

## Are all features of psychopathy associated with decreased health? Psychopathy, dysfunctional family characteristics, and health problems in convicts

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Previous research suggested that psychopathy is related to diminished physical and mental health. However, this link could be specific to psychopathic lifestyle and antisocial behavior, while manipulative characteristics and emotional superficiality could be unrelated or even positively related to physical and mental health. Furthermore, psychopathic features could mediate the link between detrimental family characteristics and health problems. We tested these hypotheses in a sample of male convicts ( $N = 224$ ). Psychopathy was explored via a rating method (PCL–R). Dysfunctional family characteristics were extracted from participants' prison files. Finally, self-reported biographical data was used to estimate problems in physical and mental health. Behavioral psychopathy tendencies and especially impulsive and erratic behavior turned out to be positively related both to physical and mental health problems. On the other hand, Interpersonal and Affective psychopathy features were mostly unrelated or negatively related to health problems. Finally, Antisocial and especially Lifestyle characteristics turned out to be significant mediators of the link between dysfunctional family characteristics and health problems. Research results showed that narrow psychopathy facets are differentially related to health status. Psychopathic lifestyle and criminal behavior are positively related with problems in physical and mental health, while manipulative characteristics and affective shallowness are associated with better health. The results are in accordance with the concept of successful psychopathy and evolutionary accounts on psychopathy.

**Key words:** psychopathy, physical and mental health, family dysfunctions, successful psychopathy, human evolutionary ecology

### Highlights:

- We explored the relations between psychopathy, dysfunctional family, and health.
- Factor 2 psychopathy traits (Lifestyle and Antisocial) were positively related to health problems.
- Factor 1 traits (Interpersonal and Affective) were negatively related to health problems.
- Factor 2 traits mediated the relations between dysfunctional family relations and health problems.

Physical and mental health are key variables in epidemiological research. The search for individual dispositions and environmental factors which could diminish or elevate physical and mental health represents a fundamental task in this field of study. Physical and mental health are not independent of each other: somatic problems can facilitate psychological disturbances and vice versa (Kagee & Freeman, 2017). This is why these measures are thought to be the indicators of covitality, which depicts the level of general health and wellbeing (Figueredo, Vasquez, Brumbach, & Schneider, 2004). Covitality may be important for an evolutionary analysis of a certain trait: physical and mental health are key features of longevity which is considered to be one of the crucial components of evolutionary fitness (Figueredo & Rushton, 2009; Sefcek & Figueredo, 2010). Hence, using an evolutionary framework and analyzing the psychological correlates of Covitality, we can gain additional knowledge about the adaptive characteristics of various behavioral traits.

### Psychopathy

Psychopathy is a multidimensional construct, often operationalized as a compound of four narrower characteristics: manipulative and deceitful interpersonal style, emotional coldness and shallowness, impulsive and irresponsible lifestyle, and antisocial behavior (Hare & Neumann, 2009). This is a four-factor model of psychopathy where these features are labeled as *Interpersonal*, *Affective*, *Lifestyle*, and *Antisocial* (Hare & Neumann, 2005). Four narrow psychopathy characteristics are grouped in two higher-order factors: Interpersonal and Affective features depict Factor 1 while Lifestyle and Antisocial facets constitute Factor 2 (Harpur, Hare, & Hakstian, 1989). Psychopathy is a frequent topic of empirical research because it is related to various amoral and antisocial behavior, including persistent criminality (Leistico, Salekin, DeCoster, & Rogers, 2008), moral and socio-conventional transgressions (Dolan & Fullam, 2010) and violence (Blais, Solodukhin, & Forth, 2014).

Many empirical findings suggest that psychopathy represents a crucial part of the *dark* side of the human personality (Jones & Figueredo, 2013). However, there are findings suggesting that psychopathy features have a potential for functional and adaptive behavior: these aspects of psychopathy are often called *successful psychopathy* (Lilienfeld, Watts, & Smith, 2015). The concept of successful psychopathy refers to the fact that psychopathic traits may not lead to criminal behavior and consequently to prison sentences, quite contrary, in some cases psychopathy may be associated to accomplishments in a corporate (Pavlić & Međedović, 2019) or political career (Lilienfeld, Waldman, Landfield, Watts, Rubenzer, & Faschingbauer, 2012). It seems that Factor 1 characteristics have greater potential for successful psychopathy: contrary to Factor 2, Factor 1 traits are positively related to some aspects of mental health, performance on intelligence tests and higher executive

functioning (reviewed in Međedović, 2015). These findings are congruent with the views of Factor 1 and Factor 2 as the traits with different etiologies – the dual deficit model of psychopathy (Fowles & Dindo, 2006). Hence, successful psychopathy may be based on the presence of affective and interpersonal psychopathy traits, but with preserved impulse and behavioral control (Hall & Benning, 2006).

### **Psychopathy, Physical, and Mental Health**

Psychopathy is often portrayed as a personality disorder and explored from a clinical and forensic perspective<sup>1</sup>. Indeed, empirical findings showed that psychopathy is related to various personality disorders (Blackburn, 2007; Miller, Dir, Gentile, Wilson, Pryor, & Campbell, 2010), suicidal behavior (Swogger, Conner, Meldrum, & Caine, 2009), and depression (Price, Salekin, Klinger, & Barker, 2013). However, when narrower psychopathy characteristics are taken into consideration, almost opposite results emerge regarding the associations between Factor 1 and Factor 2 with psychopathology. Findings usually specify that the relations between psychopathy and psychological dysfunctions are limited to lifestyle and antisocial manifestations of psychopathy (Bonogofsky, 2007; Sprague, Javdani, Sadeh, Newman, & Verona, 2012; Swogger, Walsh, Houston, Cashman-Brown, & Conner, 2010). Interpersonal manipulation and affective callousness are often unrelated to psychopathology, or even show negative associations with psychological maladjustment (Benning, Patrick, Salekin, & Leistico, 2005; Ragsdale & Bedwell, 2013; Willemsen & Verhaeghe, 2012).

The relations between psychopathy and physical health have received considerably less attention in empirical research. The existing data suggests that the relation between the constructs is negative (Beaver et al., 2014; Hudek-Knežević, Kardum, & Mehić, 2016; Jonason, Baughman, Carter, & Parker, 2015). Thus, existing findings supports the view that psychopathy is related to diminished physical health and greater health risks. However, all of the previous research has an important limitation: psychopathy was measured via a singular score – a general score on administered psychopathy measures. Narrow psychopathy facets were not analyzed. This could lead to oversimplifying the relations between psychopathy and physical health. For instance, there is a vast quantity of data regarding the positive relations between antisocial behavior and problems in physical health (e.g., Goldstein et al., 2008; Paradis, Koenen, Fitzmaurice, & Buka, 2016). This suggests that negative associations between

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1 However, it is noteworthy to mention that psychopathy is not included in the latest version of Diagnostic and Statistical Manual of Mental Disorders (DSM-5); the diagnostic category which is the most similar to psychopathy is the Antisocial Personality Disorder (ASPD), nevertheless, there are important differences between ASPD and psychopathy (Crego & Widiger, 2015).

psychopathy and physical health could be attributed to Antisocial psychopathy characteristics. Other features (and especially Factor 1 facets) could be unrelated or even positively associated with physical health, because they are related to higher stress tolerance (Willemsen, De Ganck, & Verhaeghe, 2012).

### **Family Characteristics, Psychopathy, and Health**

Like any psychological characteristic, psychopathy emerges from an interaction of certain biological and environmental factors. There is a large amount of empirical data suggesting that dysfunctional family characteristics like aggression, detachment and stressful relations facilitate the development of psychopathy (Gao, Raine, Chan, Venables, & Mednick, 2010; Međedović, 2019). Child abuse and neglect, disrupted families, and criminal behavior in parents are shown to be among the crucial family characteristics related to psychopathy (Farrington, 2006). The data showed that adverse childhood experiences modify the fronto-limbic functions of the brain, especially the activity of amygdala, which in turn facilitates the development of impulsive and antisocial behavior (reviewed in Lovallo, 2013) together with psychopathic affectivity (reviewed in Daversa, 2010). It is not surprising that the same family dysfunctions are negatively related to physical and mental health (Repetti, Taylor, & Seeman, 2002). Taken together, the data suggests that dysfunctional family characteristics facilitate the development of psychopathy, which in turn affects the health status of individuals. We were not able to find a study which directly empirically tested this hypothesis, however there are suggestions that early adversity may decrease health levels via impulsive behavior (Lovallo, 2013) and substance abuse (Vincent, Sorocco, Carnes, Cohoon, & Lovallo, 2017).

### **Psychopathy and Health from the Viewpoint of Evolutionary Ecology**

The evolutionary status of psychopathy is not unambiguously determined yet. Still, some authors proposed that psychopathy could enhance fitness and thus serve as an evolutionary adaptation (Krupp, Sewall, Lalumière, Sheriff, & Harris, 2012). However, it seems that different psychopathy traits are not equally adaptive; in fact, the data shows that Factor 1 traits have positive association to evolutionary fitness (usually measured as reproductive success), but Factor 2 traits have negative relations to fitness (Međedović, 2018; Međedović et al., 2017; Međedović & Petrović, 2019). Hence, similarly to the dual-deficit view on successful psychopathy, the relations between psychopathy and fitness suggest that Factor 1 traits positively contribute to biological adaptation in contrast to Factor 2 characteristics. One of the evolutionary interpretations of psychopathy, states that it represents a strategy of adjusting to scarce, hostile and detrimental environmental conditions (Međedović, 2015). Since a

dysfunctional family environment is a source of stress, children living in these conditions could develop psychopathy to buffer distress and thus optimize their fitness, including physical and mental health. The most adaptive potentials in these conditions would have Factor 1 characteristics and especially shallow and superficial affectivity, because it is based on low negative emotions, including low stress reactivity (Glenn, Kurzban, & Raine, 2011). In sum, the evolutionary viewpoint assumes that psychopathy could have adaptive outcomes, especially for individuals who grew up in unfavorable and stressful environments (Međedović, 2019).

### **Goals of the Present Study**

The primary goal of the present study is to further explore the relations between psychopathy, dysfunctional family characteristics, physical, and mental health. The main advantage of the present, compared to previous studies is using the narrow characteristics of psychopathy in the analysis. Furthermore, behavioral indicators of health are used, instead of self-report evaluations of health and well being (the data closer to objective life events, conditions or behavior – biographical data of participants' health problems). Two hypotheses regarding the association between psychopathy and health are set: 1) Factor 2 facets (impulsive lifestyle and antisocial behavior) are negatively related to health; 2) Factor 1 facets (manipulation and superficial affectivity) are positively associated to health. These hypotheses are made using two conceptual frameworks – successful psychopathy (Lilienfeld et al., 2015) and the evolutionary-ecological viewpoint on psychopathy (Glenn et al., 2011) which offer congruent hypotheses regarding the psychopathy-health link.

Previous studies regarding family characteristics and psychopathy have been criticized for using self-report measures of family relations, because the evaluations of family characteristics could be affected by the psychopathic characteristics of participants (Glenn et al., 2011). This is why we used the information from participants' prison files regarding their family characteristics, which represents another advantage of the present study. We hypothesized that dysfunctional family characteristics would be negatively related to health and furthermore, we assumed that psychopathy is the mediator of this link. Following previous empirical data and theoretical analysis provided by Livallo (2013) it could be assumed that impulsive and reckless behavior (Lifestyle psychopathy characteristics as a part of Factor 2) should be the crucial mediator between adverse childhood environment and health problems. Although existing empirical data implies this link between family dysfunctions, psychopathy and health, as far as we are aware, there is no study which combines all these variables into a single design.

## Method

### Sample and Procedure

Participants were selected from populations of convicts serving their sentence in two penitentiary institutions in Serbia. The total sample size included 224 male inmates, with a mean age of 32.76 years ( $SD = 9.58$ ). All the individuals participated in the research voluntarily. Most of the participants were serving their sentences due to a crime against life and body (35%) followed by property offences (34%), traffic offences (14%) and others. Most of the participants had previous convictions (64%) while more than half were imprisoned previously as well (54%). Data collection was carried out in two waves. Interviews which contained the psychopathy assessment and questions about physical and mental health were conducted in the first wave. Afterwards, relevant information regarding the participants' family characteristics was taken from their prison dossiers.

### Measures

Psychopathy Checklist-Revised (PCL-R; Hare, 2003) was used to measure psychopathy. It is a rating method based on the structured interview and data from participants' dossiers. Data was mostly collected by the second author of this report, together with two fellow psychologists. The scale has 20 items, however only 18 are used to calculate the scores on four psychopathic facets (Hare & Neumann, 2009): Interpersonal ( $\alpha = .67$ ), Affective ( $\alpha = .69$ ), Lifestyle ( $\alpha = .77$ ), and Antisocial ( $\alpha = .81$ ) psychopathic features. The rating scale on PCL-R items has 3 responding scores: 0 = *participant does not exhibit rated features or behaviors or has the opposite characteristics*; 1 = *participant exhibits rated features or behaviors to some degree* and 2 = *participant exhibits rated features or behaviors to a high degree*.

Dysfunctional family characteristics related with psychopathy and health decline were extracted from the prison files. Three variables were included: presence of criminal activity, alcohol or drug abuse, and documented maltreatment in the respondent's family. These measures were binary coded. The absence of a family risk-factor was represented by 0 and its presence was coded by 1. The scores on individual items were averaged in order to obtain the total score on family risk-factors.

Problems in physical health were measured by a single item. The participants were asked if they have some serious medical condition (e.g., chronic diseases or physical illnesses which demands medical attention etc). An affirmative answer was coded by 1 and a negative answer was coded by 0.

Mental health problems were assessed with the following items: 1) did the participant visit a psychologist regarding psychological problems, were they 2) treated, or 3) hospitalized in a mental health hospital, 4) did they receive a psychiatric diagnosis, and 5) did they attempt suicide. All indicators were binary coded. The average score on all indicators was used in the analysis.

## Results

### Descriptive Statistics and the Relations between Examined Variables

The first analysis we performed was aimed at examining bivariate relations between psychopathy, family risk-factors and health problems. We used Pearson's correlation coefficient to explore the associations between the analyzed variables. Since physical health is measured with a binary variable, we calculated the point-biserial correlation coefficient to analyze the relations between this measure and other variables. The results of this analysis are shown in Table 1.

Table 1  
*Bivariate relations between the examined measures*

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Interpersonal	0.74	0.52						
2. Affective	1.01	0.51	.53**					
3. Lifestyle	0.97	0.49	.20**	.28**				
4. Antisocial	0.58	0.55	.21**	.27**	.61**			
5. Family risk-factors	0.25	0.28	.01	.02	.39**	.42**		
6. Physical health problems	/	/	-.14*	-.05	.17*	.14*	.28**	
7. Mental health problems	0.37	0.34	-.02	-.02	.44**	.45**	.41**	.42**

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

As can be seen in Table 1, psychopathy facets all positively correlate between themselves. Only Lifestyle and Antisocial characteristics are positively related to all measures of health problems. The same can be said for the presence of dysfunctional characteristics in participants' families. The Interpersonal psychopathy facet has a small negative correlation with problems in physical health. Generally, the effect sizes of obtained associations highly varied from low (the association between Interpersonal traits and Physical health problems) to high (correlation between Lifestyle and Antisocial traits).

### Prediction of Health Measures by Psychopathy and Family Risk-factors

In order to control the covariation between psychopathy and family characteristics in the prediction of health problems we set three regression models. Besides psychopathy and family risk-factors, participants', age was controlled in the analysis as well since older participants have higher chance to experience health problems. Physical and mental health problems were set as the criteria measures. Binary logistic regression was used for the prediction of physical health problems, while linear regression was performed for the prediction of mental health problems. Since the correlation analysis showed that Physical and Mental health problems positively correlate (as expected), we also computed the measure of *Covitality* problems which represents problems both in physical and mental health: we calculated it as a shared variance between these two measures (extracted by the Principal component analysis: eigenvalue = 1.42; 70.87% of original indicators' variance explained)<sup>2</sup>. Covitality problems were the third criterion variable in the regression analysis. Characteristics of regression functions and the contributions of the predictors are shown in Table 2.

2 If we simply summed and averaged all measured indicators of health problems, the outcome variable would be far more saturated with the markers of mental health problems (since there are five indicators of mental health compared to a single indicator of physical health problems). By extracting the shared variation of physical and mental health (as an average score of all mental health problems' indicators) we obtained a variable where physical and mental health have the same contribution to the score.

Table 2  
*Psychopathy and family risk-factors as predictors of health problems*

	Physical health problems	Mental health problems	Covitality problems
	<i>B(SE)</i>	$\beta$ ( <i>SE</i> )	$\beta$ ( <i>SE</i> )
age	.03(.02)	-.04(.00)	-.04(.01)
Interpersonal	-.81*(.35)	-.05(.04)	-.13†(.14)
Affective	-.12(.35)	-.13†(.05)	-.08(.14)
Lifestyle	.75†(.40)	.24**(.05)	.23**(.16)
Antisocial	.25(.35)	.25**(.05)	.16*(.14)
Family risk-factors	.83**(.59)	.20**(.08)	.27**(.23)
$\chi^2/F$	27.60**	16.54**	16.32**
R <sup>2</sup>	.12	.31	.31

Note. *SE* = standard error; † $p < .1$ ; \* $p < .05$ ; \*\* $p < .01$ .

All regression models were statistically significant on the probability level of  $p < .01$ . Detrimental family characteristics positively predicted all the criteria measures. The Interpersonal facet of psychopathy had a negative association in the prediction of physical health problems while Lifestyle characteristics had marginal positive contribution to the prediction. Both behavioral psychopathy characteristics (Lifestyle and Antisocial) had positive relations with mental health problems. The Affective facet was marginally significant predictor with a negative contribution in this regression function. Finally, Interpersonal traits had marginally significant negative contribution to the prediction of Covitality problems; Lifestyle, Antisocial traits and Family risk-factors had positive contributions to this regression function. The percentage of Mental health and Covitality problems' explained variation was higher (31%) than the variation in Physical health problems (12%).

### **Psychopathy as a Mediator of the Link between Family Dysfunction and Health**

The final analysis which we performed was aimed at the exploration of a possible psychopathy's mediation role in the link between family risk-factors and health problems. To test this hypothesis, we set a structural model where psychopathy characteristics were modeled as mediators between family characteristics and health problems. We decided to use combined physical and mental health problems as a criterion measure in this analysis, based on the shared variation between them. First we tried to set a model where analyzed variables would be represented as latent ones, however, the fit indices of this model did not reach the criteria for acceptable structural models (Hu & Bentler, 1999); the indices of our model were as following:  $\chi^2(249) = 403.4$ ;  $p < .01$ ; NFI = .84; CFI = .91; RMSEA = .06. Therefore, we decided to analyze all variables as the observable ones. The model and path coefficients are shown in Figure 1.

As can be seen in Figure 1, the pathways coefficients are in a high accordance with the correlations and regression coefficients shown before.



However, there is some additional information provided by the path analysis. The direct path from Family risk-factors to Covitality problems was still significant in the model: this means that the mediation role of psychopathy is only a partial one. Furthermore, the crucial psychopathy traits that mediate the link between dysfunctional family characteristics and health problems are Lifestyle characteristics: the association between Antisocial traits and Covitality problems was only marginally significant in the model. Analyzed predictors explained 25% of the Covitality problems' variation.

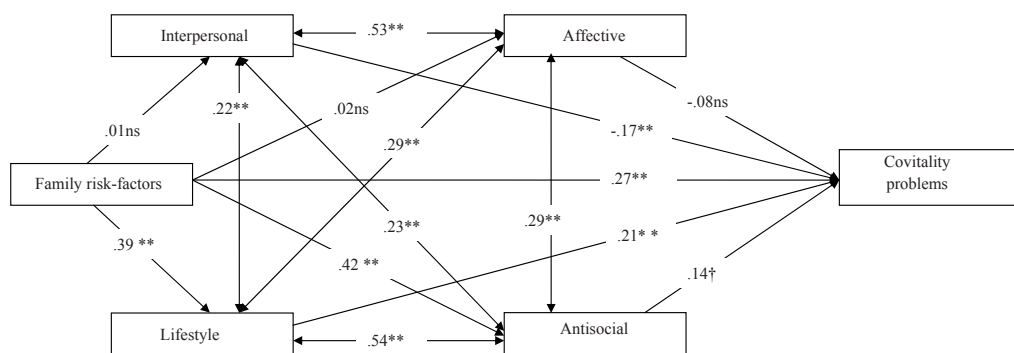


Figure 1. Psychopathy traits as mediators of the link between family dysfunctions and health problems.

Note. Double arrows represent correlations; Single arrows represent hypothetical causal paths; numbers on causal paths are standardized regression coefficients; ns = not significant; † $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ .

### Discussion

In the present study, we sought to make further insight into the relations between psychopathy and health. Furthermore, we explored the relations between detrimental family characteristics, psychopathic features and health problems, thus expanding the current literature in this field. The research results mostly confirmed our hypotheses. Factor 2 facets, Lifestyle and Antisocial psychopathy features are positively related to mental health problems and to combined physical and mental health problems (Covitality problems). There was evidence that Factor 1 can elevate health: the Interpersonal facet was negatively related to physical health problems and Covitality problems (this association was marginally significant in the regression model but fully significant in the path analysis) while Affective characteristics were negatively associated with mental health problems. Still, it must be noticed that the latter finding is inconclusive: the zero-order association between Affective characteristics and Mental health problems was not significant and the standardized coefficient in the regression model was only marginally significant. Finally, dysfunctional family characteristics are associated with health declines and this link is partially mediated by Factor 2 psychopathy facets – especially the Lifestyle psychopathy traits.

### **Psychopathy and Health Problems**

Previous research suggested that psychopathy is negatively related both to physical and mental health (Beaver et al., 2014; Hudek-Knežević et al., 2016; Jonason et al., 2015). However, these studies analyzed only the total score on psychopathy. Using the concepts of successful psychopathy and evolutionary-ecological theory, we hypothesized the crucial difference between Factor 1 and Factor 2 regarding their relation to health: Factor 2 indeed should be positively related to health problems, but we expected the opposite relations on the link between Factor 1 and health. In accordance with the hypotheses, we found that only Lifestyle and Antisocial psychopathy characteristics are associated to diminished health status, especially in mental health. This finding is in line with previous studies (Bonogofsky, 2007; Sprague et al., 2012; Swogger et al., 2010). In fact, Factor 1 traits showed negative associations with health problems – the link was more convincing for Interpersonal than Affective traits. Negative association between Affective traits and mental health problems can be more easily explained since Affective traits represent lower reactivity to stress (Willemssen et al., 2012). However, the association between Interpersonal traits and health is not easy to explain, since this relation cannot be reduced to the shared variance between Interpersonal and Affective traits. Future research, beside replicating this finding, should try to analyze potential mediators in this link as well.

Hence, only Factor 2 traits are unequivocally related to diminished physical and mental health. Decreased physical health is linked to antisocial behavior in previous research as well (Goldstein et al., 2008; Paradis et al., 2016). Impulsive and reckless behavior was reliably linked to health decline too (Lovello, 2013). In sum, present data suggests that Factor 1 and Factor 2 are differently related to health: the former are unrelated or positively related with health, while the latter are negatively associated with individual health status. Thus, the present data are in line with the dual-process perspective on psychopathy (Hall & Benning, 2006): Factor 1 and Factor 2 characteristics have different etiologies and they are crucially distinct in regard to their adaptive outcomes – individuals with elevated Factor 1 traits, but with low Factor 2 characteristics do not have higher chance for illness, quite the contrary. Interestingly, the psychopathic traits which were examined in our sample certainly cannot be labeled as successful since our participants served the prison sentences. However, the conceptual framework of successful psychopathy apparently can be implemented in populations which are not characterized by adaptive and functional behavior as well.

### **Family Dysfunctions, Psychopathy, and Health Problems**

Detrimental, dysfunctional and stressful family characteristics turned out to have consistent relations both to psychopathy and health. They are positively associated with Factor 2 and all the health problems indicators. These relations were predicted by previous empirical research (Daversa, 2010; Gao et al., 2010; Farrington, 2006; Repetti et al., 2002; Romano, Weegar, Babchishin, & Saini, 2018). Furthermore, the data showed that Factor 2, especially the Lifestyle features, partially mediate the link between family dysfunctions and health

status: the result which is in line with previous data on the role of impulsiveness and disinhibition in diminished health (Lovello, 2013). These findings allow us to infer a possible process which leads to health problems: a scarce and stressful family environment enables the emergence of erratic and impulsive lifestyle; these characteristics in turn lead to physical and mental health problems, probably by further exposure to stressful environments accompanied by disregard to potential symptoms of illness.

### **Implications for the Evolutionary Ecology of Psychopathy**

Indications of adaptive potentials regarding Factor 1 found in the present study are in accordance with the evolutionary accounts of psychopathy, which assume that psychopathy traits may elevate evolutionary fitness (Krupp et al., 2012). In fact, the results of the present study show striking convergence with the previous data on the relations between psychopathy and fitness: Factor 1 traits (especially Interpersonal characteristics) were found to be reliably positively related to evolutionary fitness, in contrast to Factor 2 traits (Međedović et al., 2017; Međedović, 2018; Međedović & Petrović, 2019). Previous data suggested that psychopathy traits are involved in evolutionary tradeoffs – they elevate mating and reproductive output but diminish parental investment (Međedović, 2019) which may lead to diminished fitness in offspring (Međedović & Petrović, 2019). Consistently with this, it was assumed that psychopathy may participate in fertility-longevity tradeoff as well: psychopathic individuals may increase their reproductive output but have shorter life spans. However, the present data cast a doubt on this hypothesis, at least regarding Factor 1 traits: with positive links to physical and mental health, these characteristics may not result in decreased longevity. This remains an important topic for the future research in the behavioral ecology of psychopathy.

However, the findings of the present study are not in accordance with the view of psychopathy as an adaptive strategy in scarce environments: Factor 1 facets are negatively related to health problems, but they are *not associated* with family dysfunctions. This finding is not in line with the hypothesis that stressful environments can facilitate the development of psychopathy (and especially Affective features) as mechanisms which buffer stress (Glenn et al., 2011). This means that diminished stress reactivity in psychopathy could be triggered not by the environment, but perhaps by some other characteristics of the individual, such as elevated distress in early stages of ontogeny (Mills-Koonce, Wagner, Willoughby, Stifter, Blair, & Granger, 2015).

### **Limitations and Future Directions**

The key limitation of the present study is the operationalization of certain variables. Coding physical health problems as a binary variable decreases the quantity of information obtained by this measure. Measurement of family maltreatment could be more precise as well, especially in the distinction between physical and psychological abuse. The findings of the current study should be replicated with other operationalizations of both the environment and

health measures in order to explore their generalizability. The present study is cross-sectional in its nature so inferences of causal pathways are limited and should be interpreted with caution. Longitudinal design is more appropriate for testing the hypotheses of causal relations between those measures. Future studies could overcome these shortcomings. Furthermore, future research should explicitly test whether adaptive features of psychopathy emerge from detrimental environmental contexts, or individual characteristics, or perhaps both. These findings can help both researchers and practitioners to understand both the origins of psychopathy and its outcomes. The link between psychopathy and health is especially important since it holds both heuristic and practical benefits in understanding the adaptive role of psychopathy and advancing physical and mental health status of communities. Furthermore, since longevity is one of the crucial components of evolutionary fitness, further research on associations between psychopathy and health can shed new light on adaptive potentials of psychopathy in an evolutionary sense.

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## Da li su sve karakteristike psihopatije povezane sa lošijim zdravljem? Psihopatija, disfunkcionalne karakteristike porodice i zdravstveni problemi osuđenika

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Prethodna istraživanja su ukazala da je psihopatija povezana sa lošijim fizičkim i mentalnim zdravljem. Međutim, ova povezanost može biti specifična za psihopatski životni stil i antisocijalno ponašanje, dok manipulativne karakteristike i emocionalna površnost mogu da budu nepovezane ili čak pozitivno povezane sa fizičkim i mentalnim zdravljem. Štaviše, psihopatske karakteristike mogu biti medijatori veze između loših porodičnih karakteristika i zdravstvenih problema. Testirali smo ove hipoteze na uzorku muških osuđenika ( $N = 224$ ). Psihopatija je ispitivana rejting skalom procene (PCL–R). Podaci o disfunkcionalnim porodičnim karakteristikama su dobijeni iz zatvorskih dosijea osuđenika. Biografski podaci o osuđenima dobijeni samoprocenom su korišćeni za procenu njihovog fizičkog i mentalnog zdravlja. Bihejvoralne psihopatske tendencije i naročito impulsivno i nepredvidivo ponašanje su se pokazali pozitivno povezanim sa problemima u fizičkom i mentalnom zdravlju. S druge strane, karakteristike interpersonalne i afektivne psihopatije uglavnom nisu bile povezane ili su bile negativno povezane sa zdravstvenim problemima. Konačno, antisocijalne karakteristike psihopatije i naročito karakteristike psihopatije koje se odnose na životni stil su se pokazale značajnim medijatorima odnosa između disfunkcionalnih porodičnih karakteristika i zdravstvenih problema. Rezultati istraživanja su pokazali da su uske facete psihopatije različito povezane sa zdravstvenim statusom. Bihejvoralne karakteristike su pozitivno povezane sa problemima fizičkog i mentalnog zdravlja, dok su manipulativne karakteristike i afektivna površnost povezane sa boljim zdravljem. Rezultati su u skladu sa konceptom uspešne psihopatije i evolucionim objašnjenjima psihopatije.

**Ključne reči:** psihopatija, fizičko i mentalno zdravlje, porodične disfunkcije, uspešna psihopatija, ljudska evolucionarna ekologija

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