psychopathy and sadism through the lens of negative past experiences and in line with the LHT, we need to stress that past-oriented perspectives are not the measure of life events. We could recommend future studies to overcome this limitation by including the measures of early-life events, which could provide additional clarification of associations between the Dark Tetrad and time perspectives in males and females. Ultimately, we find it necessary to place the most crucial recommendation. Since we aimed to extend the findings on relations between the time perspectives and dark traits by including sadism and exploring sex differences in these associations, we highly encourage researchers for cross-cultural replication of our results and invite them to collaborate with us in such future studies.

CONCLUSION

Finally, we can highlight the most important findings and draw some conclusions. First, the Dark Tetrad traits are, in general, mostly related to orientation toward the present, somewhat less associated with past time perspectives, and almost unrelated to future concerns. Second, sadism was shown to be the most similar to psychopathy in terms of associations with time perspectives. Third, the exploration of sex differences in these relations yielded the most fruitful insights. When the five time perspectives

were taken into account simultaneously, the pleasant view of the present was shown to be the only orientation related to narcissism in both sexes, but more strongly in females. Psychopathy and sadism relations with the time perspectives, although quite similar between themselves, differed the most regarding sex. More precisely, in males, both traits were related to present orientation and unrelated to the view of the past. In contrast, these two traits in females were shown to have a substantial and consistent relationship with the recollection of the past, including both the lack of positive and the presence of negative experiences. Although the study design does not allow us to draw a strong conclusion about the development pathways of these two traits, we see these findings as indicators of the possibly greater role of adverse childhood experiences in the actual behavioral manifestation of psychopathy and sadism in females. As much as the generalizability of these findings is limited due to their descriptive and speculative nature, and future research is needed (in the first place, longitudinally, and follow-up designed ones), our preliminary insights might be useful in clinical and forensic settings where the dark traits are relevant. These results might help understand those manifestations in males and females more thoroughly, particularly in sadistic behavior where this type of findings was not provided by now.

REFERENCES

- Aldousari, S. S., & Ickes, W. (2021). How is Machiavellianism related to locus of control? A meta-analytic review. *Personality and Individual Differences, 174*, Article 110677. <https://doi.org/10.1016/j.paid.2021.110677>
- Belsky, J. (2010). Childhood experience and the development of reproductive strategies. *Psicothema, 22*(1), 28-34.
- Birkás, B., & Csathó, Á. (2015). Size the day: The time perspectives of the Dark Triad. *Personality and Individual Differences, 86*, 318-320. <https://doi.org/10.1016/j.paid.2015.06.035>
- Bonfá-Araujo, B., Lima-Costa, A. R., Hauck-Filho, N., & Jonason, P. K. (2022). Considering sadism in the shadow of the Dark Triad traits: A meta-analytic review of the Dark Tetrad. *Personality and Individual Differences, 197*, Article 111767. <https://doi.org/10.1016/j.paid.2022.111767>
- Book, A., Visser, B. A., Blais, J., Hosker-Field, A., Methot-Jones, T., Gauthier, N. Y., Volk, A., Holden, R. R., & D'Agata, M. T. (2016). Unpacking more "evil": What is at the core of the dark tetrad? *Personality and Individual Differences, 90*, 269-272. <https://doi.org/10.1016/j.paid.2015.11.009>
- Brumbach, B. H., Figueredo, A. J., & Ellis, B. J. (2009). Effects of harsh and unpredictable environments in adolescence on development of life history strategies: A longitudinal test of an evolutionary model. *Human Nature, 20*(1), 25-51. <https://doi.org/10.1007/s12110-009-9059-3>
- Chabrol, H., Van Leeuwen, N., Rodgers, R., & Séjourné, N. (2009). Contributions of psychopathic, narcissistic, Machiavellian, and sadistic personality traits to juvenile delinquency. *Personality and Individual Differences, 47*(7), 734-739. <https://doi.org/10.1016/j.paid.2009.06.020>
- Davis, A. C., Visser, B. A., Volk, A. A., Vailancourt, T., & Arnocky, S. (2019). The relations between life history strategy and dark personality traits among young adults. *Evolutionary Psychological Science, 5*, 166-177. <https://doi.org/10.1007/s40806-018-0175-3>
- Dinić, B. M., & Wertag, A. (2018). Effects of Dark Triad and HEXACO traits on reactive/proactive aggression: Exploring the gender differences. *Personality and Individual Differences, 123*, 44-49. <https://doi.org/10.1016/j.paid.2017.11.003>
- Dinić, B. M., Bulut Allred, T., Petrović, B., & Wertag, A. (2020). A test of three sadism measures: Short Sadistic Impulse Scale, varieties of sadistic tendencies, and assessment of sadistic personality. *Journal of Individual Differences, 41*(4), 219-227. <https://doi.org/10.1027/1614-0001/a000319>
- Dinić, B. M., Petrović, B., & Jonason, P. K. (2018). Serbian adaptations of the Dark Triad Dirty Dozen (DTDD) and Short Dark Triad (SD3). *Personality and Individual Differences, 134*, 321-328. <https://doi.org/10.1016/j.paid.2018.06.018>
- Ely, R., & Mercurio, A. (2011). Time perspective and autobiographical memory: Individual and gender differences in experiencing time and remembering the past. *Time & Society, 20*(3), 375-400. <https://doi.org/10.1177/0961463X10366081>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical

- power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191. <https://doi.org/10.3758/BF03193146>
- Foulkes, L. (2019). Sadism: Review of an elusive construct. *Personality and Individual Differences*, 151, Article 109500. <https://doi.org/10.1016/j.paid.2019.07.010>
- Garcia, D., Rosenberg, P., Moraga, F. R. G., & Rapp-Ricciardi, M. (2018). Dark time matter: Dark character profiles and time perspective. *Psychology*, 9(1), 63-79. <https://doi.org/10.4236/psych.2018.91005>
- Gladden, P. R., Figueredo, A. J., & Jacobs, W. J. (2009). Life history strategy, psychopathic attitudes, personality, and general intelligence. *Personality and Individual Differences*, 46(3), 270-275. <https://doi.org/10.1016/j.paid.2008.10.010>
- Goodman, S. H., & Brand, S. R. (2008). Parental psychopathology and its relation to child psychopathology. In M. Hersen & A. M. Gross (Eds.), *Handbook of clinical psychology, Vol. 2. Children and adolescents* (pp. 937-965). John Wiley & Sons, Inc.
- Grijalva, E., Newman, D. A., Tay, L., Donnellan, M. B., Harms, P. D., Robins, R. W., & Yan, T. (2015). Gender differences in narcissism: A meta-analytic review. *Psychological Bulletin*, 141(2), 261-310. <https://doi.org/10.1037/a0038231>
- Hair, J., Black, W., Babin, B., Anderson, R., (2014). *Multivariate data analysis: Pearson new international edition* (seventh edition). Pearson Education Limited.
- Herrera, V. M., & McCloskey, L. A. (2001). Gender differences in the risk for delinquency among youth exposed to family violence. *Child Abuse & Neglect*, 25(8), 1037-1051. [https://doi.org/10.1016/S0145-2134\(01\)00255-1](https://doi.org/10.1016/S0145-2134(01)00255-1)
- Horton, R. S., Bleau, G., & Drwecki, B. (2006). Parenting narcissus: What are the links between parenting and narcissism? *Journal of Personality*, 74(2), 345-376. <https://doi.org/10.1111/j.14676494.2005.00378.x>
- Huberty, C. J., & Petoskey, M. D. (2000). Multivariate analysis of variance and covariance. In H. E. A. Tinsley & S. D. Brown (Eds.), *Handbook of applied multivariate statistics and mathematical modeling* (pp. 183-208). Academic Press. <https://doi.org/10.1016/B978-012691360-6/50008-2>
- Hughes, S., & Adhikari, J. (2022) Time wasters? Active procrastination and the Dark Tetrad. *Journal of Individual Differences*, 43(2), 89-94. <https://doi.org/10.1027/1614-0001/a000357>
- Jaffee, S. R., & Price, T. S. (2008). Genotype-environment correlations: Implications for determining the relationship between environmental exposures and psychiatric illness. *Psychiatry*, 7(12), 496-499. <https://doi.org/10.1016/j.mppsy.2008.10.002>
- Jonason, P. K., & Davis, M. D. (2018). A gender role view of the Dark Triad traits. *Personality and Individual Differences*, 125, Article 102105. <https://doi.org/10.1016/j.paid.2018.01.004>
- Jonason, P. K., Sitnikova, M., & Oshio, A. (2018). The Dark Triad traits and views of time in three countries. *Personality and Individual Differences*, 120, 107-111. <https://doi.org/10.1016/j.paid.2017.08.036>
- Jones, D. N., & Paulhus, D. L. (2014). Introducing the Short Dark Triad (SD3): A brief measure of dark personality traits. *Assessment*, 21(1), 28-41. <https://doi.org/10.1177/1073191113514105>
- Kiire, S. (2017). Psychopathy rather than Machiavellianism or narcissism facilitates intimate partner violence via fast life strategy. *Personality and Individual Differences*, 104, 401-406. <https://doi.org/10.1016/j.paid.2016.08.043>
- Kılıçkaya, S., Uçar, N., & Denizci Nazlıgül, M. (2021). A systematic review of the association between parenting styles and narcissism in young adults: From Baumrind's perspective. *Psychological Reports*, 126(2), 620-640. <https://doi.org/10.1177/003329412111041010>
- Luo, Y. L., Kovas, Y., Wang, L., Stalikas, A., Kyriazos, T. A., Gianniou, F. M., Likhanov, M., & Papageorgiou, K. A. (2022). Sex differences in the Dark Triad are sensitive to socioeconomic conditions: the adaptive value of narcissism in the UK, Greece, and China. *Current Psychology*, 126(2), 1-13. <https://doi.org/10.1007/s12144-022-03302-9>
- Lyons, M., Houghton, E., Brewer, G., & O'Brien, F. (2022). The Dark Triad and sexual assertiveness predict sexual coercion differently in men and women. *Journal of Interpersonal Violence*, 37(7-8), NP4889-NP4904. <https://doi.org/10.1177/0886260520922346>
- McCabe, K. M., Lansing, A. E., Garland, A., & Hough, R. (2002). Gender differences in psychopathology, functional impairment, and familial risk factors among adjudicated delinquents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(7), 860-867. <https://doi.org/10.1097/00004583-200207000-00020>
- Mededović, J., & Petrović, B. (2015). The Dark Tetrad: Structural properties and location in the personality space. *Journal of Individual Differences*, 36(4), 228-236. <https://doi.org/10.1027/1614-0001/a000179>
- Mertens, A., von Krause, M., Denk, A., & Heitz,

- T. (2021). Gender differences in eating behavior and environmental attitudes – The mediating role of the Dark Triad. *Personality and Individual Differences*, 168, Article 110359. <https://doi.org/10.1016/j.paid.2020.110359>
- Mishra, S., Templeton, A. J., & Meadows, T. J. S. (2017). Living, fast and slow: Is life history orientation associated with risk-related personality traits, risk attitudes, criminal outcomes, and gambling? *Personality and Individual Differences*, 117, 242-248. <https://doi.org/10.1016/j.paid.2017.06.009>
- Moraga, F. R., Nima, A. A., & Garcia, D. (2017). Sex and dark times' strategy: The Dark Triad and time perspective. *PsyCh Journal*, 6(1), 98-99. <https://doi.org/10.1002/pchj.153>
- Muris, P., Merckelbach, H., Otgaar, H., & Meijer, E. (2017). The malevolent side of human nature: A meta-analysis and critical review of the literature on the dark triad (narcissism, Machiavellianism, and psychopathy). *Perspectives on Psychological Science*, 12(2), 183-204. <https://doi.org/10.1177/1745691616666070>
- Nedeljković, J. (2012). Integrativni model psiholoških prediktora akademske neefikasnosti. [An integrative model of psychological predictors of academic procrastination]. [Unpublished Ph.D. thesis.] Faculty of Philosophy, University of Niš.
- Paulhus, D. L. (2014). Toward a taxonomy of dark personalities. *Current Directions in Psychological Science*, 23(6), 421-426. <https://doi.org/10.1177/0963721414547737>
- Paulhus, D. L., & Jones, D. N. (2015). Measures of dark personalities. In G. J. Boyle, D. H. Saklofske, & G. Matthews (Eds.), *Measures of personality and social psychological constructs* (pp. 562-594). Elsevier Academic Press. <https://doi.org/10.1016/B978-0-12-386915-9.00020-6>
- Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 36(6), 556-563. [https://doi.org/10.1016/S0092-6566\(02\)00505-6](https://doi.org/10.1016/S0092-6566(02)00505-6)
- Sest, N., & March, E. (2017). Constructing the cyber-troll: Psychopathy, sadism, and empathy. *Personality and Individual Differences*, 119, 69-72. <https://doi.org/10.1016/j.paid.2017.06.038>
- Stolarski, M., Czarna, A. Z., Malesza, M., & Szymańska, A. (2017). Here and now: Sociosexuality mediates the associations between Dark Triad and Time Perspectives (in females). *Personality and Individual Differences*, 111, 119-123. <https://doi.org/10.1016/j.paid.2017.02.001>
- Szabó, E., & Jones, D. N. (2019). Gender differences moderate Machiavellianism and impulsivity: Implications for Dark Triad research. *Personality and Individual Differences*, 141, 160-165. <https://doi.org/10.1016/j.paid.2019.01.008>
- VanVoorhis, C. W., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample sizes. *Tutorials in Quantitative Methods for Psychology*, 3(2), 43-50. <https://doi.org/10.20982/tqmp.03.2.p043>
- Viding, E., & McCrory, E. J. (2012). Genetic and neurocognitive contributions to the development of psychopathy. *Development and Psychopathology*, 24(3), 969-983. <https://doi.org/10.1017/S095457941200048X>
- Vizard, E., Hickey, N., French, L., & McCrory, E. (2007). Children and adolescents who present with sexually abusive behaviour: A UK descriptive study. *The Journal of Forensic Psychiatry & Psychology*, 18(1), 59-73. <https://doi.org/10.1080/14789940601056745>
- Xi, J., Lee, M. T., Carter, J. R., & Delgado, D. (2022). Gender differences in purpose in life: The mediation effect of altruism. *Journal of Humanistic Psychology*, 62(3), 352-376. <https://doi.org/10.1177/0022167818777658>
- Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual differences metric. *Journal of Personality and Social Psychology*, 77(6), 1271-1288. <https://doi.org/10.1037/0022-3514.77.6.1271>
- Zimbardo, P. G., Keough, K. A., & Boyd, J. N. (1997). Present time perspective as a predictor of risky driving. *Personality and Individual Differences*, 23(6), 1007-1023. [https://doi.org/10.1016/S0191-8869\(97\)00113-X](https://doi.org/10.1016/S0191-8869(97)00113-X)

SOUHRN

Časové perspektivy temné tetrády u mužů a žen: předběžné nálezy pohlavních rozdílů v sadismu

Cíle. Porozumění vztahu mezi časovými perspektivami a temnou tetradou může osvětlit některé skryté mechanismy těchto osobnostních rysů a zjištění možných pohlavních rozdílů v těchto vztazích může přispět k podrobnějšímu porozumění temné tetradě a jejím důsledkům pro muže i ženy. Předěšlé studie přinesly cenné poznatky o vztazích mezi různými časovými perspektivami a rysy temné triády (Machiavellismus, psychopatie a narcismus), ale většinou opomíjely pohlavní rozdíly a neuvažovaly o sadismu. Tato studie měla za cíl zkoumat temnou tetradu a její spojení s časovými perspektivami odděleně u mužů a u žen.

Soubor a metody. Soubor zahrnoval 350 účastníků (170 mužů a 180 žen ve věku od 18 do 69 let), kteří vyplnili škálu Short Dark Triad, škálu přímého sadismu z Varieties of Sadistic Tendencies a Zimbardův dotazník Time Perspective Inventory.

Hypotézy. Autoři předpokládali, že rysy temné tetrády budou v kladném vztahu s časovými perspektivami přítomnosti u obou pohlaví, ale více u mužů.

Statistická analýza. Po zjištění korelací na výchozí úrovni byly moderační analýzou zkoumány pohlavní rozdíly, a následně oddělené mnohonásobné regrese pro obě pohlaví.

Výsledky. Rysy temné tetrády byly u obou pohlaví především asociovány s orientací na přítomnost, s rozdíly založenými na pohlaví účastníků výzkumu. Narcismus se silněji spojoval s hédonistickou perspektivou přítomnosti u žen a psychopatie s fatalistickou perspektivou

přítomnosti u mužů. Především v sadismu se projevily nápadné rozdíly. U mužů byl sadismus ve vztahu jenom s fatalistickou perspektivou přítomnosti, zatímco u žen byl spojen s hédonistickou perspektivou přítomnosti a s negativní perspektivou minulosti. Tento výzkum poskytl počáteční náhled do časové perspektivy sadismu a upozornil na potenciálně větší roli negativních raných zážitků u žen.

Limity. Byly diskutovány charakteristiky zkoumaného souboru, korelační design, měření rysů temné triády jednoduchými mírami a absence míry událostí v raném životě.