



Those who (enjoy to) hurt: The influence of dark personality traits on animal- and human directed sadistic pleasure

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ARTICLE INFO

Keywords:

Dark triad
Psychopathy
Sadism
Sadistic pleasure
bug grinder
Noise blasting

ABSTRACT

Background and objectives: Sadistic pleasure – gratuitous enjoyment from inflicting pain on others – has devastating interpersonal and societal consequences. The current knowledge on non-sexual, everyday sadism – a trait that resides within the general population – is scarce. The present study therefore focussed on personality correlates of sadistic pleasure. It investigated the relationship between the Dark Triad traits, and both dispositional and state-level sadistic pleasure.

Methods: $N = 120$ participants filled out questionnaires to assess their level of Dark Triad traits, psychopathy subfactors, and dispositional sadism. Then, participants engaged in an animal-directed task in which they were led to believe that they were killing bugs; and in a human-directed task where they could ostensibly noise blasts another participant. The two behavioral tasks were administered within-subjects, in randomized order. Sadistic pleasure was captured by increases in reported pleasure from pre- to post-task.

Results: All Dark Triad traits related to increased dispositional sadism, with psychopathy showing the strongest link. The coldheartedness psychopathy subscale showed a unique combination with both self-reported sadism and increased pleasure following bug grinding.

Limitations: Predominantly female and student sample, limiting generalizability of findings.

Conclusions: Out of all Dark Triad components, psychopathy showed the strongest link with gaining pleasure from hurting others. The results underscore the differential predictive value of psychopathy's subcomponents for sadistic pleasure. Coldheartedness can be considered especially disturbing because of its unique relationship to deriving joy from irreversible harm-infliction (i.e. killing bugs). Our findings further establish psychopathy – and especially its coldheartedness component – as the most adverse Dark Triad trait.

1. Introduction

Sadism refers to deriving enjoyment from others' emotional or physical suffering, and especially by causing that suffering (Davies & O'Meara, 2007; Paulhus & Dutton, 2016). Historically, sadism has been primarily studied in the context of sexual sadism and criminal behavior (Arndt, Foehl, & Doog, 1985; Buckels, 2012; Foulkes, 2019; O'Connell & Marcus, 2019). This has contributed to the common belief that sadism is a rather rare phenomenon. Nonetheless, there are examples that implicate a widespread appetite for (indirect/vicarious) cruelty in the general population, as reflected by the popularity of violent movies, video games and brutal sports (Baumeister & Campbell, 1999; Buckels, Jones, &

Paulhus, 2013). These have been labelled “everyday sadism”, referring to “largely acceptable forms of subclinical sadism that are prevalent in modern culture” (Paulhus & Dutton, 2016). Sadism spans from enjoying seeing others in pain not inflicted by oneself (i.e., indirect/vicarious sadism, captured by the German term “Schadenfreude”) to engaging in active sadism, where one is directly responsible for others' pain (Porter, Bhanwer, Woodworth, & Black, 2014).

The current study aims to contribute toward unravelling the personality constellation of sadism. Strong candidate traits can be found in the Dark Triad, which is composed of three socially malevolent personality traits: narcissism, Machiavellianism, and psychopathy (Paulhus & Williams, 2002). All three concepts are underpinned by a shared

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<https://doi.org/10.1016/j.jbtep.2024.101963>

Received 17 April 2023; Received in revised form 26 April 2024; Accepted 29 April 2024

Available online 5 May 2024

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callousness, self-promotion, and social deviance (Paulhus, 2014; Paulhus & Williams, 2002). Machiavellianism and psychopathy further share self-control deficits (Jonason & Tost, 2010). Aside from this, narcissism implies a pattern of attention-seeking and fantasizing about unlimited success or power and possessing a grandiose sense of importance and entitlement (Emmons, 1987). Machiavellianism refers to deception, manipulation, and a common use of deceit, flattery or cynicism to promote one's own interests (Jakobwitz & Egan, 2006). Finally, psychopathy is characterized by antisocial behavior including animal cruelty (Kavanagh, Signal, & Taylor, 2013), and deficits in emotional functioning and empathy (Kirsch & Becker, 2007; Paulhus & Jones, 2015).

All Dark Triad traits have been linked to increased levels of sadism. This has led researchers to add the trait of subclinical sadism to the existing constellation, forming a *Dark Tetrad* (Chabrol, Van Leeuwen, Rodgers, & Séjourné, 2009; Johnson, Plouffe, & Saklofske, 2019; Paulhus, 2014). Two recent meta-analyses concluded that of all Dark Triad traits, psychopathy had the strongest link with self-reported sadism (r 's = 0.58; whereas r 's = 0.26 - 0.27 for narcissism; and r 's = 0.43 - 0.46 for Machiavellianism, Bonfá-Araujo, Lima-Costa, Hauck-Filho, & Jonason, 2022; Kowalski, Di Pierro, Plouffe, Rogoza, & Saklofske, 2020). Psychopathy is generally assumed to consist of a triarchic structure (Patrick, Fowles, & Krueger, 2009). This model identifies boldness (including dominance, emotional stability and venturesomeness), disinhibition (deficient inhibitory control), and meanness (callousness and aggressive resource seeking) as core psychopathic features. The triarchic model has also been supported in psychopathy research using non-clinical samples, typically relying on assessment instruments that do not specifically ask about criminal and antisocial behavior (Drislane, Patrick, & Aarsal, 2014). The factors have also been labelled fearless dominance, self-centered impulsivity, and coldheartedness, respectively (Lilienfeld & Widows, 2005).

One issue with many of these studies on sadism is that they rely almost exclusively on self-report measures, which, in turn, rest on the assumption that participants are (a) able to and (b) willing to report sadistic behaviors. Yet, items measuring sadistic behavior, sadistic pleasure, or sadism-related personality dispositions are all prone to socially desirable responding, which may explain their statistical association with each other (Vigil-Colet, Ruiz-Pamies, Anguiano-Carrasco, & Lorenzo-Seva, 2012; Riggs, Murphy, & O'Leary, 1989). Notable exceptions are studies in which sadism was measured more objectively, by observing behaviors such as online trolling, noise-blasting, voodoo doll pinning, animal-grinding or killing video game characters (Buckels, Trapnell & Paulhus, 2014; Buckels et al., 2013; Buckels, Trapnell, Andjelovic, & Paulhus, 2019; Chester and Lasko, 2019; Greitemeyer, Weiß, & Heuberger, 2019). So far however, only two studies addressed the link between Dark Triad traits and behavior-based measures of sadistic pleasure. One study showed that psychopathy predicted increased pleasure ratings while watching scenes of others' emotional and physical suffering (Buckels, 2018). A recent study (Lobbestael, van Toffelen, & Baumeister, 2020) specifically investigated the three subfactors of psychopathy. To this end, a bug grinding paradigm was used in which state sadistic pleasure was measured after participants were led to believe they killed bugs by putting them into an adapted coffee-bean grinder (see Martens, Kosloff, Greenberg, Landau, & Schmader, 2007; Martens, Kosloff, & Jackson, 2010). It was the coldheartedness subscale that showed the strongest relationship to sadistic pleasure. Specifically, coldheartedness was uniquely related to increased enjoyment of (allegedly) grinding bugs.

The current study will further contribute to determining the personality constituents of individuals who engage in sadistic behavior by comparing the relative impact of the three Dark Triad components (i.e. narcissism, Machiavellianism, and psychopathy). As especially the latter Dark Triad component is expected to drive sadism, we will compare the differential impact of the three psychopathy subfactors (fearless dominance, self-centered impulsivity, and coldheartedness). Sadistic pleasure was assessed both as a trait as well as a state. Our study adds to the

limited body of research on the link between Dark Triad traits and behaviorally operationalized sadistic pleasure; and is the first to assess state sadism directed at both humans and animals, as increased positive affect following noise-blasting and bug killing.

First, we expected positive correlations between trait and state sadism and all Dark Triad traits. Second, we hypothesized trait and state sadism to relate most strongly to psychopathy (Johnson et al., 2019), which was labelled the most adverse Dark Triad component (cf. Bonfá et al., 2022). Third, following Lobbestael et al. (2020), we hypothesized that particularly the coldheartedness factor of psychopathy would be related to increased sadistic pleasure, given that this factor is characterized by a lack of empathic concern (Berg, Hecht, Litzman, & Lilienfeld, 2015). The study was pre-registered on the Open Science Framework (OSF) via https://osf.io/n5hs8/?view_only=22b9ea77745b417f8a7fd2acb7aaeb6b.

2. Method

2.1. Sample

One-hundred and twenty participants between the ages of 18 and 55 were recruited from the local student and general population in Maastricht, The Netherlands, by advertising flyers in the city center and on campus, and through an online research portal.

A priori power analyses based on linear regression analyses (Fixed model: R^2 increase, 3 predictors and 6 total number of predictors) revealed that a sample size of $N = 119$ is needed to detect a medium-size effect (i.e., $R^2 = 0.13$) on a significance level of $\alpha = 5\%$ with a probability (power) of 95%. The assumption of a medium-size population effect is based on the results from previous studies which suggest that such an assumption is plausible (Buckels, 2018; Lobbestael et al., 2020; Plouffe, Saklofske, & Smith, 2017).

Five participants (4.2%) expressed suspicion about the cover story for the bug grinding task, and ten (8.3%) about the cover story for the noise blasting task. These participants were excluded in their respective task analyses. Importantly, including them in the analyses did not change the pattern of results. The study was approved by the Ethics Review Committee Psychology and Neuropsychology (Maastricht University, Reference code 186_04_12_2017_A1).

Table 1 displays the distribution of demographic variables in our sample. The majority were female students. About half of the students were studying psychology. About half of the sample completed high school education, while the rest obtained either bachelor or master degrees. About half of all participants were of either Dutch or German nationality. The two order groups (i.e. either bug grinding or noise blasting first) did not differ significantly in any of the demographic variables (Table 1).

2.2. Procedure

Informed consent was obtained in writing after participants were verbally informed about the study. All participants performed both the bug grinding and the noise blasting task in a gender-stratified randomized order. This counterbalancing resulted in $n = 59$ participants assigned to the blasting/grinding order condition, and $n = 61$ assigned to the grinding/blasting condition. After filling out the demographic questionnaire, baseline affect was assessed. Next, the first behavioral sadism task (grinding or blasting) was administered, followed by the first post-affect measure, the second behavioral sadism task (grinding or blasting), and the second post-affect measure.

Animal-directed sadism was assessed with a bug-grinding paradigm. Pill bugs were collected in a park and kept in a terrarium with soil, twigs and leaves. The terrarium was regularly sprayed with water to keep a moist environment, and the bugs were fed with vegetable peels. Eight pill bugs of similar size were presented on a tray placed next to the bug grinder, each in a small clear plastic cup. The following rationale and

Table 1
Sample characteristics' frequencies with group difference tests.

Characteristic	Conditions			Chi Square tests for group comparisons	
	Overall sample N = 120	Blasting-grinding n = 59	Grinding-blasting n = 61	X ²	p
Age (SD)	23.69 (6.74)	23.71 (5.93)	23.67 (7.48)	0.03	0.97
Gender n (%)				0.09	0.76
male	32 (36.70)	15 (24.40)	17 (27.90)		
female	88 (73.30)	44 (74.60)	44 (72.10)		
Nationality n (%)				38.18	0.29
Dutch	38 (31.67)	20 (33.90)	18 (29.50)		
German	29 (24.17)	13 (22.03)	16 (26.20)		
other/dual	53 (44.17)	26 (44.07)	27 (44.26)		
Marital status n (%)				1.79	0.62
single	65 (54.20)	35 (59.30)	30 (49.20)		
relationship	53 (44.17)	23 (38.98)	30 (49.20)		
divorced/ widowed	2 (1.70)	1 (1.70)	1 (1.16)		
Occupational status n (%)				7.27	0.12
student	88 (73.33)	43 (72.88)	45 (73.77)		
employed (full/ part-time)	23 (19.17)	9 (15.25)	14 (22.95)		
unemployed	9 (7.50)	7 (11.90)	2 (3.30)		
Education level n (%)				1.56	0.46
high school	67 (55.80)	31 (52.50)	36 (59.00)		
bachelor	30 (25.0)	14 (23.70)	16 (26.20)		
master	23 (19.20)	14 (23.70)	9 (14.80)		
Education type students n (%)				3.31	0.07
psychology	57 (64.77)	33 (76.74)	24 (53.33)		
other/unspecified	31 (35.23)	10 (23.26)	21 (46.67)		

instructions were given: “We will look at the role of pest controllers who specialize in the extermination of insects, such as pill bugs. This apparatus is a bug grinder, which is used for the extermination of bugs. As the use of toxic sprays and chemicals is not allowed inside the university building, there are blades on the inside of this grinder. If you press the activation button, the blades will start to rotate. Now, in order to give you a brief extermination experience we would like to ask you to place a number of pill bugs into the grinder’s funnel. In order to do this, you pick up the cup and dump the pill bug into the funnel. Please do not touch the pill bugs. After you’ve placed the bugs into the grinder, press the activation button once.”

Human-directed sadism was assessed with a modified noise-blasting task. Just before the start of the noise blasting task, the experimenter left the room under the guise of checking in with the other experimenter and participant to see what point they were at. When the experimenter entered the participant room after allegedly checking in on the other session, they said: “We are lucky! The other participant was already waiting for us.” In the noise blasting task, participants were shown “live” camera footage of a 30-year-old male with a neutral facial expression with a headphone on. Participants were told this was a fellow participant sitting in an adjunct lab, but in reality, it was a pre-recorded movie fragment of our research confederate. The following rationale and instructions were given:

“As we are also conducting research regarding the impact of sound on performance, you are assigned to a condition where we would like to ask you to administer sounds to another participant. We connected a camera in that room to your computer so you can see him. You are sitting in separate rooms so that you can work at your own pace on the other tasks – the current task is the only one you will do with him. This participant has been asked to play Tetris and is currently waiting for a signal through his headphones to start doing so. He has been told that he needs to gain as many points as possible, because the more points he earns, the greater his monetary reward will be afterwards. Whenever he is inactive he loses points, so he needs to play as much as possible to avoid this. Administering sounds will interrupt the Tetris game, which leads to a loss in points. The person knows that he can be

distracted by a sound at random moments. You are assigned to the condition where you can administer this sound. In order to allow him to re-focus after each noise-blast, there is a 10 s buffer in which the space bar will not activate another blast of noise. Also, due to ethical guidelines, there is a maximum number of noise blasts to administer – after this, the space bar won’t work anymore. This task is set up to study how random distraction influences the performance of the other participant gaming under pressure.”

Next, the participant was told that (s)he would be left alone in the lab and could administer noise blasts to the other participant. Upon a space-bar press by the participant that initiated the noise blast, a black screen appeared reading: “Sound being administered”, after which the actor showed one of a number of pre-recorded startle responses consisting of a physical startle reaction, low-level displays of pain and increasing irritation with increased number of noise blasts being administered. The video footage was programmed in Inquisit, version 3, and allocation of the actors’ responses was random. Once the experimenter left the room, they started a 3-min timer, and noted the number of bugs ground, as well as any behavior observed through the camera that stood out. The experimenters returned once the time was up, or once the participant knocked on the door to indicate they had finished.

After a 10-min break following the behavioral sadism tasks, participants completed a battery of self-report measures, starting with self-reported sadistic pleasure and their feelings about the bugs they killed (“bug ratings”), followed by the trait questionnaires of the Dark Triad traits, psychopathy and dispositional (trait) sadism, the experimental demand check and an exit interview. Finally, participants were carefully debriefed, and shown that the bugs they had inserted into the grinder were all still alive. Participants were also informed that the other “participant” in the noise blasting task was in fact a research confederate, who did not receive the noise blasts, and that the footage of this confederate ‘reacting’ to the noise blasts was recorded beforehand. We also normalized any number of bugs ground or noises administered, by explaining that everyone reacts differently to these instructions and that their behavior does not imply they had a deviant personality. Participants were invited to contact the responsible researchers in case of further questions or worries. The study took about 2 h, and participants were compensated with either study credits or a voucher of 15€.

2.3. Measures

2.3.1. Sadistic pleasure

2.3.1.1. Dispositional sadism. The Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels & Paulhus, 2013) is a 29-item self-report inventory, measuring a dispositional tendency to enjoy hurting others. Sample items are “I enjoy making jokes at the expense of others” and “I enjoy physically hurting people”. The CAST consists of three subscales: direct verbal sadism, direct physical sadism, and vicarious sadism; complemented with 11 filler items. Items have to be rated on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Following Buckels and Paulhus (2013), we computed a composite score for direct sadism as the mean of the 11 physical and verbal items ($\alpha = 0.86$). Because the focus of the current study is on directly inflicted sadism, the analyses in our paper include only this composite direct sadism score.

2.3.1.2. State-level sadism. To give participants an opportunity to inflict harm on innocent others and then measure the amount of sadistic pleasure resulting from this, two behavioral tasks were included. Both tasks were made procedurally comparable to each other. In order to avoid demand characteristics and to increase ecological validity, participants were not given any suggestions as to how many bugs should be ground (cf. Buckels et al., 2013; Martens & Kosloff, 2012), or how much aversive noise should be administered.

Animal-directed sadism. Based on the faux bug-killing paradigm of

Martens et al. (2007), we developed a modified plastic coffee grinder with a metal tube and plastic funnel attached to its top (see Appendix A). This ensured that the pill bugs (Armadillidiidae, about 1 cm length) could be dropped into the grinder easily and without necessitating touching them. Within the grinder, the mechanism that activated the cutting blades was removed and replaced with a sound electrode that simulated the sound of bugs being ground up. The original electromotor was retained to further simulate a grinding experience by producing a small vibration. Thus, even when the bugs landed in the grinding chamber via the funnel, they remained unharmed. On the side of the grinder, a red activation button was attached, simulating the grinding when pressed. Participants believed they could grind up to eight pill bugs in the grinding machine. In reality, no bugs were killed.

Human-directed sadism. We developed a task based on the Competitive Reaction Time Task (CRTT, a variant of the Taylor Aggression Paradigm, see Bushman & Baumeister, 1998; Warburton & Bushman, 2019). In contrast to the original Taylor Aggression Paradigm (Taylor, 1967) and the variations of white noise aggression tasks (e.g. Buckels, 2012; Paulhus & Dutton, 2016), our variant did not inspire motives to compete or retaliate which may interfere with validity in capturing sadistic pleasure. The CRTT is considered the gold standard in measuring aggression at a behavioral level. Its validity is well supported (Bushman, 1995; Chester & Lasko, 2019; Giancola & Parrott, 2008), and empirically derived scoring algorithms for standardizing its outcomes have been proposed (Lobbestael et al., 2021). In order to procedurally parallel the bug grinding task and remove the incentive to compete, retaliate or win, we simplified the CRTT while retaining its crucial component of hurting someone who does not want to be hurt. Specifically, in contrast to the standard CRTT, the current CRTT was unilateral (i.e., participants could not be blasted themselves); did not require the participant to compete against the opponent; and the outcome was simply quantified as the number of blasts (0–8).

Self-reported pleasure. Participants' level of experienced pleasure was assessed with the 5-item joviality subscale of the Extended Positive and Negative Affect Scale (PANAS-X, Watson & Clark, 1994), consisting of *delighted*, *joyful*, *excited*, *happy* and *enthusiastic*. Other affect items were not analyzed here because they had nothing to do with sadistic pleasure. Internal consistency of the PANAS-X joviality subscale in previous studies was $\alpha = 0.93$ (Watson & Clark, 1994). The scale was measured three times: (1) at the beginning of the experiment; (2) after the bug-killing task, and (3) after the noise-blast task.

2.3.2. Bug ratings

To assess how the participants felt about the pill bugs and to test whether this differed between the conditions, we asked two additional questions (based on Buckels et al., 2013) about how negative and disgusting participants found the pill bugs. Both items had to be rated on 100 mm VAS scales, ranging from *extremely positive* to *extremely negative* (valence), and from *not disgusting at all* to *extremely disgusting*.

2.3.3. Experimental demand

Two items for each behavioral task were presented to assess the level of experimental demand: "To what extent did you feel free to refrain from [terminating any bugs/administering any blasts to the other participant]?", and "How uncomfortable would you have found it not to comply with the task?", scored on a 100 mm VAS scale ranging from *not at all/extremely uncomfortable* to *completely/not uncomfortable at all*.

2.3.4. Psychopathy

Psychopathy traits were assessed with the Psychopathic Personality Inventory-Revised (PPI-R, Lilienfeld & Widows, 2005), consisting of 154 items that have to be scored using a 4-point Likert scale (1 = *false*, 2 = *mostly false*, 3 = *mostly true*, 4 = *true*). Factor analysis suggested that seven out of eight PPI-R subscales loaded on two main factors: fearless dominance (FD) and self-centered impulsivity (SCI, Benning, Patrick, Hicks, Blonigen, & Krueger, 2003). The eighth factor, coldheartedness,

did not load on any of these two factors (Benning et al., 2003). Satisfactory internal validity (PPI-R Total, $\alpha = 0.91$; PPI-FD, $\alpha = 0.91$; PPI-SCI, $\alpha = 0.89$, PPI-coldheartedness, $\alpha = 0.79$), construct validity (correlates ranging from $r = 0.18$ – 0.68 with other psychopathy measures), and external validity has been established for PPI-R factors (Uzieblo, Verschuere, Van den Bussche, & Crombez, 2010). Additionally, test-retest reliability proved to be high (between $r = 0.90$ and $r = 0.93$, Sandler, 2007).

2.3.5. Dark Triad

Subclinical Dark Triad traits were measured with the Short Dark Triad (SD3; Jones & Paulhus, 2014), an improved version of the Dark Triad Dirty Dozen measure, composed of 27 items that have to be rated on a 5-point Likert scale from 1 (*disagree strongly*) to 5 (*agree strongly*). Factor analytic evidence (Jones & Paulhus, 2014) supports its three-factor structure of Machiavellianism, narcissism, and psychopathy; as well as acceptable internal subscale reliability (Machiavellianism $\alpha = 0.71$ – 0.76 , psychopathy $\alpha = 0.72$ – 0.77 , narcissism $\alpha = 0.68$ – 0.78); and convergent validity with other Dark Triad measures (Jones & Paulhus, 2014).

2.3.6. Exit interview

An exit interview was conducted in order to probe participants for suspicion. Participants were asked: 1) "What do you think this study was about?"; 2) "What are your thoughts on the bug grinder?"; 3) "What are your thoughts on the computer program with which you could administer tones to the other participant?"; 4) "What is your impression of the other person playing Tetris?"; 5) "What do you think about the other person's reaction to the tones he received?"; and 6) "Did you notice anything else?". The interviews were audio-recorded and transcribed for coding with regard to three levels of suspiciousness (1 = *no*, 2 = *maybe*, 3 = *yes*). Two trained coders rated the level of suspiciousness about the cover story of the bug grinder and the cover story of the noise blasting task. Discrepancies in ratings were discussed and resolved.

2.4. Statistical analyses

Variables violating the normality assumption were examined using non-parametric tests. Intercorrelations between all study variables were assessed using Pearson's or Spearman's correlations. To reduce the probability of false positives, we adjusted the critical p -value using Benjamini and Yekutieli's correction for false discoveries (B–Y method, Narum, 2006). For 56 intercorrelations, this adjusted alpha level was $\alpha = 0.01$.

Analyses were conducted for the following five dependent variables, respectively: (1) Trait direct sadism, (2) no. of bugs killed, (3) no. of noise blasts, (4) intraindividual increase in sadistic pleasure after bug killing (relative to baseline), and (5) intraindividual increase in sadistic pleasure after noise blasts (relative to baseline). For each DV, a first multiple regression model was specified with the three Dark Triad subscales as predictors (i.e., narcissism, Machiavellianism, psychopathy); followed by a second multiple regression model with the three psychopathy subscales (i.e., fearless dominance (FD), self-centered impulsivity (SCI), and coldheartedness) as predictors. The no. of bugs killed was analyzed with ordinal regression analyses because of its ordinal transformation into three clusters. To correct for multiple testing, the alpha level in the regression analyses was lowered to $\alpha = 0.02$ (ten tests; B–Y method, Narum, 2006).

3. Results

3.1. Descriptives, order effects and group comparability

Table 2 shows the mean scores of the study measures. The impact of order effects of the two conditions was tested on the main outcome variables, but did not reveal any order conditions (number of bug kills, t

Table 2
Descriptive values of all study variables (*N* = 120).

Study variable	Mean	SD or %
Psychopathy (SD)		
Fearless dominance	110.51	16.24
Self-centered impulsivity	133.87	20.63
Coldheartedness	32.84	7.38
Dark Triad (SD)		
Machiavellism	2.53	0.70
Narcissism	2.57	0.59
Psychopathy	2.05	0.51
Dispositional sadism (SD)		
Direct verbal	16.51	6.63
Direct physical	7.56	3.10
Total direct	24.08	8.36
# Bugs ground ^a (%)		
0	69	60.00
1	19	16.50
2	5	4.30
3	2	1.70
4	6	5.20
5	2	1.70
6	0	0
7	0	0
8	12	10.40
# Noise blasts ^b (%)		
0	14	12.70
1	15	13.60
2	14	12.70
3	9	8.20
4	12	10.90
5	10	9.10
6	10	9.10
7	7	6.40
8	19	17.30
Self-reported pleasure (SD)		
Baseline	8.37	4.04
After grinding ^c	4.26	4.19
After blasting ^d	5.65	4.72
Bug ratings (SD)		
Disgust	44.83	33.60
Negative	51.75	23.29
Experimental demand (SD)		
Freedom refrain grinding	66.05	35.68
Comfort non-compliance grinding	64.12	32.01
Freedom refrain blasting	60.92	32.05
Comfort non-compliance blasting	60.84	30.49

Note. ^a*n* = 115, suspicious participants excluded; ^b*n* = 110, suspicious participants excluded; ^c*n* = 46, suspicious participants excluded as well as those who refrained from grinding; ^d*n* = 96, suspicious participants excluded as well as those who refrained from blasting.

(113) = 00.19, *p* = 0.85, administered noise blasts, *t*(108) = 1.75, *p* = 0.08; bug valence/disgust and freedom to refrain from bug killing and comfort with task noncompliance, *U*'s = 1494.00–1564.50, *Z*'s = –0.13 to –0.42, *p*'s > 0.67; opinion ratings noise blasting task, *U*'s = 1212.50–1402.50, *Z*'s = –0.01 to –1.40, *p*'s > 0.16).

3.2. Trait sadism

Correlational analyses showed that dispositional direct sadism was significantly positively related to all Dark Triad traits and to all psychopathy subfactors (Table 3). After controlling for the presence of the other subscales, psychopathy remained the only significant positive predictor within the Dark Triad; while both the self-centered impulsivity and coldheartedness psychopathy subfactors remained significant positive predictors of trait direct sadism (Table 4). Trait direct sadism was positively related to the number of bugs ground, and the number of noise blasts (Table 3).

3.3. Bug grinding

The mean number of bugs killed was 1.43 (*SD* = 2.54).¹ Inspection of the bug grinding variable revealed that the data was not equally distributed, i.e. it partly clustered around zero; none of the participants ground either six or seven bugs; and a larger percentage ground eight bugs. Therefore, the bug-grinding variable was transformed to ordinal variables with three levels, i.e. 0 kills (*n* = 69, 60.00%), 1–4 kills (*n* = 32, 27.80%) and 5–8 kills (*n* = 14, 12.20%). The number of bugs ground showed to be significantly positively related to the number of blasts administered (Table 3). Both the correlational analyses (Table 3) and the regression analyses (Table 4) showed that none of the Dark Triad or psychopathy subfactors related to the number of bugs ground. Enjoyment of the bug grinding was positively related to the coldheartedness subfactor of psychopathy (Table 3), which remained significant after controlling for the other psychopathy subfactors (Table 4).

3.4. Noise blasting

The mean number of noise blasts was 3.90 (*SD* = 2.78).² Both the correlational analyses (Table 3) and the regression analyses (Table 4) showed that none of the Dark Triad or psychopathy subfactors related positively to the number of noise blasts. The regression analyses did show that, after controlling for the other Dark Triad components, the narcissism subscale was negatively related to the number of noise blasts (Table 4). Both the correlational analyses (Table 3) and the regression analyses (Table 4) showed that none of the Dark Triad or psychopathy subfactors related to enjoyment of noise blasting.

4. Discussion

Sadistic cruelty can be so destructive to victims that it is important to understand interpersonal and context variables that heighten its risk. However, ethical and practical constraints make it difficult to study genuine interpersonal cruelty in the laboratory. The present investigation adapted a simulated animal-directed bug-killing procedure developed by Martens et al. (2007) as well as a human-directed noise-blasting paradigm to test hypotheses about the personality constituents of those with an appetite for cruelty. Next to the Dark Triad components of psychopathy offered multiple subfactors. This way, we were able to investigate which of them accounted for substantial variance in (enjoying) hurting others — thereby illuminating which aspects of Dark Triad and psychopathy contribute to sadism.

Our results suggest some relevance of sadism to all Dark Triad and psychopathy (sub)factors, as reflected in basic positive correlations with dispositional sadism. These findings coincide with recent primarily questionnaire-based meta-analyses showing that all Dark Triad components predispose to experiencing a hedonic value to cruel behavior (Bonfá et al., 2022; Kowalski et al., 2020), and support the inclusion of subclinical sadism into a Dark Tetrad (Johnson et al., 2019).

When comparing the relative impact of the Dark Triad traits, it was psychopathy that stood out as the strongest predictor of self-reported sadism. This confirmed our hypothesis of subclinical psychopathy being the most adverse Dark Triad component (Buckels, 2018; Bonfá et al., 2022). Subscale analyses of psychopathy showed that Self-centered Impulsivity – an impulsive action style that disregards conventional norms and expectations - correlated with self-reported sadism. Nevertheless, the strongest link to sadism was coldheartedness, consistent with previous findings (Lobbestael et al., 2020). Coldheartedness captures a core aspect of psychopathy, namely the lack of sympathy for victims and an indifference to their suffering.

¹ *n* = 115, suspicious participants excluded.

² *n* = 110, suspicious participants excluded.

Table 3
Intercorrelations between study variables (N = 120).

	1	2	3	4	5	6	7	8	9	10	11
1: Dark Triad: Machiavellianism	1										
2: Dark Triad: Narcissism	0.56 (<0.001)*	1									
3: Dark Triad: Psychopathy	0.60 (<0.001)*	0.47 (<0.001)*	1								
4: Psychopathy: FD	0.36 (<0.001)*	0.43 (<0.001)*	0.40 (<0.001)*	1							
5: Psychopathy: SCI	0.57 (<0.001)*	0.44 (<0.001)*	0.63 (<0.001)*	0.40 (<0.001)*	1						
6: Psychopathy: Cold	0.35 (<0.001)*	0.23 (<0.001)*	0.40 (<0.001)*	0.27 (0.003)*	0.27 (0.003)*	1					
7: Dispositional sadism	0.46 (<0.001)*	0.45 (<0.001)*	0.66 (<0.001)*	0.38 (<0.001)*	0.60 (<0.001)*	0.35 (<0.001)*	1				
8: # bugs grounded ^{a,b}	0.17 (0.07)	0.08 (0.37)	0.16 (0.09)	0.03 (0.74)	0.18 (0.05)	0.18 (0.05)	0.26 (0.005)*	1			
9: Pleasure increase following grinding ^b	-0.06 (0.52)	-0.002 (0.98)	0.04 (0.69)	-0.06 (0.54)	-0.003 (0.98)	0.37 (<0.001)*	0.03 (0.79)	-0.08 (0.38) ^{a,b}	1		
10: # blasts ^c	0.15 (0.12)	-0.12 (0.23)	0.18 (0.06)	0.08 (0.39)	0.19 (0.05)	0.16 (0.10)	0.26 (0.007)*	0.46 (0.001) ^{d,e}	0.35 (0.02) ^d	1	
11: Pleasure increase following blasts ^c	-0.08 (0.38)	-0.14 (0.16)	-0.08 (0.44)	-0.07 (0.44)	-0.07 (0.46)	0.14 (0.14)	-0.07 (0.45)	-0.02 (0.83) ^{a,d}	0.62 (<0.001) ^{d,e}	0.10 (0.29)	1

Note. *Correlations significant at FDR: $p = 0.01$. ^aSpearman Rank order; ^b $n = 115$, suspicious participants excluded; ^c $n = 110$, suspicious participants excluded; ^d $n = 107$, suspicious participants excluded; FD = fearless dominance; SCI = self-centered impulsivity; Cold = coldheartedness.

Table 4
Regression analyses with personality traits as predictors and sadism as dependent variables (N = 120).

	Dispositional sadism		# bugs ground ^a		Pleasure increase grinding ^a		# blasts administered ^b		Pleasure increase blasting ^b	
	β	t (p)	OR	Wald χ^2 (p)	β	t (p)	β	t (p)	β	t (p)
Dark Triad										
Machiavellianism	0.02	0.20 (0.85)	0.54	2.04 (0.15)	-0.14	-1.07 (0.29)	0.20	1.56 (0.12)	-0.007	-0.05 (0.96)
Narcissism	0.17	2.01 (0.046)	-0.39	0.89 (0.35)	0.03	0.24 (0.81)	-0.32*	-2.87 (0.005)	-0.13	-1.07 (0.29)
Psychopathy	0.57*	6.62 (<0.001)	0.44	0.92 (0.34)	0.10	0.86 (0.39)	0.21	1.73 (0.09)	-0.01	-0.10 (0.92)
Psychopathy										
FD	0.13	1.62 (0.11)	-0.009	0.50 (0.48)	-0.15	-1.55 (0.13)	-0.003	-0.03 (0.97)	-0.09	-0.88 (0.38)
SCI	0.50*	6.30 (<0.001)	0.02	2.36 (0.13)	-0.06	-0.58 (0.56)	0.16	1.51 (0.14)	-0.09	-0.84 (0.40)
Cold	0.19*	2.49 (0.01)	0.05	2.95 (0.09)	0.42*	4.62 (<0.001)	0.12	1.19 (0.24)	0.19	1.89 (0.06)

Note. *Correlations significant at FDR: $p = 0.02$; ^a $n = 115$, suspicious participants excluded; ^b $n = 110$, suspicious participants excluded; FD = fearless dominance; SCI = self-centered impulsivity; Cold = coldheartedness.

Coldheartedness correlated with both the self-report measure of dispositional sadism and with reporting pleasure and enjoyment obtained from grinding bugs to death.

Contrary to our hypothesis, psychopathy was unrelated to harmful behavior itself (i.e., grinding bugs and noise blasting). This contrasts with some previous findings (Buckels et al., 2013; Kavanagh et al., 2013), but likely can be related to our conservative testing approach, as the raw correlations with both Self-centered Impulsivity and coldheartedness were of comparable size with these previous studies. The link we found between psychopathy’s coldheartedness factor and pleasure after bug grinding aligns with previous Dark Triad research pinpointing psychopathy as the only correlate of animal abuse, and having intentionally killed an animal for no good reason, including ‘just for fun’ (Kavanagh et al., 2013).

The lack of a significant correlation between psychopathy and reporting pleasure after hurting others with noise blasts was unexpected and requires further exploration. The recorded video to simulate the ostensible other participant’s painful responses we used may have been ineffective, as suggested by some participants reporting that it looked “mechanical,” which may be unsatisfying to sadists or just generally unconvincing.

Our findings support the notion that the expression of Dark Triad traits is context dependent (Jones & Paulhus, 2010). Psychopathic behavioural traits largely relate to instrumental goals (Porter, Woodworth, & Black, 2018). Our data show that this goal can be hedonic and

that cruelty is an appetitive motive for individuals with elevated psychopathy. Moreover, psychopathy’s impulsive orientation might limit aggression to low-investment, short-term responses (Jones & Paulhus, 2011) – aligning with our bug-grinding design. The results show that for those with increased Machiavellian traits only, mere hedonic advantage might not be appealing enough. This aligns with the notion that Machiavellians are too calculated to risk retaliation or punishment without sufficient benefits (Jones & Paulhus, 2010). Likewise, narcissism also did not correlate with sadistic behavior or pleasure after controlling for the other Dark Triad traits, and indeed high narcissism predicted administering a lower number of administered blasts. One likely explanation for this is that we assessed unprovoked harmful behavior, whereas narcissists are unlikely to aggress unless their ego is threatened (Bushman & Baumeister, 1998; Campbell, Bonacci, Shelton, Exline, & Bushman, 2004).

Most of our sample (87%) chose to administer some noise blasts, and 20% reported increased positive affect for doing so. For grinding bugs, 40% chose to do it and only 11% reported higher positive affect. These numbers do indicate that sadistic behavior and sadistic pleasure are not limited to a small, criminal (or sexually deviant) proportion of the population, but instead provide further evidence for the existing of “everyday sadism” on a continuum in the general population (Buckels et al., 2013; Paulhus, 2014). Readers may wonder why our participants were more willing to blast other people with aversive noise than to grind bugs to death. We speculate that the act of killing has a more negative,

and permanent, impact than administering noise stress (Martens et al., 2007). Furthermore, the fact that our participants were administered one noise blast themselves in the instruction phase, might have increased curiosity as to how another participant would respond to it, or it could have justified administering at least one noise blast themselves.

The current study contributes to a rather new field of study, that is, everyday, non-sexual sadism and sadistic pleasure, and its relationship with Dark Triad and psychopathy traits – looking at both animal- and human-directed sadistic pleasure. The positive correlations between dispositional sadism and the number of bugs ground and noise administered, aligns with previously established correspondence between self-reported and behavioral sadism (Buckels, 2018; Mededović & Knežević, 2019; Schumpe & Lafrenière, 2016) and supports the validity of both our measures as sadism indices. Although the ecological validity of noise blasts and bug grinding has been criticized (e.g. Ritter & Eslea, 2005) as e.g. noise blasting might not be the most obvious way of hurting others in the real world, these behaviors do align with the standard aggression definition of ‘hurting others who don’t want to be hurt with the intent to cause harm’ (Bushman & Anderson, 2001) and outperform self-report in several ways (see Lobbestael et al., 2021 for an overview).

Drawbacks of the study include the reliance on a predominantly female and student sample. Prior research suggests that females tend to be less sadistic (Buckels et al., 2013; Fiester & Gay, 1991; Fuller, Blashfield, Miller, & Hester, 1992) and less psychopathic (Coid, Yang, Ullrich, Roberts, & Hare, 2009; Moran, 1999) than males. Moreover, many participants were students of the social sciences, who may be less sadistic or more inhibited in acting aggressively and reporting sadistic pleasure. The current sample might thus not be representative of the general population, limiting its generalizability. Future studies would benefit from using larger samples including patient samples to investigate whether the current findings extend into the clinical realm, or whether distinct personality profiles shape clinical sadistic behavior and pleasure.

Another promising avenue for future studies would be to assess how other personality traits outside the context of Dark Triad relate to sadistic pleasure. Although this has hardly been studied, a recent review (Lobbestael, Slaoui, & Gollwitzer, 2023) suggests Cluster B personality disorder traits would be viable personality correlates, whereas more general (Big 5/HEXACO) traits can be expected to inversely relate to sadism. Similarly, it would be interesting to assess the impact of contextual or confounding factors on the personality-sadism link, like perceived similarity (e.g., Martens et al., 2007), objectification (e.g., Lachowicz-Tabaczek, Lewandowska, Kochan-Wójcik, Andrzejewska, & Juszkiewicz, 2021), or boredom (Pfattheicher, Lazarević, Westgate, & Schindler, 2021).

5. Conclusion

This study tested and found support for a positive relationship

Appendix A. The bug grinder

between sadism and particularly the dark personality constellation of psychopathic traits. Our findings indicate that within the concept of psychopathy, the coldheartedness component can be considered especially disturbing because of its unique predictive value for sadistic pleasure following behavior of the most irreversible nature (i.e., killing). Enjoyment of harm infliction might serve as a perpetuating factor of aggression for those with increased coldheartedness. Our results do not fit the conceptualization of psychopathy as a coherent, unitary, one-dimensional construct (see e.g. Sellbom & Drislane, 2021). Instead, they support the triarchic conceptualization of psychopathy in which meanness constitutes a separate concept (Patrick et al., 2009). We thus postulate that coldheartedness constitutes a central concept that calls for further emphasis (cf. Berg et al., 2015).

Funding sources

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CRedit authorship contribution statement

Jill Lobbestael: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Franziska Wolf:** Writing – review & editing, Writing – original draft, Project administration, Data curation. **Mario Gollwitzer:** Writing – review & editing, Writing – original draft, Methodology. **Roy F. Baumeister:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization.

Declaration of competing interest

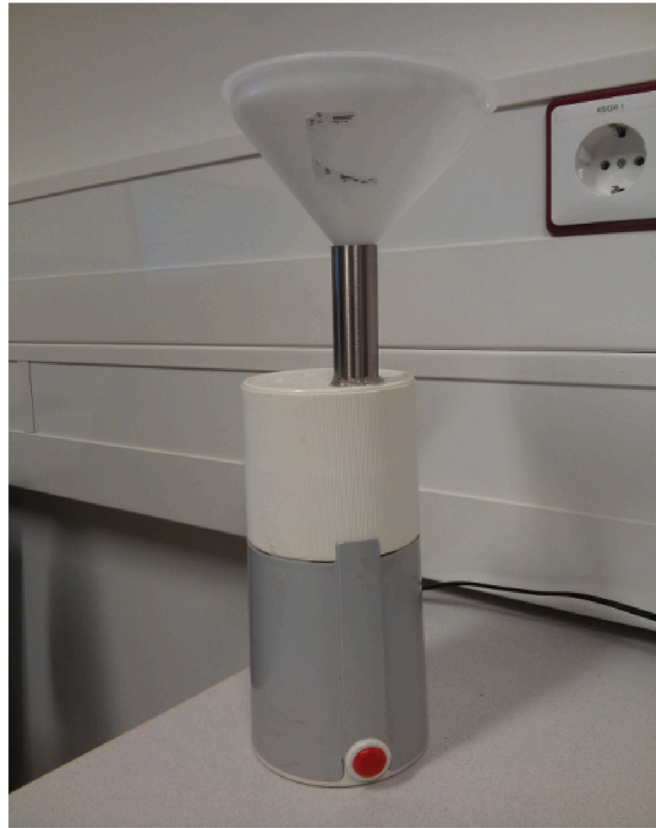
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgements

We thank René Finger for the creation of the technical development of the human directed sadism task, and Frauke Peeters and Sefania Baadjou for assisting in data collection.



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