

Adapting to Prison Environments: Dark Tetrad Traits, Coping Mechanisms, and Resocialization Progress in Prisoners*

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Existing research on the Dark Tetrad traits (narcissism, Machiavellianism, psychopathy, and sadism) in the context of criminal behavior and institutional adjustment is very scarce. In the present study, we examined the associations between the Dark Tetrad, coping mechanisms (adaptive, social support, and maladaptive coping), and two indicators of progress in the resocialization process (benefits obtained through adjustment to prison norms/regulations and transfer to semi-open departments) in Serbian prisoners (N = 588). Regression results showed that Machiavellianism positively predicted both adaptive and maladaptive coping; psychopathy negatively predicted benefits in the resocialization process, but this effect disappeared when coping mechanisms were added to the model. Narcissism showed a positive contribution, while sadism showed a negative contribution to the explanation of adaptive and support coping. Lower levels of adaptive and maladaptive coping predicted membership in a semi-open department, while decreased maladaptive coping also contributed to the model with benefits as the criterion measure. Interactions showed that higher Machiavellianism, psychopathy, and adaptive coping elevated chances for being in a semi-open department for women only. Finally, path analysis showed that higher maladaptive coping completely mediated the links between Machiavellianism and hampered resocialization progress; unexpectedly, higher adaptive coping mediated the association between Machiavellianism and increased benefits, highlighting some adaptive features of Machiavellianism as well. The current findings expand the nomological network of the Dark Tetrad traits and provide useful suggestions for prison staff that may facilitate progress in prisoners' resocialization.

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Introduction

Coping and the Latent Structure of Coping Models

Coping mechanisms describe individual differences in cognitive, affective, and behavioral reactions to stressful events (Lazarus & Folkman, 1984). Reactions to stressful, aversive, and unpleasant situations are some of the key behavioral outputs that enable successful adaptation to an environment if they are successful, or facilitate maladaptation if they are suboptimal. There are various taxonomies of coping behaviors. Some researchers (Roger et al., 1984) suggest that behavioral variation in coping can be best described by four characteristics: rational coping (logical planning and purposeful action), detached coping (preventing strong emotions from overwhelming decision-making in response to stressful events), emotional coping (reaction to stress characterized by an overflow of emotions), and avoidant coping (denying or avoiding the problem).

The two former strategies are considered to be effective, while the latter two are largely ineffective in adapting to stressful events. There are taxonomies of coping (Xie, 1998) suggesting only two broad behavioral patterns: positive (attempts to solve the problem that may include seeking information or social support) and negative (e.g., distraction, blaming others, self-criticism, and aggression) coping. Conversely, there have been attempts to describe coping behavior more specifically and in greater detail. Carver's (1997) model represents such a taxonomy; he distinguishes between 14 behavioral reactions to stressful events: active coping, planning, instrumental, using instrumental support, using emotional support, venting, behavioral disengagement, self-distraction, self-blame, positive reframing, humor, denial, acceptance, religion, and substance use.

Originally, these 14 coping mechanisms were assumed to load onto three higher-order factors (problem-focused coping, emotion-focused coping, and avoidant coping), however, newer research showed that this is not the case. In fact, various factor solutions of these coping behaviors have been found, ranging from 2 to 15 factors; however, most latent structures consist of two or three latent components (Solberg et al., 2022). To sum up, various taxonomies of coping behavior (including those previously described) usually identify two major reactions to stress – adaptive (those that attempt to solve the problem in some way) and maladaptive (avoidance in dealing with the problem).

The Relevance of Coping Mechanisms in Prison Environments

Incarceration and the prison environment in general represent major sources of stress due to restrictions on freedom, the obligation to conform to prison rules and regulations, and the disruption of accustomed activities and habits. Hence, it is not surprising that coping behavior represents an important aspect of adaptation to the prison environment and the mental health of prisoners. For instance, elevated emotional coping has been found to predict higher levels of psychological distress, somatic symptoms, social dysfunction, anxiety, insomnia, and depression in adolescent prisoners; conversely, rational coping negatively predicted the majority of these symptoms (Ireland et al., 2005). Dysfunctional coping was associated with increased adverse mental health symptoms during 12 months of longitudinal evaluation in incarcerated men (Meyers et al., 2024). Emotional and avoidant coping (ineffective coping reactions) are positively associated with various personality disorders and, in fact, mediate the links between personality disorders and psychological distress indicators like psychosomatic symptoms, anxiety, and social dysfunction (Ireland et al., 2006). Finally, maladaptive coping is positively associated with suicidal ideation among prisoners (Gooding et al., 2015), which can probably be explained by the links between emotional flooding and hopelessness as a precursor of suicide (McKeown et al., 2017).

Dark Tetrad (DT) Traits, Criminal Behavior, and Coping

In order to describe personality dispositions toward amoral behavior, breaking social and legal norms, and acts that result in hurting others, scholars have proposed a taxonomy of traits labeled the Dark Triad (Paulhus & Williams, 2002): it consists of psychopathy (affective callousness, lack of empathy and guilt), Machiavellianism (exploitation of others, ruthless goal-orientation), and narcissism (entitlement, arrogance, a heightened impression of one's abilities). Afterwards, it was recognized that enjoyment in hurting others or perceiving them in distress (i.e., sadism) represents an additional motive for antagonistic and destructive behavior, hence, the Dark Tetrad structure (DT: Chabrol et al., 2009; Međedović & Petrović, 2015; Paulhus, 2014). To date, this model of malevolent, socially aversive and destructive personality traits has gained significant attention in the empirical and theoretical work of scholars from various disciplines. These traits are linked with aggression (Paulhus et al., 2021), antagonism, hostility, impulsivity, dominance (Blötnner et al., 2021), sexual behavior (Pilch & Smolorz, 2019), career success (Spurk et al., 2016) and others.

Considering the nature and psychological content of the DT traits, it is not surprising that these personality traits are associated with antisocial, delinquent, and criminal behavior. Individuals that express elevated levels of these traits tend to engage both in traditional stalking and cyberstalking to a higher extent

(Branković et al., 2023). Football fans (including hooligans) with dark personalities tend to have attitudes favoring criminal behavior (Međedović & Kovačević, 2021). DT traits are positively related to vandalism (Pfattheicher et al., 2019), sexual harassment (Zeigler-Hill et al., 2016), and militant extremist thinking patterns in the prison population (Međedović & Knežević, 2019). DT traits represent dispositions towards antisocial behavior (Chabrol et al., 2009) and especially repeated offences and criminal recidivism (Međedović, & Vujičić, 2022), including early onset of offending and life-course criminal behavior (Međedović, 2024). Finally, DT traits are involved in adaptation to incarceration, specifically in how prisoners adjust to the established rules and conduct norms in prison wards. More precisely, DT traits are associated with maladjustment to the prison environment, expressed as a higher frequency of various forms of institutional misconduct (Međedović et al., 2024).

Dark traits are also related to coping mechanisms, although the existing research is mostly based on the Dark Triad taxonomy (i.e., sadism is largely missing from the data). It can be easily assumed that due to their mostly dysfunctional and maladaptive nature, dark personalities tend to express aberrant coping reactions. Indeed, the findings mostly confirm this hypothesis. For example, there is robust evidence that there are systematic positive correlations between the triad traits and negative coping behavior (Xia, 2023; Xu et al., 2023; Yang et al., 2024). However, when multidimensional models of coping are investigated, some differences between the dark traits emerge. Psychopathy seems to be the most maladaptive, as it positively correlates with avoidant coping and negatively with problem-focused coping; Machiavellianism also has a positive link with avoidant coping, while narcissism has no associations with coping mechanisms (Brajković et al., 2022). The distinctive role of narcissism is further pronounced in a study that examined more narrow aspects of coping (Birkás et al., 2016). In contrast to the remaining Dark Triad traits, narcissism was positively related to task-oriented coping, planful problem-solving, and self-control, followed by negative associations with avoidance strategies (although it also showed negative links with accepting responsibility). These findings are in line with the claims that narcissism represents the least “dark” component of malevolent personality and possibly the one with some adaptive potentials as well (Rauthmann & Kolar, 2012).

Goals of the Present Research

Research on the relations between dark personality traits and coping mechanisms is still in its infancy. In the present study, we explored these associations with two additional contributions to the existing literature. Previous research has examined the links between the Dark Triad and coping in the general population – we analyzed these relations using the Dark Tetrad model (i.e.,

including the sadism trait) in a sample of prisoners. Furthermore, we examined potential behavioral outcomes of the dark traits and coping in prison wards – the progress of prisoners in the resocialization process (we will also use “treatment progress” as a synonym). Hence, the present research has both conceptual and practical significance. Conceptually, it extends the nomological network of DT traits in a context that may be especially important for the behavioral expression of dark personalities – a penitentiary environment. Practically, the current data provides useful guidelines for psychologists and other prison staff that work with prisoners on their behavioral change: resocialization is a crucial goal of every behavioral treatment for prisoners; understanding behavioral dispositions that may facilitate adjustment and resocialization provides potential targets for behavioral treatment to foster and develop. Our main hypotheses are: 1) DT traits are positively related to maladaptive coping mechanisms and negatively to adaptive coping mechanisms; 2) DT traits are negatively associated with the resocialization progress; 3) adaptive coping is positively associated with advancement in the resocialization process (while maladaptive coping has a negative connection to the resocialization process); 4) finally, we expect that coping mechanisms partially mediate the links between the DT and treatment progress. An additional expectation may be added: narcissism may slightly deviate from the proposed associations, given that it may have more adaptive potential than the other DT traits; hence the proposed effects may be the lowest in magnitude (or even reversed) in narcissism.

Method

Sample

The data were collected in five penitentiary facilities in Serbia: Sremska Mitrovica, Niš, Požarevac, Zabela, and Padinska Skela. Participants were sampled on a voluntary basis and the only inclusion criterion was functional literacy. All participants were informed about the study goals, they filled out informed consent forms, and they could leave the data collection process at any moment. Researchers were present during the entire process of data collection. The final sample of participants who completed the analyzed measures consisted of 588 participants (86.4% males; $M_{age} = 39.80$ [$SD = 10.17$]). Participants had lower education levels than the Serbian average (according to Serbian 2022 census data): the average education level of the participants was completed high school (62.80%), 25.20% had completed elementary school, a small percentage of participants had finished university (7.30%), while 4.70% had not finished elementary school. At the time of data collection, 72.60% of participants were serving their sentences in closed departments, while 27.40% were staying in semi-open departments. The research was approved by the institutional ethical

committee and was part of a larger project – PrisonLIFE project: <https://prisonlife.rs/en/>. The complete dataset from the PrisonLIFE project is publicly available (Milićević et al., 2024).

Measures

All measures were collected via the self-report methodology. Dark personality traits were measured by the Dirty Dozen scale (Jonason & Webster, 2010) that assesses *psychopathy*, *Machiavellianism*, and *narcissism*; these three traits were operationalized via four items each. *Sadism* was operationalized by five items taken from the Direct Sadism scale, which represents one of the measures from the VAST inventory (Paulhus & Jones, 2015).

We assessed coping mechanisms using the Brief-COPE inventory (Carver, 1997). It measures dispositional reactions to stressful events via 28 items; 14 narrow coping behaviors are tapped via two items each: *active coping*, *planning*, *using instrumental support*, *using emotional support*, *venting*, *behavioral disengagement*, *self-distraction*, *self-blame*, *positive reframing*, *humor*, *denial*, *acceptance*, *religion*, and *substance use*. Both the DT and coping measures used a 5-point Likert-type scale for responding, where 1 stands for “completely disagree” and 5 for “completely agree” with the presented items; hence, higher scores represent a higher expression of every trait.

We used two indicators of the resocialization progress in penitentiary settings. The first is labeled *benefits*. By adjusting to the treatment process and conforming to prison rules and regulations, prisoners acquire additional benefits and rights that can alleviate the deprivation imposed by incarceration. We measured several of these benefits: receiving packages from relatives more frequently, a greater number of visitations, visitations without supervision, visitations in separate rooms (reserved for romantic partners), visitations outside the prison grounds, better accommodation, prisoners’ visitation to nearby settlements, weekend leave, extraordinary leave of absence, leave of absence as a reward for appropriate behavior, and vacations. All these benefits were coded with 1 if the participant received them and with 0 if the participants did not have them; afterwards, a simple sum of the benefits was calculated to obtain the final measure.

The second indicator of the resocialization progress is the *department*: prisoners are usually placed in closed departments that are surrounded by walls, protected by security officers and where movement is more severely restricted; however, adaptation, adjustment and motivation to participate in the resocialization process can result in transferal to semi-open departments that are not enclosed by walls, usually have more green spaces and facilitate various free-time activities during the prison sentence, providing more freedom for prisoners.

The department variable is binary coded, where 0 represents closed and 1 semi-open departments.

Data Analysis Plan

Firstly, we conducted a Principal Component Analysis (PCA) on the coping measures: since the latent structure of the brief-COPE inventory is variable across the sample, we wanted to extract the latent components from our current sample. Only the PCA extracted components are used in subsequent analyses.

We analyzed the correlations between the DT measures, coping components, and, afterwards, the resocialization progress measures. These analyses were followed by regression models: the coping components and resocialization progress measures were used as the criteria measures, while the DT and control variables (sex [men coded by 1 and women by 0], age and education) were analyzed as the predictors. Regressions for the resocialization progress variables were conducted once again with coping components added to the DT traits as predictors, to assess their predictive power in explaining the resocialization process. Interactions between the participants' sex, DT traits, and coping in the prediction of the resocialization progress were analyzed as well. Finally, we evaluated a path analysis where the DT traits were set as predictors, coping mechanisms as mediators, and resocialization progress measures as the criteria variables.

Results

The Latent Space of Coping Mechanisms

We conducted PCA with promax rotation on the original 14 indicators of the Brief-COPE inventory. The Guttman-Kaiser criterion advised for a three-component solution: the pattern matrix of extracted components is shown in Table 1. The first component is loaded by humor, acceptance, planning, active coping, positive reframing, self-blame, self-distraction, and venting: hence, this component is heterogenous in its nature. However, the coping mechanisms that have highest loading on this component represent successful attempts to resolve stressful situations; therefore, we labeled this component as *adaptive coping*, but we remind the readers to adopt this label with caution and to have in mind the component encompass diverge set of coping mechanisms. The second component is based on searching for social support in coping (using instrumental support, using emotional support, and religion) and is labeled *support coping*. Finally, the third component represents *maladaptive coping* because it is loaded with behavioral disengagement, denial, and substance use as reactions to a stressful

situation.² Extracted components are saved in the database and used in further analyses³.

Table 1

Principal Component Analysis of the Brief-COPE subscales

	Adaptive coping	Support coping	Maladaptive coping
eigenvalues	4.50	1.72	1.06
% of explained variation	32.13	12.31	7.58
Humor	0.76		
Acceptance	0.74		
Planning	0.71		
Active coping	0.65		
Positive reframing	0.61		
Self-blame	0.47		0.31
Self-distraction	0.44		
Venting	0.39		
Using instrumental support		0.78	
Using emotional support		0.73	
Religion		0.60	
Behavioral disengagement			0.79
Denial			0.74
Substance use		-0.44	0.72

Note: only the loadings > 0.30 are shown in the table.

Correlations Between the Analyzed Variables

The next step in exploring the relations between the examined measures is calculating their bivariate associations. Pearson's correlation coefficient was used for this purpose; the point-biserial coefficient was used to describe the associations between sex, department, and other variables as they are binary

² Parallel analysis suggested that two latent variables represent the most optimal solution for describing the latent space of Brief-COPE indicators. In this solution, support coping is lost and blended into adaptive coping; the component of maladaptive coping remained exactly the same as in the three-component solution. We decided to accept the more liberal criterion of component extraction (i.e., Guttman-Kaiser in this analysis) because searching for social support represents a psychologically relevant and distinct aspect of coping; furthermore, the three-component solution is also frequently found in existing studies (see the Discussion section). Therefore, although we are aware that Guttman-Kaiser criterion may provide higher-than optimal number of components, we have chosen this solution because it provides more detailed psychological depiction of coping mechanisms.

³ We used PCA in order to maximize the percentage of explained variation of original coping indicators. However, it is important to note that the factor analysis methods, namely Maximum Likelihood (ML) extraction and Principal Axis Factoring (PAF) provided almost identical solutions. The only exception was Religion: similarly to PCA, PAF showed that Religion has the highest loading on support coping with secondary loading on adaptive coping, while ML showed the reverse pattern for Religion. Beside this, all three methods converged to a largely similar latent structure of coping indicators.

measures (ϵ coefficient was used to estimate the associations between sex and department). The correlations, together with the descriptive statistics and reliabilities of the multi-item measures (Cronbach's α coefficients) are shown in Table 2. All the DT traits are positively related to maladaptive coping; surprisingly, all traits except sadism are positively associated with adaptive coping as well. Narcissism is positively related to support coping, while the opposite stands for sadism. None of the DT traits are related to benefits, while all of them are negatively correlated with the department (i.e., they are more expressed in semi-open departments compared to closed departments). Maladaptive coping is negatively related to both measures of the resocialization progress, while adaptive coping is negatively associated with the department as well. All coping components are positively associated with one another.

Prediction of Coping Components and Resocialization Progress

We fitted the regression models with coping and the resocialization progress as the criteria variables, while sex, age, education and DT traits were set as the predictors; additional regressions were set for the resocialization progress where the contribution of coping components was evaluated together with the DT traits. All models were based on multiple linear regressions except for the department where a GLM model with a binomial distribution of the criterion measure was used. All models were statistically significant with a low explained variation of the criteria measures: the highest accuracy was achieved for maladaptive coping (15% of the explained variation) and the lowest for benefits (5% and 7% of the explained variation). Narcissism positively predicts both adaptive coping and support coping, while sadism negatively predicts these two components. Machiavellianism is the only DT trait that positively predicts maladaptive coping. Psychopathy had a negative contribution to the prediction of benefits, but this contribution dropped to zero when coping components were added – only low maladaptive coping predicts benefits in the final model. Sadism has a marginally significant negative contribution to the prediction of the department, but more prominent predictors are low levels of maladaptive and adaptive coping.⁴ The regression functions can be seen in Table 3.

⁴ It can be argued that there is an additional important confound in the present analysis: the amount of time an individual had spent in prison when the data were collected. Indeed, we conducted all regression analyses with this variable included in the set of predictors – the results were exactly the same as in the presented models. In order to build the most parsimonious models, we report the analyses without this variable.

Table 2*Correlations between the examined measures*

	<i>M (SD)</i>	α	1	2	3	4	5	6	7	8	9	10	11
1. Sex													
2. Age	39.8 (10.17)		.02										
3. Education	3.73 (0.70)		-0.03	.16**									
4. Machiavellianism	1.73 (0.99)	0.87	-0.03	-0.16**	-0.01								
5. Psychopathy	1.90 (0.93)	0.73	-0.10*	-0.18**	-0.04	.60**							
6. Narcissism	2.00 (1.07)	0.85	-0.01	-0.12**	-0.07	.47**	.39**						
7. Sadism	1.23 (0.53)	0.81	-0.06	-0.19**	-0.01	.43**	.46**	.25**					
8. Adaptive coping			-0.07	-0.14**	.01	.24**	.16**	.24**	.03				
9. Support coping			-0.10*	-0.08*	-0.10*	.03	-0.02	.28**	-0.11**	.51**			
10. Maladaptive coping			-0.14**	-0.00	-0.21**	.28**	.22**	.17**	.18**	.25**	.26**		
11. Benefits	1.12 (1.46)	0.73	-0.05	-0.03	.11**	-0.01	-0.08	-0.01	-0.04	.05	.01	-0.16**	
12. Deparment			.01	.04	.13**	-0.10*	-0.11*	-0.10*	-0.12**	-0.14**	-0.08	-0.22**	.31**

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

Table 3

Prediction of the coping components and resocialization progress

	Adaptive coping	Support coping	Maladaptive coping	Benefits (1 st level)	Benefits (2 nd level)	Department (1 st level)	Department (2 nd level)
Sex	-.06 (.12)	-.11 (.12)**	-.14 (.05)**	-0.05 (.18)	-0.07 (.18)	-0.06 (.28)	0.00 (.01)
Age	-.11 (.00)**	-.08 (.00)*	.09 (.06)*	-0.06 (.01)	-0.04 (.01)	-0.00 (.01)	0.32 (.15)
Education	.04 (.06)	-.08 (.06)*	-.22 (.12)**	0.12 (.09)**	0.08 (.09)	0.41 (.14)**	0.10 (.14)*
Machiavellianism	.18 (.05)**	-.00 (.05)	.22 (.05)**	0.05 (.08)	0.08 (.08)	-0.05 (.14)	-0.06 (.14)
Psychopathy	.02 (.07)	-.08 (.06)	.04 (.11)	-0.11 (.08)*	-0.10 (.08)	-0.09 (.14)	-0.09 (.11)
Narcissism	.17 (.04)**	.27 (.04)**	.03 (.01)	0.01 (.06)	0.01 (.07)	-0.12 (.11)	-0.45 (.27)
Sadism	-.12 (.09)**	-.17 (.09)**	.07 (.03)	-0.03 (.13)	-0.01 (.13)	-0.05 (.27)†	-0.26 (.12)†
Adaptive coping					0.07 (.07)		0.09 (.13)*
Support coping					0.01 (.07)		-0.51 (.13)
Maladaptive coping					-0.17 (.07)**		-1.66 (.75)**
F (χ^2 for Department)	9.51**	9.74**	12.70**	2.24*	3.03*	22.58**	47.80**
R ²	.10	.09	.15	.03	.05	.06	.11

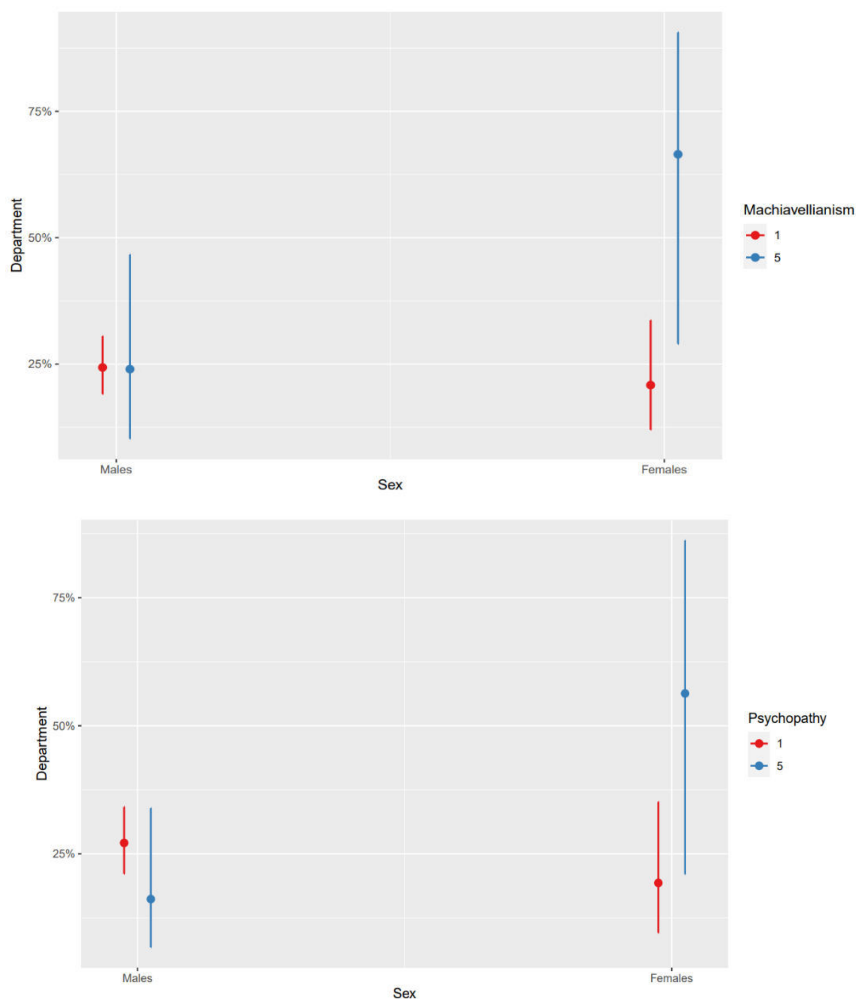
Note. Standardized coefficients with standard errors in parentheses are shown as the measures of predictors' contribution, except for the department variable where unstandardized estimates are shown for the predictors.

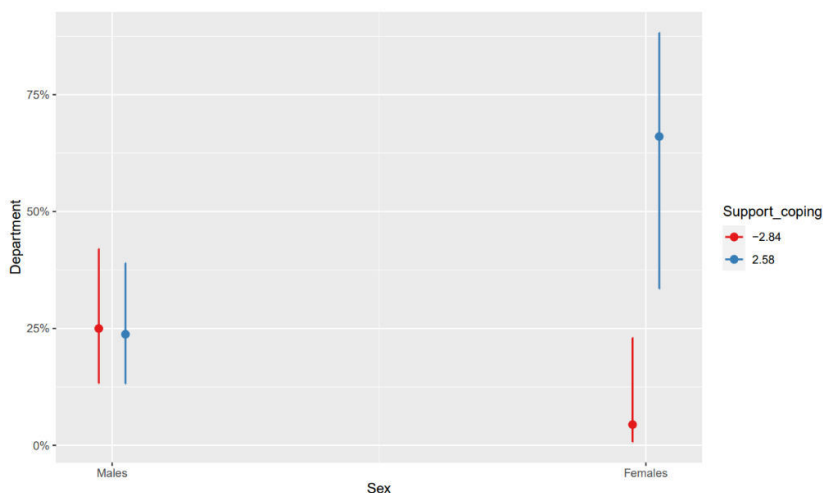
† $p < .10$; * $p < .05$; ** $p < .01$.

Besides the additive contributions of examined variables, we also examined the interactions between participants' sex and the analyzed predictors in the regression models. Three significant interactions were found, and all interactions were detected when the department was analyzed as the criterion measure. Machiavellianism ($\beta = .51; p = .04$), psychopathy ($\beta = .59; p = .03$), and support coping ($\beta = -.70; p = .02$) interacted with sex such that females higher in Machiavellianism and psychopathy and with higher support coping have a higher chance of being in semi-open departments. Graphical representations of the interactions can be seen in Figure 1.

Figure 1

Interactions between participants' sex, Machiavellianism (upper), psychopathy (middle), and support coping (below) in the prediction of staying in a semi-open department



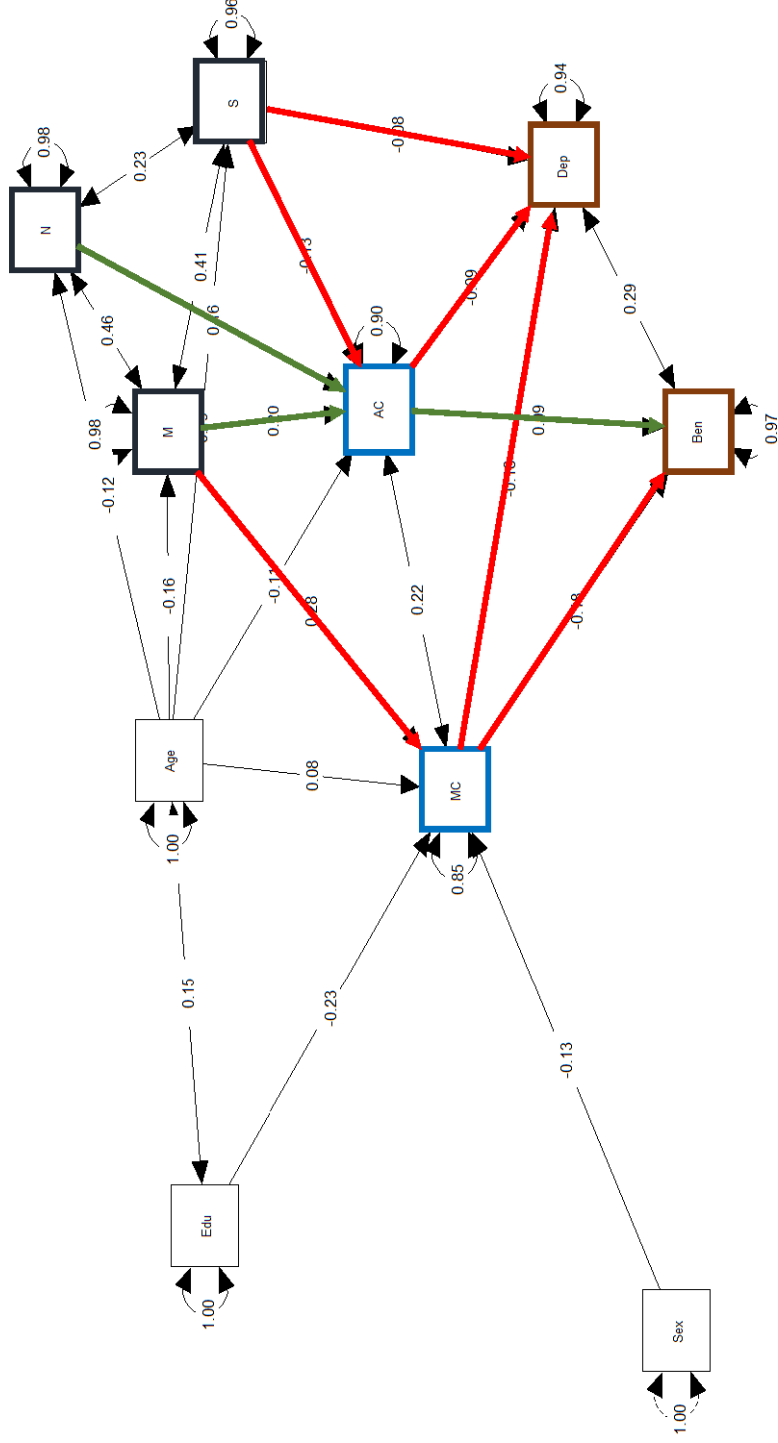


Do Coping Mechanisms Mediate the Links Between DT Traits and Resocialization Progress?

Finally, we constructed a path analysis where DT traits were modeled as the predictors, coping components as mediators, and resocialization progress variables as the criteria measures. All variables were modeled as observed; the variation of sex, age, and education was controlled in this analysis as well. We also modeled covariations between the DT traits, coping components, and resocialization measures. After the removal of nonsignificant paths, the remaining structure had an excellent fit: $\chi^2(23) = 24.02$; $p = .402$; $CFI = 0.998$; $TLI = 0.997$; $RMSEA = 0.009$ [90%CI for RMSEA: 0.000 to 0.035]; $SRMR = 0.027$. Benefits were predicted both by higher adaptive ($\beta = .09$; $p = .03$) and lower maladaptive coping mechanisms ($\beta = -.26$; $p < .001$); the variation of the department was significantly explained by lower adaptive ($\beta = -.09$; $p = .04$) and maladaptive coping mechanisms ($\beta = -.18$; $p < .001$), and sadism ($\beta = -.08$; $p = .007$). Machiavellianism ($\beta = .20$; $p < .001$), narcissism ($\beta = .16$; $p < .001$), and sadism ($\beta = -.13$; $p = .001$) significantly predicted adaptive coping (the former two traits having positive contributions and the latter contributing negatively), while only Machiavellianism positively predicted maladaptive coping ($\beta = .29$; $p < .001$). Hence, eight possible mediating effects of coping regarding the link between DT traits and resocialization progress were tested; only three turned to be statistically significant and all three referred to Machiavellianism. Namely, Machiavellianism is positively indirectly associated with benefits via higher adaptive coping ($\beta = .02$; $p = .04$); however, it simultaneously has a negative indirect effect both on benefits ($\beta = .05$; $p < .001$) and the department ($\beta = .05$; $p < .001$) via its positive associations with maladaptive coping. A graphical representation of the model can be seen in Figure 2.

Figure 2

Path analysis with coping components as the mediators between dark traits and resocialization progress



Note. Predictors are colored with black, mediators with blue, and criteria measures as dark brown; red arrows are negative regression paths, blue are positive regression paths; N – narcissism; M – Machiavellianism; S – Sadism; AC – Adaptive coping; MC – Maladaptive coping; Ben – Benefits; Dep – Depression; see the main text for the exact numerical values of regression paths and model fit indices.

Discussion

The main goal of our present research was to examine the relations between three sets of constructs: dark personality traits (Dark Tetrad characteristics), coping mechanisms, and indicators of resocialization progress (or treatment advancement) in penitentiary institutions. The rationale for the study is twofold. Firstly, psychologists can obtain new data about the nomological network of dark personalities in the context of stress reaction and adaptation to the penitentiary context. Secondly – resocialization is the most fundamental criterion of the treatment process, aimed at changing behavioral patterns of prisoners to help them desist from future crime and adapt to society after release. Hence, gaining insight into factors that may impede resocialization, or conversely, facilitate the rehabilitation process has immense benefits. Our hypotheses reflected the links between three sets of constructs and our empirical data (with few exceptions) was mostly in line with our expectations: the resocialization process may be facilitated by lower levels of dark personality traits and more adaptive (and simultaneously less maladaptive) coping with stressful events.

The Factor Structure of Coping Mechanisms

There are various models that describe coping: some of them consist of only two traits (positive and negative: Xie, 1998), while others comprise more behavioral reactions to stress. However, all these models usually distinguish between effective and ineffective coping mechanisms (Roger et al., 1984). It is clear that a coping taxonomy may benefit from more detailed behavioral patterns related to coping and that was the goal of the COPE and Brief-COPE constructors (Carver, 1997), who describe 14 ways to experience and react to stress. Although much more precise, this taxonomy faced a new challenge: what is the optimal number of latent dimensions to describe these coping mechanisms as 14 variables may represent too large a number to be included in multivariate analyses? Indeed, a recent study (Solberg et al., 2022) showed that there is a considerable variation in the extracted latent structures of these 14 measures: this is the main reason we conducted our own PCA and estimated a three-component solution as the most optimal. We extracted three components that broadly correspond to adaptive, social support and maladaptive coping; although we highlight once again that the first component is heterogenous in its nature because it comprises both adaptive and maladaptive coping mechanism (with higher loadings of the former ones). This solution was previously extracted by other researchers and it mostly resembles the results obtained by Hsu and Tung (2011) who extracted acceptance and action, venting and avoidance, and seeking support; Hur et al., (2012) who obtained problem-solving, support seeking, and avoidance; Prado et al., (2004) who found yet another three-component solution structured by active, support-

seeking, and avoidant coping; and finally, Schottenbauer et al. (2006) who described a Brief-COPE structure with problem engagement, avoidant coping, and social support. The taxonomies we briefly evaluated provide the rationale for retaining support coping as a separate factor, despite it was not supported by parallel analysis, as it is clearly in line with the previously found structures. Secondly, the fact that the two-factor solution clearly placed support coping in the adaptive component, provides an unambiguous interpretation of the support component – seeking social support in order to overcome the challenges imposed by stressful situations clearly represents an adaptive reaction to stress.

Dark Personalities and Coping Mechanisms

Dark personality traits depict mostly maladaptive, antisocial, socially aversive, and malevolent personality traits as it was shown by large number of empirical studies (Blötner et al., 2021; Branković et al., 2023; Paulhus & Williams, 2002; Chabrol et al., 2009; Međedović, 2024; Međedović & Knežević, 2019; Međedović & Kovačević, 2021; Međedović & Petrović, 2015; Međedović, & Vujičić, 2022; Paulhus, 2014; Paulhus et al., 2021; Pilch & Smolorz, 2019; Pfattheicher et al., 2019; Spurr et al., 2016; Zeigler-Hill et al., 2016). Given the maladaptive nature of dark personalities, we assumed that they mostly use maladaptive stress reactions; this expectation was based on some of the previous data (Xia, 2023; Xu et al., 2023; Yang et al., 2024). However, the situation is not that simple: DT traits may have different associations with coping mechanisms (Birkás et al., 2016; Brajković et al., 2022). Our current results contribute to the view that there are important differences between the dark traits in their relations to coping reactions. Firstly, it seems that narcissists may have the most adaptive reactions to stress – this is reflected in elevated adaptive and support coping, which both represent effective and adjusted reactions to challenging environments. This is in line with the view that narcissism may be the least dark trait in the entire taxonomy and that it may bear certain adaptive potentials (Rauthmann & Kolar, 2012). The opposite can be said for sadism: it is negatively linked with both adaptive and support coping mechanisms. Given that the nature of sadism is based on hypertrophied, destructive, and malevolent aggressiveness, with facilitated pleasant cognitive-emotional associations when other individuals are harmed (Međedović, 2017), this is not surprising.

The most interesting findings consider Machiavellianism: this dark trait is positively linked both with adaptive and maladaptive coping. The fact that the same trait may have similar links with two traits with seemingly contrasting content should not puzzle us: the majority of people probably use both adaptive and maladaptive coping mechanisms. In fact, the finding that all three extracted coping components have positive correlations between them corroborates this view. In other words, Machiavellianism has both adaptive and maladaptive

potential in confronting stressful events; although, it is important to note that the regression results suggest that the maladaptive sides of Machiavellianism are higher than its potential adaptive potentials.

Prediction of Resocialization Progress

Our current research did not find robust evidence regarding the links between DT traits and resocialization progress, which is in contrast with our hypotheses. Dark personality traits are apparently more powerful predictors of maladjustment, misconduct, and behavioral problems in penitentiary institutions (Međedović et al., 2024) than adaptive and adjusted behavior. There are two exceptions to this conclusion. Firstly, psychopathy negatively predicted benefits in treatment, although this effect dropped to zero when coping mechanisms were introduced to the prediction model. This result is in line with findings that psychopathic traits predicting antisocial behavior, misbehavior and adjustment problems (Guy et al., 2005; Thomson et al., 2019). Individuals with elevated psychopathy lack empathy for others and are manipulative, self-centered, and disinhibited. All these traits, especially disinhibition, can buffer long-term goals and the attainment of rewards that are based on well-governed and controlled behavior; this in turn can hinder the advancement of psychopathic individuals in rehabilitation treatment. Secondly, sadism had a marginal negative contribution to the prediction of staying in semi-open departments, both in regressions with and without coping mechanisms. While marginally significant coefficients may not warrant reporting given the current sample size, we emphasize that the negative path coefficient from sadism to the department was fully significant in the path analysis. Therefore, hypertrophied and malignant aggressiveness, motivated by enjoyment in hurting or perceiving others in pain, hinders successful socializing and potentially initiates antisocial behavior and violence, which impede resocialization progress. Furthermore, it is important to note that all four DT traits had negative (although very low) zero-order associations with the department measure. Hence, although we did not detect systematic links between DT traits and resocialization progress, the data showed that these links should be further pursued in future empirical research, because indications of their predictive potentials apparently exist.

Maladaptive coping was the best negative predictor of both resocialization progress measures. Maladaptive coping is a reaction to stressful events characterized by the denial of the problem, reluctance to engage in solving it, and consequent disengagement, followed by increased usage of psychoactive substances to alleviate stress. This behavioral pattern impedes advancement in rehabilitation treatment: the resocialization process bears many obstacles and challenges that demand effective reactions in solving them. Maladaptive coping probably does exactly the opposite. The mediating mechanisms linking

maladaptive coping to maladjustment in the resocialization process are probably numerous; however, previous literature has found associations between maladaptive coping and higher psychological distress, somatic symptoms, social dysfunction, anxiety, insomnia, depression, adverse psychological symptoms in general, and even a higher risk of suicidality in incarcerated individuals (Gooding et al., 2015; Ireland et al., 2005; Meyers et al., 2024; Mckeown et al., 2017). An unexpected link emerged as a negative association between adaptive coping and the department variable of the resocialization process; although, to be precise, the magnitude of the link between maladaptive coping and the department measure was much higher than the one between adaptive coping and the department. We can explain the latter link by the fact that the component of adaptive coping in fact represents quite a heterogeneous behavioral disposition. While the vast majority of coping reactions that saturate this component may indeed be considered adaptive, self-blame and self-distraction are also among them, which may be viewed as less adaptive. Hence, this intriguing result may be partially attributed to the structure of the adaptive coping component, and it warns researchers to enhance their attempts in providing more coherent and robust latent structure of coping mechanisms.

There is another informative result regarding the predictions of the resocialization process: interactions between participants' sex, dark traits, and coping mechanisms, and the prediction of advancements in the rehabilitation process. Gender differences in resocialization are certainly ubiquitous due to the different challenges that men and women face in prison settings. Our interaction analyses showed that women with elevated psychopathy, Machiavellianism, and social support in coping enjoy benefits in resocialization treatment – they have a higher chance of being in semi-open departments. Hence, these three traits may be adaptive for women in prison environments. This is not surprising for support in coping, as it may facilitate more effective stress management. The role of psychopathy and Machiavellianism is more intriguing, though not because these traits may facilitate long-term goals, thinking and effort in the treatment process, but because these effects are found only in women – future research may attempt to explain this.

Interestingly, Machiavellianism was indirectly linked with both decreased and improved resocialization progress, via positive links with both maladaptive and adaptive coping mechanisms. Apparently, Machiavellianism as a personality trait has potentials that can both facilitate adjustment and impede resocialization; it can be accompanied by elevated behavioral control and long-term goals that can be useful for adaptation. Conversely, scheming and exploitation of others can generate social disruption and hinder adaptation. It is important to note that the indirect effect extracted from the model clearly suggests that the links between Machiavellianism and impeded resocialization progress are notably stronger than its potential benefits. This is in line with previous findings indicating that

Machiavellianism can facilitate misconduct in various contexts (Dåderman & Ragnestål-Impola, 2019; Veríssimo et al., 2022) and that it represents a personality disposition towards life-course criminal behavior (Međedović, 2024). Still, it may represent an interesting challenge for practitioners working in penitentiary treatment services to identify the adaptive potentials in Machiavellians and foster these, while simultaneously reducing the disruptive and dysfunctional characteristics of Machiavellianism. Finally, it should be noted that narcissism had a mostly peripheral role in the analyzed associations: this is in line with the data indicating that narcissism may have the lowest levels of socially aversive, antagonistic, and malevolent behavior (Rauthmann & Kolar, 2012), which is also expressed in the context of criminal behavior (Međedović, 2024) and institutional misconduct (Međedović et al., 2024); i.e., this trait does not represent a primary target in the treatments of behavioral change conducted in a penal context.

Limitations and Future Directions

We used a model of coping that probably depicts the highest number of plausible reactions to stress. This is certainly an advantage, but the factor structure of this model is unstable and varies across the samples, which may buffer its analytical potentials. At least some of the DT traits are multidimensional behavioral dispositions (i.e., psychopathy and narcissism) and the inclusion of their narrow traits into the analysis could provide both conceptual and practical benefits. Our markers of resocialization progress were self-reported: analyzing the observations from prison staff (especially treatment practitioners and security officers) would enhance the validity of the data. Finally, resocialization and rehabilitation treatments represent *a process of behavioral change* and it would be most suitable to examine it as such: this suggests the need for longitudinal measurements that can capture experiences of prisoners in their social and physical environment in prisons. However, we still believe that research such as the present study is invaluable in building this research process, as it provides us with the most suitable behavioral targets that can offer valuable information about the desired change from crime to desistance.

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