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CORINNA M. PERCHTOLD-STEFAN
ENIKŐ SZABÓ
CHRISTIAN ROMINGER
ANDREAS FINK
LAURA OPRIS
NÓRA PATAKY

Criminal Genius or Everyday Villain? A Comparison of Malevolent Creativity Among Prisoners, Police Officers, and the General Population

ABSTRACT

Criminals allegedly use effective novelty to intentionally exploit and harm others (creative fraud, theft, and murder). However, empirical evidence that criminals possess higher malevolent creativity than individuals without criminal backgrounds is lacking. We compared a male sample of prisoners in a maximum-security penitentiary ($n = 140$), police officers ($n = 122$), and the general population ($n = 106$) on three different aspects of malevolent creativity: self-reported malevolent creativity behavior (MCBS), willingness to engage in malevolent creativity on a test (MCT), and malevolent creativity potential on that test (reduced $n = 285$). Group comparisons (ANOVAs) differed for different malevolent creativity aspects: Prisoners reported more malevolent creativity behavior in daily life (MCBS) than nonprisoners, which may reflect their alleged criminal personality or the effects of confinement on creative coping with threat. However, prisoners also performed worse than police officers in generating creative ideas for taking revenge on others (MCT). No differences in initial willingness to engage in malevolent creativity (MCT) emerged. This discrepancy of self-report and ability is discussed from several angles, including suitability of the applied measures and heterogeneity of prison populations. This study constitutes the first empirical insights into the often hypothesized but rarely tested malevolent creativity expression in the criminal mind.

Keywords: malevolent creativity, antisocial behavior, creative behavior, creative potential, offenders.

In the vast era of creativity research, scholars have occasionally skimmed the "darker side" of creative ideation. Creativity has been linked to deception, dishonesty, rule-breaking, or schizotypal and psychosis-prone personality traits (Acar & Sen, 2013; Beaussart, Andrews, & Kaufman, 2013; Walczyk, Runco, Tripp, & Smith, 2008), alluding that creative individuals may have unfavorable traits and that there is no automatic link between creativity and good, positive outcomes. However, since Cropley, Kaufman, and Cropley's (2008) seminal paper "*Malevolent Creativity: A Functional Model of Creativity in Terrorism and Crime*," scholars have recognized that creative ideas and creative potential may be deliberately used to damage others, with serious physical, financial, or psychological consequences for individuals, groups, or society. Since then, a surge of research interest in this dark and antisocial expression of creativity has established malevolent creativity as a regular, observable, and distinguishable phenomenon not only in extreme individuals but also in the general population (Harris & Reiter-Palmon, 2015; Kapoor & Kaufman, 2022a). Interestingly, however, although the concept of malevolent creativity was originally built around aspects of terrorism and crime, to date, there is a lack of empirical studies examining how exactly malevolent creativity differs between criminals and the general population, if there are differences at all. The present study is the first to provide a robust, large-sample investigation of self-reported and performance-based malevolent creativity in three specific groups: convicted prisoners in a maximum-security penitentiary, police officers working in prison settings, and the general population, to answer the overarching research question whether malevolent creativity is higher in criminals than noncriminals.

CONCEPTIONS OF MALEVOLENT CREATIVITY IN TERRORISM AND CRIME

Research defines malevolent creativity as coming up with original and novel ways for the "evil" purpose of harming others (Cropley et al., 2008), with most articles citing unique and unprecedented terrorism (like the 9/11 attacks) or creative criminal enterprises (like spectacular bank heists) as extreme but functional examples of malevolent creativity[1] (Cropley & Cropley, 2019). Accordingly, creativity can not only be inadvertently bad (negative creativity), but it may also be intentionally bad (malevolent creativity aimed at damaging others), and certain individuals (criminals, terrorists, aggressors) may extract explicit value from being creative in a malevolent context (Cropley et al., 2008; Cropley & Cropley, 2013, 2019). Thus, it seems that malevolent creativity should be significantly higher in criminals than the general population. This is at least implicitly supported by several publications highlighting the emergence of malevolent creativity in terrorist organizations (Gill, Horgan, Hunter, & Cushenbery, 2013; Hunter, Walters, Nguyen, Manning, & Miller, 2022; Logan, Damadzic, Medeiros, Ligon, & Derrick, 2021). For criminal behavior specifically, Cropley and Cropley (2013) note effective novelty as a requirement for criminal actions, as otherwise, most forms of criminal enterprises would not succeed, the most obvious instances being fraud, extortion, cybercrime, drug trafficking, theft, but also murder. Prison wardens also remark on the astonishing creativity of prison inmates, like making a shotgun out of bedposts, curtain tape, matchheads, AA batteries, and broken lightbulb, or soaking paper drawings in methamphetamine and making them appear like they were made by a child for their parent (Chatterjee, 2017; Singer, 2010). Eisenman (2008) provides observations that criminals may be exceptionally creative in the domain of crime and antisocial settings while being incredibly noncreative in other domains that require structured, controlled ideation (e.g., generating original objects within a predefined time). This further suggests that criminals may score higher in malevolent creativity tests and questionnaires, provided they have an explicit antisocial focus and appeal to the proposed criminals' self-indulgence and chronic rule violation (Walters, 2017). As another perspective, Cropley, Kaufman, White, and Chiera (2014) reported that laypeople perceive both ambiguous and illegal/violent actions to be more creative than legal actions and illegal/nonviolent actions. While this does not contradict that the highest malevolent creativity lies in illegal and lethal actions, it also hints at malevolent creativity in morally complex, ambiguous settings, and "gray areas" often occurring in daily life, which draws attention to malevolent creativity in the general population.

MALEVOLENT CREATIVITY IN THE GENERAL POPULATION

The majority of research has almost exclusively focused on the general population, noting creative lying, manipulation, bulling, mobbing, vandalism, or theft as common instances of malevolent creativity in everyday life (Harris & Reiter-Palmon, 2015; Perchtold-Stefan, Fink, Rominger, & Papousek, 2021a; Perchtold-Stefan, Rominger, Papousek, Fink, 2022). Notwithstanding considerable heterogeneity in measurement approaches (e.g., Dumas & Strickland, 2018; Hao, Tang, Yang, Wang, & Runco, 2016; Harris & Reiter-Palmon, 2015; Perchtold-Stefan et al., 2021a), researchers managed to build a robust framework of antecedents and potential consequences of malevolent creativity (see Kapoor & Kaufman, 2022a, 2022b). Seminal findings include links of malevolent creativity with general creative potential and brain activation (Perchtold-Stefan, Rominger, Papousek, & Fink, 2023a, 2023b), but also with aggression and antisocial traits (Harris & Reiter-Palmon, 2015; Perchtold-Stefan et al., 2021a), low morality (Kapoor & Kaufman, 2022a; Zhao, Xu, & Pang, 2022), negative moods like anger and depression (Cheng, Lu, & Hao, 2021; Perchtold-Stefan, Rominger, & Fink, 2023), low emotional intelligence and emotion regulation capacity (Harris, Reiter-Palmon, & Kaufman, 2013; Perchtold-Stefan, Fink, Rominger, & Papousek, 2021b), or social exclusion (Perchtold-Stefan, Fink, Rominger, Papousek, et al., 2022). It may be argued that even though malevolent creativity in the general population has less severe consequences (e.g., lying, mobbing) than when exercised by criminals (assault, murder), it is simply more prevalent in terms of a higher base rate of legal, semi-legal, or hard to prosecute malevolent creativity (e.g., *damaging someone's reputation by posting creative lies online*) compared to illegal malevolent creativity *(e.g., catfishing someone to harvest their organs for the black market)* and is thus in imminent need of investigation. However, despite robust correlations with antisocial personality traits, negative moods, and reduced emotional capacities, it is rather difficult to detect,

[1] Both original terrorism and crime as strong examples of malevolent creativity meet the standard definition of creativity as something novel and useful/effective (Runco & Jaeger, 2012), as the criterion of usefulness is defined within a specific social context (see Plucker, Beghetto, & Dow, 2004) that may also be malevolent. Thus, malevolent creative ideas are inherently useful for individuals seeking to inflict harm on others (see Harris & Reiter-Palmon, 2015).

distinguish, and ultimately, prevent malevolent creativity potential in the general population if comparisons to extreme groups are lacking.

EMPIRICAL FINDINGS ON MALEVOLENT CREATIVITY IN CRIMINALS AND PRISON INMATES

There are some empirical studies that directly examine or indirectly address malevolent creativity in criminals, specifically in convicted criminals and prison settings. Eisenman (1992, 1999, 2008) reported generally low creativity in prison samples, with the exception of creativity in antisocial situations (e.g., creative robberies with a lot of "thinking out of the box"). Barbot, Cerda, and Teo (2020) also suggested that negative creative ideation (including malevolent creative ideas) in a sample of juvenile offenders was highly task- and theme-specific; however, it was not increased for prompts with more obvious harmful uses like brick or rake. Meshkova, Enikolopov, Mitina, and Meshkov (2018) adapted the Russian version of the Malevolent Creativity Behavior Scale (MCBS; Hao et al., 2016) in a large sample that also included violent criminals, reporting positive links of malevolent creativity with aggression, hostility, anger, and search for novelty, but did not conduct group comparisons between convicts and the general population. In a more recent study by Szabó et al. (2022), prisoners who started committing crimes at an early age (16–20) reported more malevolent creativity behavior (MCBS) compared to prisoners who offended at a later age. Curiously, Szabó et al. (2022) also found that prisoners convicted of violent crimes reported less malevolent creativity for hurting others compared to prisoners convicted of nonviolent crimes. They explained this by a lack of planning and inability to self-regulate on part of violent offenders—traits that support spontaneous violence but not calculated creative "hurting." In sum, although these studies provide some insights of malevolent creativity in criminal samples, none of them included comparisons to the general population, complicating any assertions that criminals/convicts possess particularly high malevolent creativity.

THE PRESENT STUDY

In our study, we compared malevolent creativity in convicted criminals from a maximum-security penitentiary (1) to two control groups: participants from the general population without any prison background (2), and police officers working in/around the same maximum-security penitentiary (3). Comparisons were made across three domains: (a) self-reported malevolent creativity behavior in daily life (MCBS) with respect to hurting others, lying, and playing tricks, (b) willingness to engage in malevolent creativity in a validated psychometric performance test where participants are instructed to come up with creative ideas for taking revenge on others (Malevolent Creativity Test; MCT, Perchtold-Stefan et al., 2021a), and (c) malevolent creativity potential on the MCT in terms of number, originality, and malevolence of generated ideas (see Perchtold-Stefan et al., 2021a, 2021b, Perchtold-Stefan, Fink, et al., 2022, Perchtold-Stefan, Rominger, et al., 2022, Perchtold-Stefan et al., 2023a, 2023b; Perchtold-Stefan, Rominger, et al., 2023).

Given the scarcity of previous empirical research, we follow the general hypothesis that prisoners will display higher malevolent creativity (behavior, potential, or both) than both the general population and police officers (Cropley et al., 2008; Eisenman, 2008; Szabó et al., 2022). We do not propose specific hypotheses for differences between police officers and the general population, though there may be some. Police officers were chosen as a second control group to examine whether proximity to criminals or prison settings may influence malevolent creativity expression. Additionally, studies show that criminals and law enforcement are involved in a perpetual intellectual arms race as higher police efficiency and novel police tactics may counter criminal enterprises and vice versa (Banerjee, Van Hentenryck, & Cebrian, 2015; Ladegaard, 2020), which suggests interesting competitive dynamics in malevolent creativity. Two avenues seem plausible: Police officers, due to experiencing more job-based stress and violence may display higher malevolent creativity than the general population, as creative violence, may be seen as an appropriate means to deal with difficult inmates without facing consequences. Alternatively, it may be argued that the stereotype police personality high in authoritarianism, conservatism, and dogmatism does not converge with a creative mindset (Cropley & Cropley, 2011), and additional high awareness of the consequences for deviant behavior may result in lower malevolent creativity.

In terms of sensitivity analyses, we also consider the possibility that our recruited prisoners differ in the nature and type of crimes committed (e.g., violent vs. nonviolent, murder vs. theft, etc.), which may imply different degrees of malevolent creativity. For this reason, within prisoners, we additionally test for differences in malevolent creativity based on the type of crime prisoners were convicted for.

Given the robust link of malevolent creativity with antisocial and impulsive personality traits, we also tested for group differences in the following personality traits to help interpret findings on malevolent

creativity: Machiavellianism associated with calculated social manipulation and high moral flexibility (Kapoor & Kaufman, 2022a; Szabó et al., 2022), psychopathy associated with callous, impulsive, and predatory behavior (Kapoor, 2015; Kapoor & Kaufman, 2022a), and impulsiveness as rapid, unplanned actions without regard for negative consequences (Harris et al., 2013; Perchtold-Stefan, Rominger, et al., 2022). Narcissism was omitted from analyses due to negligible associations with malevolent creativity and stronger links to socially desirable behavior (Kapoor & Kaufman, 2022a; Szabó et al., 2022). In general, we hypothesize that prisoners report significantly higher dark personality traits than non-prisoners (Azizli et al., 2016). For prisoners specifically, we expect that their malevolent creativity may also be linked to the length of their prison sentence, time of first conviction, number of committed crimes, and potential previous imprisonment, which we will test by means of correlations.

Given our primary access to male prisoners, we chose to only sample male participants from the police officer group and the general population to avoid complications due to unequal gender compositions between the groups. Moreover, as gender differences in malevolent creativity are still debated (Hao et al., 2016; Kapoor & Kaufman, 2022a; Perchtold-Stefan et al., 2021a, 2021b), and gender differences in aggression are well-documented (see Archer, 2004), it seems reasonable to initially focus our investigation on men with a higher general propensity for aggression.

METHODS

PARTICIPANTS

Participants were recruited from three different populations: (1) prisoners with various criminal backgrounds and sentences from the Oradea Maximum Security Penitentiary in Romania, (2) participants from the Romanian general population, and (3) police officers working in and around the Oradea Maximum Security Penitentiary. A priori power analyses (G*Power) suggested that a minimum of $n = 301$ participants is required to detect small to medium-sized effects of $f = 0.18$ in ANOVAs ($\alpha = 0.05$, $1-\beta = 0.80$, $groups = 3$, $df = 2$). In total, $n = 378$ participants participated in the study; however, $n = 2$ participants had to be removed from analyses due to incomplete data. Additionally, $n = 8$ participants were removed from the general population due to having reported previous crimes and imprisonments.

The final sample comprised $n = 368$ male participants, 140 prisoners ($M_{age} = 36.44$, $SD_{age} = 10.79$), 122 police officers ($M_{age} = 34.25$, $SD_{age} = 7.69$), and 106 participants from the general population ($M_{age} = 30.20$, $SD_{age} = 12.42$). 53.6% of prisoners were convicted for a violent crime (murder, rape, assault, etc.), 46.4% for a nonviolent crime (theft, drug trafficking, driving without a license, etc.). Prisoners' reported number of committed crimes were: one (35%), two (34.3%), three to five (8.6%), and more than five (22.1%). The average prison sentence was $M = 8.56$ years ($SD = 7.71$, min = 7 months, max = 30 years). In terms of first conviction, 8.6% of prisoners reported having been convicted before the age of 16, 20.7% before the age of 20, and 70.7% after the age of 20. In terms of previous imprisonment, 53.6% were imprisoned for the first time, 34.3% had already been imprisoned between one and three times, and 12.1% had been imprisoned more than three times. All participants provided written informed consent. The study was approved by the United Ethical Review Committee for Research in Psychology (EPKEB) in Hungary (approval number: 2022-74)[2]. Data and analysis scripts are available on the Open Science Framework[3].

DEMOGRAPHIC DATA

Prior to malevolent creativity assessment, participants reported their age, level of education, alcohol, and drug consumption, as well as history of self-mutilation and suicide attempts (see Table 1).

MALEVOLENT CREATIVITY BEHAVIOR (MCBS)

On the MCBS (Hao et al., 2016), participants reported how often they engage in malevolent creativity behaviors in everyday life (e.g., deceptions, tricks, lies, revenge, etc.). The MCBS consists of 13 items rated on a 5-point Likert scale from 0 (never) to 4 (usually; $\alpha = 0.85$; e.g., "*How often do you have ideas about new ways to punish people*?"). The three subscales assess malevolent creativity behavior in terms of hurting others (e.g., $M = 2.42$, $SD = 3.34$, $\alpha = 0.81$), lying (e.g., $M = 2.75$, $SD = 2.85$, $\alpha = 0.74$), and playing tricks

[2] This study was not pre-registered.
[3] https://osf.io/cuybr/.

TABLE 1. Frequencies for Demographic Data

Demographic data	Category	Total		Prisoners		General population		Police officers	
		n	%	*n*	%	*n*	%	*n*	%
Education	Primary school (grades 1–4)	10	2.7	10	7.1	0	0	0	0
	Secondary grade (grades 5–8)	56	15.2	47	33.6	9	8.5	0	0
	High school (grades 9–12)	105	28.5	53	37.9	40	37.7	12	9.8
	Professional/trade school	89	24.2	14	10	9	8.5	66	54.1
	University studies	108	29.3	16	11.4	48	45.4	44	36.1
Alcohol consumption	Never	59	16	20	14.3	31	29.2	8	6.6
	Rarely/occasionally	286	77.7	107	76.4	69	65.1	110	90.2
	Frequently	20	5.4	11	7.9	6	5.7	3	2.5
	Alcohol dependence	3	0.8	2	1.4	0	0	1	0.8
Drug consumption	Never	322	87.5	100	71.4	103	97.2	119	97.5
	Rarely/occasionally	24	6.5	21	15	2	1.9	1	0.8
	Frequently	11	3.0	10	7.1	1	0.9	2	1.6
	Drug addiction	11	3.0	9	6.4	0	0	0	0
Self-mutilation	None	341	92.7	119	85	102	96.2	120	98.4
	Once	15	4.1	11	7.9	3	2.8	1	0.8
	Twice	5	1.4	4	2.9	0	0	1	0.8
	More than twice	7	1.9	6	4.3	1	0.9	0	0
Suicide attempts	None	350	95.1	127	90.7	104	98.1	119	97.5
	Once attempt	8	2.2	5	3.6	2	1.9	1	0.8
	Two attempts	4	1.1	4	2.9	0	0	2	1.6
	More than two attempts	6	1.6	4	2.9	0	0	0	0

on others (e.g., $M = 1.96$, $SD = 2.00$, $\alpha = 0.54$)[4]. Average total malevolent creativity behavior for the total sample was $M = 7.14$ ($SD = 6.77$).

MALEVOLENT CREATIVITY POTENTIAL (MCT)

On the Malevolent Creativity Test (MCT; Perchtold-Stefan et al., 2021a), participants are confronted with negative social scenarios featuring unfair behavior from peers/associates, reflecting the idea that malevolent creativity is more easily elicited in provocative settings (Baas, Roskes, Koch, Cheng, & De Dreu, 2019; Harris & Reiter-Palmon, 2015). Participants are explicitly instructed to generate original ideas with the goal of sabotaging or taking revenge on the wrongdoers (3 min per item). Validity of the MCT was confirmed by several studies showing significant associations with verbal divergent thinking, negative mood, antisocial personality, and dysfunctional emotion regulation of anger (Perchtold-Stefan et al., 2021a, 2021b, Perchtold-Stefan, Fink, et al., 2022, Perchtold-Stefan, Rominger, et al., 2022, Perchtold-Stefan et al., 2023a, 2023b, Perchtold-Stefan, Rominger, et al., 2023). We used six different MCT scenarios (see Perchtold-Stefan et al., 2023a, 2023b): (1) a broken promise for money for helping a neighbor with apartment renovations, (2) a careless colleague spilling coffee on an expensive book, (3) an inconsiderate roommate throwing a party during exam season, and (4) an unfair romantic rival, (5) a rivalry for a job with an unfair acquaintance, and (6) a colleague stealing one's food from the office fridge. As one deviation from the original MCT instructions, in this study, we only asked participants to generate *one* idea per item. This was done to simplify the procedure for nonstudent populations and to ensure higher compliance with the testing procedure. Additionally, it allowed a stronger focus on the quality of malevolent creative ideation and less on ideational fluency.

For the first time, in the present study, the MCT was administered mostly to nonstudent participants, with respectively little experience with creativity tests. Prior experience with the MCT showed that even student populations are sometimes unwilling to generate malevolent creative ideas for revenge (even when

[4] Due to insufficient internal consistency, the playing tricks subscale is not considered in the subsequent analyses.

explicitly instructed to the hypothetical nature of the MCT). Accordingly, prior to rating the quality of generated ideas, we scored participants' willingness to engage in malevolent creative ideation in the MCT: Participants answers to each of the MCT items were scored as 1 if the intent to generate a malevolent creative idea was present and scored as 0 if participants either explicitly refused to engage in malevolent creativity in all six situations of the MCT (e.g., "*I do not want to*," "*I would never do that*," or simply "*no*") or if they provided nonmalevolent problem-solutions (e.g., "*I would just do my best*," "*I will talk to [the wrongdoer]*," etc.). In absolute terms (engagement no/yes), 22.6% of participants refused to engage with all MCT situations despite instructions to the theoretical nature of the test. In relative terms (percentage score: number of items with malevolent creativity engagement relative to all six items), mean malevolent creativity engagement was $M = 44.07\%$ ($SD = 36.04\%$). In conclusion, only ideas that suggested malevolent creativity engagement were rated for malevolence and originality (77.4% of the sample), that is, $n = 285$ ($n = 109$ prisoners, $n = 80$ participants from the general population, $n = 96$ police officers).

Participants' ideas were scored for degree of malevolence (1 = slightly malevolent; 4 = highly malevolent, $M = 1.09$, $SD = 0.79$), and originality (1 = very unoriginal, 4 = very original, $M = 0.99$, $SD = 0.71$) by four experienced raters (2 women, 2 men). Interrater reliability with the intraclass correlation coefficient (ICC, two-way random, consistency) was ICC = .98 for malevolence and ICC = .95 for originality of ideas. A total score of malevolent creativity was computed by summing up the number of malevolent ideas with an average originality rating of ≥2 (moderately original), indicating $M = 1.15$ ($SD = 1.43$) malevolent creative ideas on average. This total malevolent creativity score is based on the seminal approach by Harris and Reiter-Palmon (2015), stating that malevolent creative ideas need to be both harmful and original.

PERSONALITY TRAITS

Machiavellianism was assessed with the Romanian version of the MACH-IV Scale (Christie & Geis, 1970; translation by Gavreliuc, Gavreliuc, & Cîmpean, 2009) as one of the most popular measures to date (Paulhus & Jones, 2015; example item: "*Anyone who trusts anyone else is asking for trouble*"). The MACH-IV consists of 20 items rated on a scale from 1 (strong disagreement) to 6 (strong agreement). Mean scores for the total sample were $M = 63.55$ ($SD = 5.38$, $\alpha = 0.72$).

Psychopathy was assessed with the Psychopathy Checklist-Revised (Hare, 1991, 2003), which scores psychopathic traits on a 3-point scale from 0 (item does not apply) over 1 (item applies to a certain extent) to 2 (item applies). For applicability in all study groups (prisoners, police officers, general population), the scale was administered as a self-report, without interview by clinicians. The scale consists of 20 items assigned to four facets and two factors: factor 1 (interpersonal, affective, e.g., *grandiose sense of self-worth*; $M = 3.37$, $SD = 3.19$, $\alpha = 0.77$) and factor 2 (lifestyle, antisocial, e.g., *impulsivity*, *irresponsibility;* $M = 2.74$, $SD = 3.30$, $\alpha = 0.79$). Mean score for total psychopathy was $M = 6.96$ ($SD = 6.88$, $\alpha = 0.88$).

Impulsiveness was assessed with the Barratt Impulsiveness Scale Version 11 (Patton, Stanford, & Barratt, 1995; also see Stanford et al., 2009), which consists of 30 items that measure a total score of impulsiveness ($M = 63.84$, $SD = 10.51$, $\alpha = 0.82$) as well as three second-order factors of motor impulsiveness (e.g., "*I act on impulsive*," $M = 20.47$, $SD = 4.92$, $\alpha = 0.71$), attentional impulsiveness (e.g., "*I have racing thoughts*," $M = 16.43$, $SD = 3.75$, $\alpha = 0.66$), and nonplanning impulsiveness (e.g., "*I say things without thinking*," $M = 26.95$, $SD = 4.83$, $\alpha = 0.60$) on a scale from 1 (rarely/never) to 4 (almost always).

PROCEDURE

For prisoners and police officers, test sessions were conducted in person in a quiet room at the Oradea Maximum-Security Penitentiary. Demographic data forms and the personality questionnaires were completed before filling out the MCBS. Afterward, they received detailed instructions for the MCT and completed the six MCT items. Self-report data in the general population were collected via Google Forms, while the MCT was completed at the University of Debrecen. All tests and questionnaires were completed in Romanian by all participants. The total testing procedure lasted ~60 min.

STATISTICAL ANALYSES

First, for preliminary analyses, we tested for group differences in age and personality traits by means of ANOVA and education, alcohol, and drug consumption, as well as self-mutilated and suicide attempts by means of chi-squared tests.

Second, for our main analyses testing for group differences in various aspects of malevolent creativity, we ran three univariate ANOVAs with the between-subjects factor GROUP (prisoners, police officers, and

general population) and the dependent variable of total malevolent creativity behavior (MCBS), malevolent creativity engagement (MCT), and total malevolent creativity potential (MCT), respectively.

Third, group effects in these main models were followed up with ANOVAs for subscales of the MCBS (hurting people, lying) and the MCT (malevolence, originality of ideas). Please note that the MCBS playing tricks subscale is not included in these analyses due to insufficient internal consistency ($\alpha = 0.54$).

Fourth, sensitivity analyses were run to test for group differences among prisoners with regard to conviction for a violent crime versus conviction for a nonviolent crime and convictions for different crime types (e.g., murder vs. theft vs. drug crimes). Independent sample *t*-tests tested group effects (violent crime vs. nonviolent crime) and ANOVAS (different crime types) on total malevolent creativity behavior (MCBS), malevolent creativity engagement (MCT), and total malevolent creativity potential (MCT). Additionally, participants' malevolent creativity was linked to their prison sentence in years, time of first conviction, number of committed crimes, and previous imprisonment by Pearson's and Spearman correlations.

Finally, we computed Pearson's correlations between all malevolent indicators and personality traits.

Significant ANOVA group effects for all main analyses were followed up with Games-Howell post hoc tests due to unequal error variances across the groups. Effect sizes are expressed in partial eta squared (η_p^2) for ANOVAs and Cohen's *d* for *t*-tests. Results are generally considered significant if $p < .05$. However, given the novel nature of our investigation, for the main ANOVA models only, it is also reported if results fail to be significant but show a trend ($p < .10$) to inform future research questions. All analyses were performed with IBM SPSS version 28. Note that analyses for the MCT are based on a subsample of participants who were willing to at least produce one malevolent idea ($n = 285$ from the original $n = 368$).

RESULTS

PRELIMINARY ANALYSES

Demographic variables

Age differences between the groups were observed ($F_{2,365} = 10.96$, $p < .001$, $\eta_p^2 = .06$): Participants from the general population were younger than prisoners ($p < .001$) and police officers ($p = .004$), while there was no difference between prisoners and the police officers ($p = .090$).

The groups also differed in terms of education, in that the majority of prisoners reported primary school to high school education, while police officers and the general population predominantly reported trade school education and university studies ($\chi^8 = 185.30$, $p < .001$).

Analyses suggested a higher degree of self-mutilation in prisoners compared to nonprisoners ($\chi^6 = 20.98$, $p = .002$). Differences in drug consumption and alcohol consumption were observed, as police officers reported less occasional drug and alcohol consumption than prisoners and the general population (drugs: $\chi^6 = 54.34$, $p < .001$; alcohol: $\chi^6 = 28.96$, $p < .001$). Group differences in history of suicide attempts failed to be significant ($\chi^6 = 12.32$, $p = .055$).

Personality traits

The groups significantly differed in Machiavellianism ($F_{2,365} = 3.60$, $p = .028$, $\eta_p^2 = .02$), with prisoners scoring lower than police officers ($p = .039$). There were no differences between prisoners and the general population ($p = .167$) or between police officers and the general population ($p = .681$).

Significant group differences also emerged for psychopathy factor 1 ($F_{2,365} = 13.08$, $p < .001$; $\eta_p^2 = .07$), psychopathy factor 2 ($F_{2,365} = 24.31$, $p < .001$, $\eta_p^2 = .12$), and total psychopathy ($F_{2,365} = 24.96$, $p < .001$, $\eta_p^2 = .12$). Prisoners reported higher psychopathy than police officers (factor 1, factor 2, total: $p < .001$) and the general population (only factor 2: $p = .018$, total: $p = .003$). The general population reported higher psychopathy than police officers (factor 1: $p = .027$, factor 2: $p < .001$, total: $p = .005$).

The groups also differed in total impulsiveness ($F_{2,365} = 23.28$, $p < .001$, $\eta_p^2 = .11$), which was higher in prisoners compared to non-prisoners (p's $< .001$), with no differences between the general population and police officers ($p = .157$). Significant group differences were also observed for the subscales of motor impulsiveness ($F_{2,365} = 32.11$, $p < .001$; $\eta_p^2 = .15$), attentional impulsiveness ($F_{2,365} = 17.89$, $p < .001$; $\eta_p^2 = .09$), and nonplanning impulsiveness ($F_{2,365} = 7.71$, $p < .001$, $\eta_p^2 = .04$). Prisoners reported higher motor impulsiveness than non-prisoners (p's $< .001$), higher attentional impulsiveness than police officers ($p < .001$) and the general population ($p = .037$), and higher nonplanning impulsiveness than the general population ($p < .001$). Police officers reported lower motor impulsiveness ($p < .001$) and lower attentional impulsiveness ($p = .004$) than the generation population.

See Table 2 for group means, standard deviations, and a summary of ANOVA results.

TABLE 2. ANOVA Results for Group Differences in Personality Traits

	Prisoners	Police officers	General population	Anova results				
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*df*	Error	*F*	*p*	η_p^2
Machiavellianism	62.64 (5.92)	64.36 (5.43)	63.82 (4.32)	2	365	3.60	**.028**	.02
Psychopathy 1	4.28 (3.15)	2.32 (2.83)	3.39 (3.51)			13.08	**<.001**	.07
Psychopathy 2	3.96 (3.26)	1.28 (2.67)	2.79 (3.37)			24.31	**<.001**	.12
Total Psychopathy	9.66 (6.36)	4.01 (5.98)	6.78 (7.13)			24.96	**<.001**	.12
Total Impulsiveness	68.19 (10.79)	60.10 (9.43)	62.39 (9.26)			23.28	**<.001**	.11
Motor impulsiveness	22.60 (5.23)	18.09 (4.07)	20.38 (4.07)			32.92	**<.001**	.15
Attentional impulsiveness	17.65 (3.92)	14.99 (3.20)	16.46 (3.55)			17.90	**<.001**	.09
Nonplanning impulsiveness	27.94 (4.68)	27.02 (4.56)	25.55 (5.03)			7.71	**<.001**	.04

Note. *df* = degrees of freedom; *p* = significance, η_p^2 = partial eta-squared effect size; *N* = 368. Significant effects are highlighted in bold.

Results for malevolent creativity behavior (MCBS)

The ANOVA revealed significant group differences in self-reported *total malevolent creativity behavior* ($F_{2,365} = 15.25$, $p < .001$, $\eta_p^2 = .08$). Prisoners reported more *malevolent creativity behavior* in daily life compared to police officers ($p < .001$), while differences to the general population failed to be significant, but showed a trend at $p = .064$. The general population reported more malevolent creativity behavior than police officers ($p = .011$). See Figure 1 for illustrated group differences.

Sensitivity analyses controlling for age and education yielded virtually the same results (prisoners vs. police officers: $p < .001$; prisoners vs. general population: $p = .053$; general population vs. police officers: $p = .023$).

Follow-up analyses for the MCBS subscales revealed more specific differences between the groups: Prisoners reported more malevolent creativity behavior aimed at *hurting people* compared to police officers ($p = .003$), but not the general population ($p = .754$; $F_{2,365} = 4.99$, $p = .007$, $\eta_p^2 = .03$). Prisoners reported more malevolent creativity behavior in terms of *lying* compared to both police officers ($p < .001$) and the general population ($p = .004$). The general population reported more MCBS *lying* than police officers ($p < .001$; $F_{2,365} = 25.85$, $p < .001$, $\eta_p^2 = .12$).

Sensitivity analyses controlling for age and education left results for the MCBS hurting and lying subscales virtually unchanged.

Descriptive statistics and ANOVA results for the main MCBS model are summarized in Table 3.

Results for malevolent creativity engagement (MCT)

No group differences in willingness to engage in malevolent creativity on the MCT were observed, neither in absolute terms (no/yes; $\chi^2 = 0.36$, $p = .836$) nor in relative terms (percentage; $F_{2,365} = 0.68$, $p = .508$, $\eta_p^2 < .01$), showing that prisoners, police officers, and the general population were equally willing to generate creative ideas for revenge on the MCT (see Figure 1).

Controlling for age and education in the ANOVA model had no effect on these results.

Results for malevolent creativity potential (MCT)

The ANOVA revealed a significant group difference in *total malevolent creativity potential* ($F_{2,282} = 3.45$, $p = .033$, $\eta_p^2 = .02$). Prisoners demonstrated lower performance on the MCT compared to police officers ($p = .046$), yet there was no difference to the general population ($p = .839$). Additionally, differences between police officers and the general population failed to be significant ($p = .151$).

Interestingly, despite significant differences in this *total score of malevolent creativity*, follow-up analyses indicated no group differences in *MCT malevolence* ($F_{2,282} = 0.07$, $p = .931$, $\eta_p^2 < .01$) or *MCT originality* ($F_{2,282} = 1.81$, $p = .166$, $\eta_p^2 = .01$). See Figure 1 for illustrated group differences in total malevolent creativity potential.

Adding age and education to the model rendered the differences between prisoners and police nonsignificant ($p = .096$).

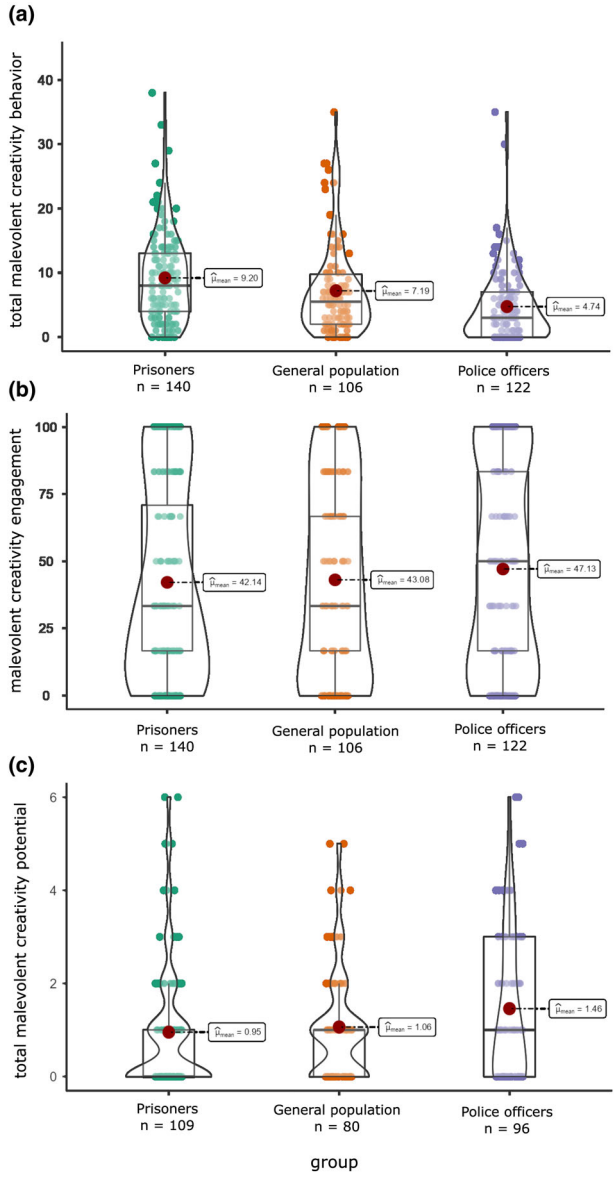

FIGURE 1. Group differences for total malevolent creativity behavior as self-reported on the MCBS (a) with $n = 368$, for malevolent creativity engagement on the MCT (b) with $n = 368$, and for malevolent creativity potential on the MCT (c) with $n = 285$. Prisoners ($n = 140$) report higher malevolent creativity behavior on the MCBS than police officers ($n = 122$), but not the general population ($n = 106$; a). No group differences for willingness to engage in malevolent creativity on the MCT were observed (b). Prisoners ($n = 109$) show lower potential for malevolent creativity on the MCT compared to police officers ($n = 96$), but not the general population ($n = 80$; c).

Descriptive statistics and ANOVA results for MCT potential are summarized in Table 3.

Correlations and group comparisons within prisoners

Within prisoners, total malevolent creativity behavior correlated positively with length of the prison sentence ($r = .18$, $p = .037$), number of previous imprisonments ($r = .30$, $p < .001$), and number of crimes committed ($r = .32$, $p < .001$). Additionally, prisoners with their first conviction at a younger age reported more malevolent creativity behavior ($r = -.23$, $p = .006$).

Length of prison sentence was negatively correlated with malevolent creativity engagement ($r = -.17$, $p = .050$).

Length of prison sentence was negatively correlated with total malevolent creativity potential ($r = -.23$, $p = .022$). Again, prisoners with earlier first convictions showed higher malevolent creativity potential ($r = -.23$, $p = .019$). For a summary of correlations including MCBS and MCT subscales, see Table 4.

TABLE 3. Anova Results for Group Differences in Different Aspects of Malevolent Creativity

		Prisoners	Police officers	General population	Anova results				
		M (*SD*)	*M* (*SD*)	*M* (*SD*)	*df*	Error	*F*	*p*	η_p^2
Malevolent Creativity Behavior (MCBS)	Total Score	9.20 (7.00)	4.74 (5.58)	7.19 (6.87)	2	365	15.25	**<.001**	.08
	Hurting	2.94 (3.60)	1.67 (2.62)	2.60 (3.60)			4.99	**.007**	.03
	Lying	3.89 (3.28)	1.51 (2.01)	2.71 (2.43)			25.85	**<.001**	.12
	Tricks	2.38 (2.04)	1.56 (1.73)	1.88 (2.13)	Not analyzed: poor internal consistency				
Malevolent Creativity Performance (MCT)	Engagement (%)	42.14 (35.62)	47.13 (37.34)	43.08 (35.18)			0.68	.508	<.01
	Total Score	0.95 (1.40)	1.46 (1.58)	1.06(1.22)	2	282	3.45	**.033**	.02
	Malevolence	1.09 (0.80)	1.11 (0.80)	1.07 (0.76)			0.07	.931	<.01
	Originality	0.91 (0.66)	1.10 (0.78)	0.98 (0.68)			1.81	.166	.01

Note. *df* = degrees of freedom; *p* = significance, η_p^2 = partial eta-squared effect size; $N = 368$ for MCBS and MCT engagement, and $N = 285$ for MCT potential. Significant effects are highlighted in bold.

TABLE 4. Correlations of Malevolent Creativity in Prisoners and Prison Demographics

		1	2	3	4	5	6	7	8	9	10
1	MCBS Total	–									
2	MCBS Hurting	.82**	–								
3	MCBS Lying	.79**	.38**	–							
4	MCT Engagement	.13	.10	.16	–						
5	MCT Total potential	.08	.09	.15	.61**	–					
6	MCT Malevolence	.18	.12	.29**	.92**	.71**	–				
7	MCT Originality	.11	.08	.20**	.91**	.86**	.91**	–			
8	Length of prison sentence (years)	.18*	.15	.15	.05	−.21*	−.14	−.20*	–		
9	Age of first conviction	−.23**	−.27**	−.16	−.16	−.20*	−.27**	−.26**	−.19	–	
10	Number of committed crimes	.32**	.31**	.28**	−.01	.02	.17	.07	.14	−.41**	–
11	Previous imprisonment	.30**	.26**	.22*	−.05	−.01	.12	.06	.09	−.52**	.59**

Note. $n = 140$ for MCBS, MCT engagement, and personality correlations; $n = 109$ for MCT potential, malevolence, and originality. Pearson's Correlations for variables 1–7, Spearmans' Rho for variables 8–11. $^{**}p < .01$, $^{*}p < .05$.

Prisoners convicted for violent crimes did not differ in total malevolent creativity behavior ($t_{138} = .02$, $p = .981$, $d < 0.01$), malevolent creativity engagement ($t_{138} = -1.40$, $p = .164$), or malevolent creativity potential ($t_{107} = -1.73$, $p = .087$, $d = -0.33$).

No group differences were observed for the MCBS subscales (hurting: $t_{138} = -0.57$, $p = .576$, $d = 0.01$; lying: $t_{138} = 0.29$, $p = .775$, $d = 0.05$) or MCT malevolence ($t_{107} = 0.08$, $p = .934$, $d = 0.16$) or MCT originality ($t_{107} = -1.14$, $p = .258$, $d = -0.21$).

For comparisons of crime types, only groups with a minimum of $n = 10$ available participants for the MCBS and the MCT were included. These six groups were: murder and attempted murder (MCBS: $n = 34$; MCT: $n = 29$), theft (MCBS: $n = 19$, MCT: $n = 14$), robbery (MCBS: $n = 12$, MCT: $n = 10$), drug crimes (MCBS: $n = 15$, MCT: $n = 15$), noncompliance with traffic laws (MCBS: $n = 21$, MCT: $n = 18$), and deception/bribery (MCBS: $n = 13$, MCT: $n = 11$).

The ANOVA for malevolent creativity behavior showed a significant group effect ($F_{5,108} = 4.38$, $p = .001$, $\eta_p^2 = .17$). Post hoc comparisons showed that malevolent creativity behavior was higher in prisoners incarcerated for theft (compared to murder: $p = .018$; to drug crimes: $p = .003$; to traffic-related crimes: $p < .001$, to deception/bribery: $p < .001$) and in prisoners incarcerated for robbery (compared to traffic-related crimes: $p = .017$, to deception/bribery: $p = .017$) (See Figure 2).

The ANOVA for malevolent creativity engagement yielded no significant group effect ($F_{5,108} = 1.04$, $p = .396$, $\eta_p^2 = .05$).

The ANOVA for malevolent creativity potential revealed a trend level group effect ($F_{5,91} = 2.20$, $p = .061$, $\eta_p^2 = .11$). Post hoc comparisons showed that malevolent creativity potential was higher in prisoners with drug-related crimes (compared to murder: $p = .008$; to deception/bribery: $p = .011$). Similar higher malevolent creativity potential compared to other groups was observed for prisoners incarcerated for theft but failed to be significant (compared to murder: $p = .078$; to deception/bribery: $p = .066$) (See Figure 2).

Correlations of malevolent creativity indicators

Over all groups, malevolent creativity behavior correlated with malevolent creativity engagement on the MCT (r's from .19 to .25), as well as with total malevolent creativity potential (r's from .13 to .17), MCT malevolence (r's from .23 to .28), and MCT originality (r's from .18 to .23). Willingness to engage in malevolent creativity on the MCT was highly correlated with total malevolent creativity potential ($r = .61$), MCT malevolence ($r = .90$), and MCT originality ($r = .90$).

Importantly, running these correlations separately per group revealed crucial differences in correlational patterns: In non-prisoners, those who reported more malevolent creativity behavior also showed more malevolent creativity engagement (police officers: $r = .37$, $p < .001$; general population: $r = .41$, $p < .001$) and higher malevolent creativity potential on the MCT (police officers: $r = .30$, $p = .001$, general population: $r = .35$, $p < .001$). Conversely, self-reported malevolent creativity behavior, engagement, and potential were not significantly correlated in prisoners (all r's $< .13$, all p's $> .13$).

Correlations of personality traits with malevolent creativity behavior and potential

Malevolent creativity behavior positively correlated with aspects of psychopathy and impulsiveness (r's from .34 to .54), but negatively correlated with Machiavellianism (r's from $= -.15$ to $-.18$). Willingness to engage in malevolent creativity (MCT) correlated with attentional impulsiveness ($r = .13$). Machiavellianism negatively correlated with malevolent creativity potential (r's from $-.21$ to $-.23$). MCT malevolence positively correlated with all personality traits except for nonplanning impulsiveness (r's from $-.23$ for Machiavellianism to .21). MCT originality positively correlated with attentional impulsiveness ($r = .14$). All correlations are summarized in Table 5.

DISCUSSION

This study compared malevolent creativity among prisoners in a maximum-security penitentiary, police officers, and the general population. Results were markedly different for distinct aspects of malevolent creativity. Prisoners reported more malevolent creativity *behavior* in daily life (MCBS) compared to police officers and (at a trend), the general population, particularly in terms of lying. By contrast, malevolent creativity *potential* as the number of original ideas generated for revenge (MCT) was significantly lower in prisoners compared to police officers, although no group differences in initial *willingness* to *engage* in malevolent creativity on the MCT were observed. In principle, our diverging pattern of findings is not unusual in creativity research. Multiple studies show that self-perceived creativity (what people believe about

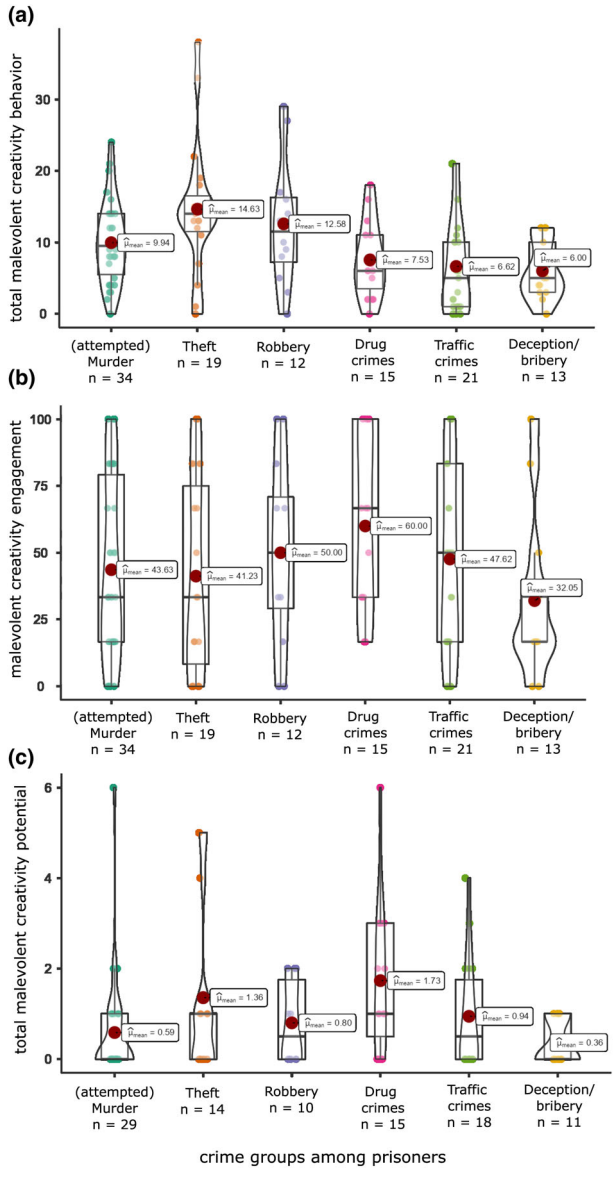

FIGURE 2. Differences for prisoner subgroups for (a) malevolent creativity behavior, (b), malevolent creativity engagement, and (c) malevolent creativity potential. Prisoners incarcerated for theft and robbery show higher malevolent creativity behavior (a). No group differences for willingness to engage in malevolent creativity were observed among the subgroups (b). Prisoners incarcerated for drug-related crimes and theft show higher malevolent creativity potential (c).

themselves), their creative potential on psychometric tests (the cognitive ability to ad hoc generate creative ideas), and their creative achievements (real-life outcomes like publishing a book) are not necessarily highly correlated (Haase, Hoff, Hanel, & Innes-Ker, 2018; Reiter-Palmon, Robinson-Morral, Kaufman, & Santo, 2012; Said-Metwaly, Taylor, Camarda, & Barbot, 2022). Respectively, it is proposed that self-ratings

TABLE 5. Correlational Matrix of All Study Variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	MCBS Total	–													
2	MCBS Hurting	.87**	–												
3	MCBS Lying	.81**	.50**	–											
4	MCT Engagement	.25**	.24**	.19**	–										
5	MCT Total potential	.17**	.17**	.13*	.61**	–									
6	MCT Malevolence	.28**	.27**	.23**	.90**	.71**	–								
7	MCT Originality	.23**	.22**	.18**	.90**	.84**	.91**	–							
8	Machiavellianism	−.18**	−.16**	−.15**	−.07	−.21**	−.23**	−.23**	–						
9	Psychopathy Factor 1	.47**	.44**	.34**	.09	.03	.13*	.05	−.26**	–					
10	Psychopathy Factor 2	.52**	.49**	.45**	.06	.03	.15**	.03	−.22**	.71**	–				
11	Total Psychopathy	.54**	.50**	.45**	.09	.02	.14*	.03	−.26**	.89**	.93**	–			
12	Impulsiveness Total	.51**	.45**	.40**	.08	.05	.15*	.07	−.25**	.46**	.49**	.53**	–		
13	Motor Impulsiveness	.56**	.52**	.45**	.08	.04	.16**	.08	−.30**	.51**	.56**	.58**	.81**	–	
14	Attentional Impulsiveness	.49**	.40**	.40**	.13*	.09	.21**	.14*	−.22**	.39**	.40**	.43**	.81**	.59**	–
15	Nonplanning Impulsiveness	.16**	.14**	.11*	<.01	<.01	.02	−.02	−.07	.18**	.19**	.21**	.73**	.28**	.39**

Note. $n = 368$ for MCBS, MCT engagement, and personality correlations; $n = 285$ for MCT potential, malevolence, and originality correlations. $^{**}p < .01$, $^{*}p < .05$.

of creativity are more strongly based on personality and past creative achievements than performance on creativity tasks, each tapping into different aspects of creativity (see Pretz & McCollum, 2014).

For the MCBS findings, one interpretation is that prisoners, either depending on their dark personality, tendency to violate rules, or the special setting of confinement itself, think more about novel ways to harm others, especially in terms of lying. Given the nature of prison life, it may be that confinement itself fosters certain aspects of malevolent creativity (Cropley et al., 2008; Cropley & Cropley, 2011), as prisoners need to creatively satisfy certain needs, improve their living situations, or find creative ways to obtain weapons, drugs, or phones, likely through deceiving and lying to other inmates, prison guards, and even relatives. It has also been proposed that inmates show higher linguistic creativity than prison guards and people outside of prison, as they constantly need to adapt their language (slang, codewords) to the everchanging circumstances in the facility to not get caught in their schemes (Dziedzic-Rawska, 2016). Matching this interpretation, we observed a positive correlation between malevolent creativity behavior, length of the served prison sentence, and number of previous imprisonments. There is also the idea that pervasive negative emotions (fear, anger) in prison settings may fuel creative thinking (Singer, 2010). Studies show that threat to the self in particular increases creativity in terms of persistence in resolving the threatening situation (Cheng, Baas, & De Dreu, 2018; De Dreu & Nijstad, 2008), which has also been confirmed for malevolent creativity (Baas et al., 2019; Perchtold-Stefan, Fink, et al., 2022). Further, Perchtold-Stefan, Rominger, et al. (2023) found elevated malevolent creativity in participants with depressed moods, arguing that it may lead to increased impulsivity and anger-rumination and thus, harmful creative ideation.

However, the present study was cross-sectional in nature, weakening the temporal trajectories of potential interpretations. Malevolent creativity behavior in prisoners may also be driven by a pre-existing criminal lifestyle and thinking patterns of irresponsibility, low self-control, and chronic rule violation (Walters, 2017; Wright et al., 2017). Research on personality correlates of malevolent creativity finds these traits predictive of malevolent creativity in the general population (e.g., Harris & Reiter-Palmon, 2015; Kapoor & Kaufman, 2022a; Perchtold-Stefan, Rominger, et al., 2022). In our study, prisoners scored significantly higher on psychopathy and impulsiveness than police officers and the general population, which may underline this criminal personality nurturing malevolent creativity. Among the dark triad, psychopathy has been linked to the tendency to generate ideas for damaging others, even when harm is not the explicit goal of the task (Kapoor, 2015; Kapoor & Kaufman, 2022b). Psychopathy is also associated with a higher number of creative achievements, however, only in self-report (Lebuda, Figura, & Karwowski, 2021; Sordia, Jauk, & Martskvishvili, 2022). On the impulsiveness spectrum, Perchtold-Stefan, Rominger, et al. (2022) found impulsive nonconformity positively correlated with both malevolent creativity behavior (MCBS) and malevolent creativity potential (MCT) in a student sample. Interestingly, while a previous prison study by Szabó et al. (2022) reported positive correlations between Machiavellianism and malevolent creativity behavior, we found negative correlations in our sample, which does not match previous findings for the general population (e.g., Kapoor, 2015; Kapoor & Kaufman, 2022b). Additional analyses showed that our result was driven by police officers and may thus occur due to either a self-serving bias (good officer = moral/lawful behavior, see Lebuda et al., 2021) or because officers' working environment strongly restricts their malevolent creative actions by default.

Importantly, prisoners' high malevolent creativity behavior is contradicted by their reduced performance on the MCT, as they were significantly outperformed by police officers. It may appear plausible that prisoners intentionally restricted their malevolent creativity on a task that explicitly asked them to produce ideas for creative revenge with a specific person and situation in mind, due to concerns about negative consequences (behavioral restrictions, tighter evaluations, etc.). By comparison, social desirability may be less relevant for the MCBS, which asks about malevolent creativity behavior in a very general way without requiring prisoners to report specific real-life instances during confinement (e.g., past actions against other prisoners, guards, or visitors). This suggests that group differences on the MCT may simply be due to social desirability effects, which weigh heaviest for prisoners, as police officers may be protected by their respectable reputation. However, we did not observe group differences in the willingness to engage in malevolent creativity on the MCT in the first place, indicating that prisoners were willing to think about malevolent ideas for revenge purposes, but their output was just significantly less creative (and malevolent) than that of police officers. This finding seems to match Eisenman's (1992, 1999, 2008) observations that when it comes to cognitive creativity tasks, prisoners are mostly uncreative due to their rigid mindset and aversion to structure. This hampers the production of creative ideas in psychometric tests with predefined goals and time constraints (i.e., 3 min idea generation in the MCT). However, Eisenman (1999) also concluded that prisoners

may be more creative in antisocial areas that break with established social norms and rules. Despite providing clear antisocial goals of revenge, the MCT situations may not have sufficed to elicit criminals' creativity, as they were based on everyday life (e.g., conflict with a neighbor, unfair work colleague) and did not focus on creative crimes specifically. It is possible that prisoners may outperform non-prisoners in an adapted MCT with prison- or crime-related scenarios, like taking revenge on an inmate for stealing one's belongings or outsmarting rival gangs to procure illegal business (Cropley & Cropley, 2011, 2019; Eisenman, 2008). As the reverse perspective, it has also been suggested that prison environments and the lack of need for intrinsic self-regulation may deplete executive functioning (Meijers, Harte, Jonker, & Meynen, 2015), which is more necessary for successful performance in psychometric creativity tests than everyday creative behavior (Benedek, Jauk, Sommer, Arendasy, & Neubauer, 2014; Jauk, Benedek, Dunst, & Neubauer, 2013). This effect may be reflected in our negative correlation of MCT performance with length of prison sentence.

Notably, sensitivity analyses for prisoners revealed that malevolent creativity potential also differed according to types of crimes committed, which may explain the general lack of difference in prisoners' MCT performance compared to the general population. While there was no significant difference in MCT performance when separating prisoners into conviction for nonviolent crimes and conviction for violent crimes, a significant difference emerged for crime subtypes: Prisoners convicted for drug-related offenses and theft showed higher MCT performance than those convicted for murder or robbery. These results show that while we may generally observe malevolent creativity differences between prisoners and police officers as extreme groups on opposite ends of the social adjustment spectrum (Liebling, Kant, & Arnold, 2018; Příhodová et al., 2023), even maximum-security prisoners are not a homogenous group. Previous research has noted different cognitive and personality profiles for violent and nonviolent offenders (van der Put, Assink, & Gubbels, 2020). By implication, their malevolent creativity potential may be closely linked to the nature and demands of their crimes (calculated drug smuggling and breaking into a house while the occupants are sleeping vs. unregulated physical assault or murder; see Szabó et al., 2022), which requires further investigations with larger samples of crime type subgroups.

STRENGTHS, LIMITATIONS, AND FUTURE DIRECTIONS

Next to examining a large sample of prisoners and two control groups, we consider the plural assessment of malevolent creativity a strength of our study, as this allows for a much-needed differentiation of (a) self-reported behavior (MCBS), willingness to engage in malevolent ideation in a psychometric test (MCT), and (c) the cognitive potential in that test (MCT). However, this approach also comes with its own challenges, especially when findings diverge for different measures. This prompts the question whether prisoners' malevolent creativity is more accurately reflected in their self-reported behavior on the MCBS (Hao et al., 2016, 2020; Zhao et al., 2022) or whether we should put more trust in performance outcomes on the MCT as a validated psychometric test (Perchtold-Stefan et al., 2021a, 2021b, Perchtold-Stefan, Fink, et al., 2022, Perchtold-Stefan, Rominger, et al., 2022, Perchtold-Stefan et al., 2023a, 2023b, Perchtold-Stefan, Rominger, et al., 2023). It also ties into current discussion on how the ability to generate creative ideas relates to the ability to evaluate them for their merit and ultimately, to their implementation in real life (see Rietzschel, Ritter, & Baas, 2024).

In general, prisoners may overestimate their malevolent creativity behavior. This may either be consciously done for self-enhancement in prison (Lebuda et al., 2021), unconsciously due to pervasive negative self-images (Perchtold-Stefan, Rominger, et al., 2023), or it may reflect the "unskilled and unaware effect," that is, low-performing individuals overestimating their abilities, which also points to poor creative metacognition (Beghetto & Karwowski, 2017; Rominger et al., 2022; Urban & Urban, 2021). However, this interpretation implies that the applied creativity measures have high construct validity and are fitting for the population at hand. In this regard, the MCBS has been criticized for measuring malicious behavior but not its uniqueness, as only a few items directly refer to novelty and originality of ideas (Perchtold-Stefan, Rominger, et al., 2022; Reiter-Palmon, 2018). As such, prisoners may certainly be more malevolent than non-prisoners, but not more original. Yet, several studies reported positive correlations of the MCBS with self-reported general creative potential (Hao et al., 2016, 2020) and with originality in both verbal divergent thinking and malevolent creativity tasks (Perchtold-Stefan et al., 2021a; Perchtold-Stefan, Rominger, et al., 2022). With the MCBS as the only self-report measure of malevolent creativity to date, future development of novel self-report scales that tap into dark creativity in daily life is highly encouraged (see Kapoor & Kaufman, 2022b).

As for the MCT, with 77.7%, malevolent creativity engagement was lower compared to previous studies with student populations (Perchtold-Stefan et al., 2021a, 2021b; Perchtold-Stefan, Fink, et al., 2022,

Perchtold-Stefan, Rominger, et al., 2022; Perchtold-Stefan et al., 2023a, 2023b; Perchtold-Stefan, Rominger, et al., 2023), despite explicit instructions to the hypothetical nature of the MCT. This highlights the need to improve MCT instructions for nonacademic samples that may be more reluctant to disclose creative ideas for harmful purposes due to social desirability effects. Further, to increase self-relevance and circumvent criminals' structure aversion, the MCT should be adapted with crime-related items that emphasize illegality, along with less time constraints and less explicit instructions of malevolent creativity to increase natural responding (Dumas & Strickland, 2018). Future replications also need to consider differentiators of malevolent creativity in the general population to compare potential subgroups higher and lower in malevolent creativity (different professions, previous lawbreaking; e.g., Sanz-García, Gesteira, Sanz, & García-Vera, 2021). Additionally, adding education and age to the ANOVA models for MCT potential reduced the group effect to trend level, although the pattern of results remained the same. This suggests that our results for MCT potential may be influenced by group differences in education, intelligence, or cognitive complexity (Karwowski et al., 2016; Plucker, Karwowski, & Kaufman, 2020). For this first comprehensive comparison of malevolent creativity between prisoners and non-prisoners, we opted for a natural sampling approach without extensive matchings for education and intelligence, which may not be representative of actual prison population characteristics (Hetland, Eikeland, Manger, Diseth, & Asbjørnsen, 2007; Schwartz et al., 2015). Yet, future studies will need to be innovative in adjusting malevolent creativity comparisons for intelligence to some degree, without trading in ecological validity for improved study control and comparability.

While we report group differences in some aspects of dark personality (Machiavellianism, psychopathy, and impulsiveness), our study does not provide extensive moderation and covariate analysis to disentangle malevolent creativity from dark personality features and criminal status itself. We believe even larger sample sizes considering a broader variety of dark personality traits (e.g., sadism, spitefulness, general antagonism; see Marcus & Zeigler-Hill, 2015) are needed to see whether antisocial personality is a more robust correlate of malevolent creativity than criminal background. In this respect, including assessments of morality may be warranted, as studies have noted lower moral foundations of criminals (Wikström & Svensson, 2010) and people high in malevolent creativity (Kapoor & Kaufman, 2022a). Dark personality, low morality, but also aspects of the environment like social exclusion (see Perchtold-Stefan et al., 2021a) may denote other crucial factors that explain how necessary but not sufficient malevolent creativity potential translates into real-life malevolent creativity behavior.

As a final note, concerns of anonymity and privacy may have affected malevolent creativity reports in prisoners and police officers more than in other samples. Both may have underreported malevolent creativity behavior and purposefully produced less-incriminating answers on the MCT (prisoners due to fear of restrictions, police officers due to fear of career damage). However, even if both groups tried to conceal their malevolent creativity, their relative differences are still significant. Also, with heavy concealment, malevolent creativity should have been highest in the general population, which it was not. In sum, while we advise against taking the obtained malevolent creativity scores as norm values for either population, they may still reflect principal differences in malevolent creativity in need of further investigation. We also acknowledge valid ethical concerns regarding prisoners as research participants (e.g., dubiousness of informed consent due to vulnerability, concerns of anonymity despite best possible scientific practice). While this study received full ethics approval and neither group received extra incentives for study participation, future research in prison should carefully weigh valuable insights into the phenomenon of malevolent creativity against underlying ethical challenges (Roberts & Indermaur, 2008).

CONCLUSION

In our study, prisoners reported more malevolent creativity behavior than police officers and the general population, yet they were outperformed by police officers in their potential for generating malevolent creative ideas on a psychometric test. These results may prove a crucial first step in understanding how malevolent creativity differs between more normative and more extreme populations. As stated by Cropley and Cropley (2019), moving malevolent creativity studies to criminals as the subjects of interest comes with its own unique challenges, as this population is only available in prison settings and is not reasonably accessible in the real world. This makes it notoriously difficult to determine whether prison itself may increase malevolent creativity in the incarcerated or whether criminals generally possess higher malevolent creativity, which drives their criminal success, at least for a time. In any case, parsing malevolent creativity in the criminals' minds has a major impact on developing defenses against rising incidences of increasingly creative crime. Research will have to show if and what targeted interventions—from cognitive reappraisal trainings

(Perchtold-Stefan et al., 2021b) over morality reasoning (Zhao et al., 2022) to brain stimulations (Gao, Lu, & Hao, 2023)—may be able to curb the devastating potential that lies in malevolent creativity.

AUTHOR CONTRIBUTIONS

Corinna M. Perchtold-Stefan: Conceptualization, methodology, formal analysis, writing—original draft; **Enikő Szabó:** Conceptualization, methodology, investigation, data curation, writing—review and editing; **Christian Rominger:** Validation; writing—review and editing; **Andreas Fink:** Validation, resources, supervision, writing—review and editing, **Laura Opris:** Resources, supervision, writing—review and editing; **Nóra Pataky:** Conceptualization; methodology, resources, supervision, project administration, writing—review and editing.

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CONFLICT OF INTEREST

We have no conflicts of interest to disclose.

ETHICS STATEMENT

The study was approved by the United Ethical Review Committee for Research in Psychology (EPKEB) in Hungary (approval number: 2022-74).

DATA AVAILABILITY STATEMENT

Our data and analyses scripts are available at the Open Science Framework (https://osf.io/cuybr/). This research was not pre-registered.

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Corinna M. Perchtold-Stefan, University of Graz

Enikő Szabó, Oradea Maximum Security Penitentiary, University of Debrecen

Christian Rominger, Andreas Fink, University of Graz

Laura Opris, Oradea Maximum Security Penitentiary, Babe -Bolyai University

Nóra Pataky, University of Debrecen

Correspondence concerning this article should be addressed to Corinna M. Perchtold-Stefan, Universitätsplatz 2, 8010 Graz, Austria. E-mail: corinna.perchtold@uni-graz.at

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