



# Screening for Dark Personalities

## The Short Dark Tetrad (SD4)

Delroy L. Paulhus<sup>1</sup>, Erin E. Buckels<sup>2</sup>, Paul D. Trapnell<sup>2</sup>, and Daniel N. Jones<sup>3</sup>

<sup>1</sup>Department of Psychology, University of British Columbia, Vancouver, BC, Canada

<sup>2</sup>Department of Psychology, University of Winnipeg, Winnipeg, MB, Canada

<sup>3</sup>Department of Management, Department of Psychology, University of Nevada at Reno, NV, USA

**Abstract:** Consensus is emerging that the constellation of dark personalities should include the sadistic personality. To build a four-factor measure, we modified and extended the Short Dark Triad (SD3) measure to include sadism. A series of three studies yielded the Short Dark Tetrad (SD4), a four subscale inventory with 7 items per construct. Study 1 ( $N = 868$ ) applied exploratory factor analysis (EFA) to a diverse 48-item pool using data collected on MTurk. A 4-factor solution revealed a separate sadism factor, as well as a shifted Dark Triad. Study 2 ( $N = 999$  students) applied EFA to a reduced 37-item set. Associations with adjustment and sex drive provided insight into unique personality dynamics of the four constructs. In Study 3 ( $N = 660$ ), a confirmatory factor analysis (CFA) of the final 28 items showed acceptable fit for a four-factor solution. Moreover, the resulting 7-item subscales each showed coherent links with the Big Five and adjustment. In sum, the four-factor structure replicated across student and community samples. Although they overlap to a moderate degree, the four subscales show distinctive correlates – even with a control for acquiescence. We also uncovered a novel link between sadism and sexuality, but no association with maladjustment.

**Keywords:** dark personalities, questionnaire, sadism

Almost 20 years ago, Paulhus and Williams (2002) coined the term *Dark Triad* to refer to a constellation of three socially offensive personality variables: narcissism, Machiavellianism, and psychopathy. These so-called “dark” variables – although they have parallels to clinical disorders – show substantial variance in non-clinical samples. Despite radically different conceptual origins, the three variables invariably show positive intercorrelations – sometimes substantial. If ignored, this overlap can lead to a misattribution of empirical associations – for example, falsely concluding that narcissism is responsible for an outcome, when psychopathy is actually the active ingredient. For that reason, Paulhus and Williams advised that the three variables be studied jointly.

The burgeoning popularity of this model has been evidenced in reviews by Furnham, Richards, and Paulhus (2013), Muris, Merckelbach, Otgaar, and Meijer (2017), and, most recently, Zeigler-Hill and Marcus (2019). Facilitating this growth was the advent of two brief measures of the Dark Triad, namely, the Dirty Dozen (Jonason & Webster, 2010) and Short Dark Triad (Jones & Paulhus, 2014). Their relative brevity made them a practical screening device for applications in social, personality, and industrial-organizational psychology.

Nonetheless, some writers (notably, Marcus & Zeigler-Hill, 2015), have called for a broader, more inclusive membership in this cadre of callous exploiters. The many nominees include spitefulness, borderline, antagonism, moral disengagement, schadenfreude, and status-driven risk-taking. However, the *sadistic personality* has generated the broadest consensus (e.g., Book et al., 2016; Buckels, Jones, & Paulhus, 2013; Chabrol, Van Leeuwen, Rodgers, & Séjourné, 2009; Craker & March, 2016; Davis, Visser, Volk, Vaillancourt, & Arnocky, 2019; Greitemeyer, 2015; Johnson, Plouffe, & Saklofske, 2019; Moor & Anderson, 2019; Plouffe, Saklofske, & Smith, 2017).

This broad movement to include subclinical sadism<sup>1</sup> and create a Dark Tetrad had been theoretically justified in two key ways. First, sadism satisfied the criterion of callousness or impaired empathy (Paulhus, 2014; Pajević et al., 2018). Many researchers in the triad tradition have argued that callous exploitation is the common component – and explains the inevitable overlap (e.g., Heym et al., 2019; Jones & Figueredo, 2013). Second, the construct of sadism added a unique element not covered by the Dark Triad members, namely, intrinsic pleasure in hurting others (Nell, 2006). In short, the construct shares a common component and adds a new one.

<sup>1</sup> We define sadism as the tendency to enjoy causing, or simply observing, others' suffering.

Inherent in the dark personality movement is the distinguishing of subclinical variants from their clinical/forensic counterparts. Thus our notion of *everyday sadism* (Paulhus & Dutton, 2016) runs parallel with the migration of psychopathy and narcissism into subclinical variants (LeBreton, Binning, & Adorno, 2006; Raskin & Hall, 1979). Although the trait approach to personality disorders avoids the difficulties raised by a categorical approach (see Krueger, Markon, Patrick, Benning, & Kramer, 2014), brief subclinical measures cannot replace clinical measures of personality disorders.

## Measuring all Four Constructs

Research on the Dark Tetrad has been hampered by the fact that no four-factor measure has yet been published. Instead, several stand-alone measures of sadism have been developed. These include the Short Sadistic Impulse Scale (SSIS; O'Meara, Davies, & Hammond, 2011), the Varieties of Sadistic Tendencies (VAST; Paulhus & Jones, 2015), the Assessment of Sadistic Personality (ASP; Plouffe et al., 2017), and the Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels & Paulhus, 2013). Often, they are used to accompany triad batteries.

Already widely used, these stand-alone measures have been shown to predict instances of everyday sadism, including enjoyment of violent video games (Greitemeyer & Sagieglou, 2017), Internet trolling (Buckels, Trapnell, Andjelovic, & Paulhus, 2019; Buckels, Trapnell & Paulhus, 2014), fascination with weapons (Gonzalez & Greitemeyer, 2018), cyberstalking (Smoker & March, 2017), Internet bullying (Kircaburun, Jonason, & Griffiths, 2018), revenge (Chester & DeWall, 2018), toxic leadership (Spain, Harms, & Wood, 2016), negative impressions (Rogers, Le, Buckels, Kim, & Biesanz, 2018), mourning style (Lee, 2019), sexual violence (Russell & King, 2016), and sadistic behavior in the laboratory (Buckels et al., 2013; Chester, DeWall, & Enjaian, 2019). The breadth of these correlates suggests a wide predictive reach for self-report sadism.

Of course, these stand-alone measures were designed to be broad-band, that is, to maximize coverage of the sadism construct. Because of their breadth, however, these measures tend to overlap highly with corresponding broad-band measures of psychopathy (e.g., the Psychopathy Personality Inventory, the Self-Report Psychopathy scale) and Machiavellianism (e.g., the Mach IV). That overlap hampers independent measurement of the Dark Tetrad members (see Muris et al., 2017; Vize, Lynam, Collison, & Miller, 2018). In this report, we develop an inventory that distinguishes the four constructs sufficiently to avoid such

ambiguities while retaining the core features of each construct.

In developing the four-factor instrument – hereafter labeled the Short Dark Tetrad (SD4) – our goals were three-fold: (1) to minimize subscale overlap by emphasizing the unique components of each construct, (2) to remain relatively brief<sup>2</sup> (under 30 items), and (3) to position the SD4 subscales in a coherent nomological network. Together these goals present a formidable challenge, that is, how to tease apart sets of items to capture factors that are known to intercorrelate.

## Overview of Our Three Studies

A sequence of three studies (total  $N = 2,527$ ) culminated in the 28-item Short Dark Tetrad. Study 1 applied exploratory factor analysis (EFA) to a diverse pool of 48 items. A four-factor solution provided evidence for a sadism factor as well as the usual three dark factors. Refinements yielded a penultimate 37 item set. Study 2 applied EFA to the reduced item set to create a 28-item inventory comprising four 7-item subscales. In Study 3, a confirmatory factor analysis (CFA) verified the four-factor structure. The subscales showed coherent links with the Big Five, adjustment, and sex drive. All samples were sufficiently large ( $N$ s of 660, 868, 999) to ensure stable correlations (Schönbrodt & Perugini, 2013).

## Study 1: Item Development

Assembling the Short Dark Tetrad (SD4) subscales followed several guidelines. First was the choice to fasten new items onto the framework of the Short Dark Triad instrument (Jones & Paulhus, 2014). This approach facilitated the contrast of sadism items against an already-established assessment. Second, we gave priority to sadism items already appearing in the stand-alone measures, especially, the VAST and CAST. Third, we confronted several challenges regarding the distinctiveness of sadism from the current triad members (Johnson et al., 2019; O'Connell & Marcus, 2019; Paulhus, 2014). We now consider each of these themes in turn.

## Structure

The SD4 was designed to extend content coverage of the SD3. Several hundred studies on the latter instrument

<sup>2</sup> Of course, there are limits to the value of brief measures (Crede, Harms, Niehorster, & Gaye-Valentine, 2012; Ziegler, Kemper, & Krueger, 2014).

have confirmed the value of separating narcissism, Machiavellianism, and psychopathy (Furnham, Richards, Rangel, & Jones, 2014; Zeigler-Hill & Marcus, 2019). Nonetheless, some critics have pointed to high correlations between Machiavellianism and psychopathy in some samples (e.g., Muris et al., 2017). Although applying less to the SD3 than to broad-band personality batteries, the problem had been ameliorated when the Mach VI was introduced (Paulhus & Jones, 2015). Its content is less aggressive, instead focussing on controlled manipulation. Hence, we began our structural analyses with the Mach VI items rather than the original SD3 Mach items. We also took the opportunity to add new triad items to allow for possible shifting of the SD3 structure when sadism items are added.

In addition, we considered the possibility that the SD4 factor structure might vary as a function of age. Previous research has demonstrated a tendency for malevolent behavior to diminish with age (Barbaree, Langton, Blanchard, & Cantor, 2009; Olver & Wong, 2015; Veselka, Schermer, & Vernon, 2011). With all four constructs tapping malevolence, we expected that restricting our sample to younger respondents would reduce the factor intercorrelations. A younger subsample would also correspond more closely to student samples – the most common source of data in personality research. Accordingly, we examined the effect of restricting respondent age.

## Sadistic Content

Items of the SSIS and ASP refer primarily to direct physical sadism (e.g., “I enjoy hurting people”) whereas the VAST also included vicarious items (e.g., “I enjoy watching violent sports”). The CAST went even further to include verbal sadism (e.g., “I enjoy making jokes at the expense of others”). For inclusiveness, our new sadism items were written to represent all three facets.

## Theoretical Claims

We also broadened the item scope to address the relevance of sexual and dominance motivations. Links have already been established between unrestricted sexuality and dark personalities (Jonason & Tost, 2010; McDonald, Donnellan, & Navarrete, 2012; Smith, Øverup, & Webster, 2019; Stolarski, Czarna, Malesza, & Szymańska, 2017). By some accounts, a strong sex drive reflects a broader impulsivity (i.e., inability to restrain inappropriate urges). That general externalizing tendency (Prentky & Knight, 1986) implicates psychopathic tendencies (Hare & Neumann, 2008; Visser,

2019). Accordingly, we wrote several items for the psychopathy subscale that refer to unrestricted sexuality.

Another controversial claim is that sadism is fundamentally motivated by *interpersonal dominance* (Nell, 2006; O’Meara et al., 2011). To evaluate this claim, we included an additional set of 10 items tapping the two axes of the trait circumplex, that is, dominance and nurturance (Horowitz & Strack, 2010; Hopwood, Wright, Ansell, & Pincus, 2013). In total, the initial pool comprised 48 items.

## Summary of Results

Because of page limitations, the details of Study 1 (including three Tables, i.e., S1.1–S1.3) are relegated to the online supplementary materials at <https://osf.io/kh2c7/>. Our initial pool of 48 items was promising but it harbored several obstacles to a clear four-factor solution. We therefore revised the item pool in several ways. First, we eliminated all reversals. Second, we removed items that showed no clear loading on any factor or cross-loaded. Now down to 37 items, this version was evaluated in Study 2.

## Study 2: Subscale Creation and Criterion Prediction

Study 2 had several purposes. First was the refinement of the 37-item version derived in Study 1. Second, we sought to increase generalizability by assessing university students rather than relying on MTurk participants. Third, we explored links of the Dark Tetrad with several forms of psychological adjustment, including sex drive.

A remaining challenge for the 37-item set was a better separation of sadism items from psychopathy items. Following Johnson et al. (2019), we suspected that the solution lay in the distinctive nature of sadism items with vicarious vs. direct physical content (Buckels et al., 2014). The physical sadism items (e.g., “I like to hurt people.”) overlapped so much with psychopathic violence that some items written for sadism could load on the two factors. By contrast, the vicarious items (e.g., “I enjoy watching violent films.”), although equally sadistic, formed a separate factor. Hence, minimizing the number of physical sadism items would promote separation (see Johnson et al., 2019). Finally, to retain their content, we “un-reversed” several of the reversals from Study 1, for example, we removed “never” from “I have never been in trouble with the law.”

In short, we sought to extract the final subscales from the best remaining item set. In addition, we explored their adjustment profiles. Note again that dark personality

variables do not share the severe impairment associated with personality disorders (Furnham et al., 2013; Kaiser, LeBreton, & Hogan, 2015). Nonetheless, adjustment differences may emerge in normal samples. Hence, we use the term “adjustment” to refer to non-pathological concerns. Analyses of such concerns have typically distinguished *personal adjustment*, that is, intra-psychic positivity and stability, from *interpersonal adjustment*, that is, harmonious relations with others (Bonanno, Field, Kovacevic, & Kaltman, 2002; Church et al., 2006; Dufner, Gebauer, Sedikides, & Denissen, 2019; Kurt & Paulhus, 2008). As a rule, adjustment problems among dark personalities have been limited to interpersonal conflict (Furnham et al., 2013; Rauthmann, 2012).<sup>3</sup> We expected that same pattern to emerge here.

Finally, we sought to understand why the sex-related items in Study 1 loaded on the sadism factor. Was it (a) the callousness implied in a preference for casual sex or (b) a more fundamental link between sadism and sexuality? To evaluate the latter, we removed the casual sex items from the SD4 candidates and added simple self-rating of sex drive to the interpersonal adjustment outcomes.

## Method

Participants were 999 students recruited from the subject pool at the University of British Columbia (56% women;  $M_{\text{age}} = 20.7$  years,  $SD = 4.3$ ). Ethnicities were as follows: 44% European Heritage, 44% East Asian, 9% South Asian, and 3% other ethnicities. Participants received a half-percent course bonus to complete the survey. Our items were part of a larger prescreen survey that included items from other laboratories.

All items were formatted as 5-point Likert scales with anchors 1 (= *not at all*) and 5 (= *very much*). Personal adjustment was measured with three items tapping intrapsychic elements of well-being: The forward-keyed item was: “I have high self-esteem”; reverse-keyed were: “I easily get depressed”, and “I have engaged in self-harm behaviors”; the  $\alpha$  reliability was .73. Interpersonal adjustment was measured with the mean of two items: “I am close to my family” (forward-keyed) and “People tend to dislike me” (reverse-keyed); the  $\alpha$  reliability was .71. The single sex drive item was worded as “My sex drive is pretty high.”

## Analyses, Results, and Discussion

Because of alterations to the item set, we turned again to EFA of the remaining 33 items. Assuming an oblique

solution, we chose the Principal Axis Factor extraction method and Promax rotation from SPSS 25.

The first four factors were clearly interpretable as the Dark Tetrad. The four factor solution was also consistent with the MAP and parallel analysis tests. Factor intercorrelations were modest, ranging from .14 to .44. However, a total of three items – all psychopathy or sadism content – cross-loaded in non-trivial ways. As expected, the physical sadism items double-loaded with psychopathy and were removed. Finally, two items were removed from each of the other two factors to equate the subscale sizes at 7. Rather than using loading differences, we removed items that were most similar in content to remaining items.

Table 1 shows a follow-up EFA on the remaining 28 items. All loaded (at least .24) on the hypothesized factors. The subscale means (Table 2) are consistent with those in previous research. As with other dark measures, male respondents scored higher than females on the sadism subscale (Jonason, Li, & Teicher, 2010; Neumann, Schmitt, Carter, Embley, & Hare, 2012): In fact, the effect size for sadism reached a Cohen’s  $d$  of 1.07. The upper section of Table 3 provides the subscale reliabilities (internal consistencies) and intercorrelations. As expected, the correlations are all positive, ranging from .11 to .49.

### Adjustment Patterns

Distinct profiles of the four constructs were confirmed by distinctive links to adjustment variables. Results are displayed in the lower section of Table 3. As expected, narcissists reported superior personal adjustment (Rose & Campbell, 2004), but there was little evidence for maladjustment in any tetrad member (consistent with Womick, Foltz, & King, 2019). With regard to interpersonal adjustment, however, the pattern followed previous tetrad research (Rogers et al., 2018): That is, both sadists and psychopaths reported significant interpersonal problems.<sup>4</sup> Previously, empathy deficits (i.e., callousness) have been established in dark personalities (Furnham et al., 2013; Jonason & Krause, 2013): But empathy deficits are more germane to interpersonal than to personal maladjustment: In fact, the latter problems are likely the consequence of empathy deficits.

Finally, as predicted, the strongest predictor of global sex drive was sadism. That finding is consistent with the Study 1 finding that items referring to sexual appetite loaded more strongly on the sadism than the psychopathy factor. Apparently, those reporting sadistic tendencies also report a stronger appetite for sex – and not just callous sex.

<sup>3</sup> Our narcissism items, like the NPI items, capture only grandiose narcissism. Had our items tapped other variants of narcissism (see Hermann, Brunell, & Foster, 2018), then personal maladjustment might have emerged as a correlate.

<sup>4</sup> To simplify communication, we use terms such as “sadists” or “psychopaths”. Such usage is not meant to imply an assumption that these variables are categorical.

**Table 1.** EFA Pattern Matrix from Study 2 (28 items)

Item	Sadism	Psychopathy	Narcissism	Machiavellianism
Should keep secrets				<b>.374</b>
Butter up VIPs				<b>.425</b>
Strategically avoid conflict				<b>.633</b>
Keep low profile				<b>.522</b>
Manipulation takes planning				<b>.534</b>
Flattery works				<b>.243</b>
Love tricky plans				<b>.401</b>
Am a natural leader			<b>.680</b>	
Am persuasive			<b>.541</b>	
I entertain people			<b>.470</b>	
Dull without me			<b>.526</b>	
Am special		.254	<b>.541</b>	
Am exceptional			<b>.587</b>	
Likely star			<b>.570</b>	
Do not mess with me		<b>.390</b>		
I like danger		<b>.420</b>		
Payback must be nasty		<b>.552</b>		
Out of control		<b>.703</b>		
Had trouble with law		<b>.525</b>		
Will say anything		<b>.564</b>		
Likely hurt		<b>.693</b>		
Love gory films	<b>.758</b>			
Fights excite	<b>.745</b>			
Torture is interesting	<b>.593</b>			
Hurt for fun	<b>.274</b>	.365		
Enjoy violent sports	<b>.727</b>			
Can hurt with words	<b>.410</b>			
Am mean on social media	<b>.242</b>	.280		

Note.  $N = 999$ . Principal Axis Factoring with Promax rotation. Bolded values were hypothesized. Loadings below .25 are omitted.

**Table 2.** Subscale means, gender difference effect sizes, and reliabilities in Study 2

SD4 Subscale	Men	Women	$d$	Reliability	
	Mean (SD)	Mean (SD)		$\alpha$	$\omega$
Narcissism	3.20 (0.63)	3.00 (0.58)	.33	.83	.84
Machiavellianism	3.34 (0.59)	3.24 (0.53)	.18	.78	.80
Psychopathy	2.10 (0.63)	1.87 (0.57)	.40	.82	.83
Sadism	2.52 (0.68)	1.81 (0.62)	1.07	.82	.85

Note.  $N = 999$ . Item means based on 5-point item format. All sex differences were significant at  $p < .01$ , with males scoring higher.

### Study 3: Confirmation of Structure

To replicate the four-factor structure of the 28-item measure, we collected another large sample of students (from a different university) and applied CFA. For several purposes, we also included a measure of the Big Five traits, namely, the Big Five Inventory (BFI; John & Srivastava, 1999). One reason was to evaluate a possible shift in

structure: That is, the positioning of the original three variables may have been altered when sadism was added to the constellation. Such a shift should be apparent in a different pattern of associations with the Big Five.

Another reason for including the BFI was to address the possibility that acquiescence had inflated the subscale inter-correlations. Such distortion is a traditional concern when all items are scored in the same direction (McCrae, Herbst,



**Table 3.** Intercorrelations of SD4 subscales and adjustment

Variable	Narcissism	Machiavellianism	Psychopathy	Sadism
Narcissism	(.83)	.11 [.05, .17]	.23 [.17, .29]	.16 [.10, .22]
Machiavellianism		(.78)	.31 [.25, .36]	.21 [.15, .27]
Psychopathy			(.82)	.49 [.44, .54]
Sadism				(.82)
Personal adjustment	.31 [.25, .36]	-.06 [-.12, .00]	-.09 [-.15, -.03]	-.03 [-.09, .03]
Interpersonal adjustment	.14 [.08, .20]	-.13 [-.19, -.07]	-.34 [-.39, -.28]	-.35 [-.40, -.29]
Sex drive	.20 [.14, .26]	.07 [.01, .13]	.20 [.14, .26]	.32 [.26, .37]

Note.  $N = 999$ . Alpha reliabilities are in parentheses. Values in square brackets are 95% confidence intervals for the correlations. All correlations  $> |.11|$  were significant at  $p < .01$ .

& Costa, 2001; Paulhus, 1991). The BFI provides a scoring procedure for acquiescence (see Soto, John, Gosling, & Potter, 2008). Any decrease in the SD4 subscale intercorrelations after controlling for acquiescence would suggest that the original values were artificially inflated.

## Method

A total of 660 students at the University of Winnipeg completed measures online as part of an annual fall mass testing by the Psychology department. In exchange for participating, they received partial course credit. Mean age of this sample was 19.8 years, with 74% self-identifying as women, 25% as men, and 1% as another gender identity. The most frequently endorsed ethnic heritages were European (49%), South Asian (9%), East Asian (8%), Indigenous (6%), and Other (8%).

The 28-item SD4 was administered with euphemistic labels for each subscale: *special* for the narcissism items; *crafty* for the Machiavellianism items; *wild* for the psychopathy items; *mean* for the sadism items. The purpose was to reduce defensiveness while still capturing the essence of each identity (see Hogan, Hogan, & Warrenfeltz, 2007). The final item set with instructions is in the Appendix.

As noted above, the Big Five factors were assessed with a standard instrument – the Big Five Inventory (BFI; John & Srivastava, 1999). As in Study 2, personal adjustment was operationalized with a composite of self-esteem and (reversed) depression.

## Results and Discussion

### Confirmatory Factor Analysis (CFA)

The CFA on the final 28 items was performed with the Mplus software package (Muthén & Muthén, 2012). We began by creating 12 parcels. This approach can be recommended when a structural model is being evaluated (see Little, Cunningham, Shahar, & Widaman, 2002). For each subscale, we randomly formed three parcels (as

recommended by Matsunaga, 2008) of 2, 2, and 3 items. To balance the parcels within subscale, we avoided huge discrepancies in reliabilities (Landis, Beal, & Tesluk, 2000).

Using the WLSMV estimator and Promax rotation, the fit indices were as follows:  $\chi^2 = 132$ ,  $p < .001$ ; RMSEA = .05, 95% CI [.04, .07]; Bentler CFI = .97; SRMR = .04. Note that all indices were in the acceptable range, except the  $\chi^2$  values. However, the latter significance is no longer considered fatal in evaluating personality models (Marsh, Balla, & MacDonald, 1988).

For a more complete picture, we ran a non-parceled version, that is, a 28-item CFA with four factors (see Figure 1). Of course, the fit indices for items were not as impressive, but no cross-loadings were required.  $\chi^2 = 1,691$ ,  $p < .001$ ; RMSEA = .077, 95% CI [.073, .080]; Bentler CFI = .88; SRMR = .07. Nonetheless, these values are still in the range typically found in evaluations of established personality models such as the Big Five (Hopwood & Donnellan, 2010). For the Mplus syntax, see the online supplementary materials at <https://osf.io/kh2c7/>.

### Subscale Descriptives and Intercorrelations

The descriptive statistics for this sample (Table 4) were remarkably similar to those in Study 2 (Table 2) – despite the addition of euphemistic labels in this study. Gender differences in effect size ranged from .39 for narcissism to 1.07 for sadism, with males scoring higher on all four subscales. The subscale intercorrelations in Table 5 range from .20 to .51. Partialing out the acquiescence index had little effect on subscale intercorrelations – now ranging from .16 to .49.

### Construct Validity

Correlations of the SD4 subscales with the Big Five Inventory appear in Table 6. As expected, the strongest correlates of sadism, psychopathy, and Machiavellianism are agreeableness and conscientiousness (both negative), and the strongest correlate of narcissism is extraversion (see Furnham et al., 2013; Muris et al., 2017; Paulhus & Williams, 2002). Also included in Table 6 are the

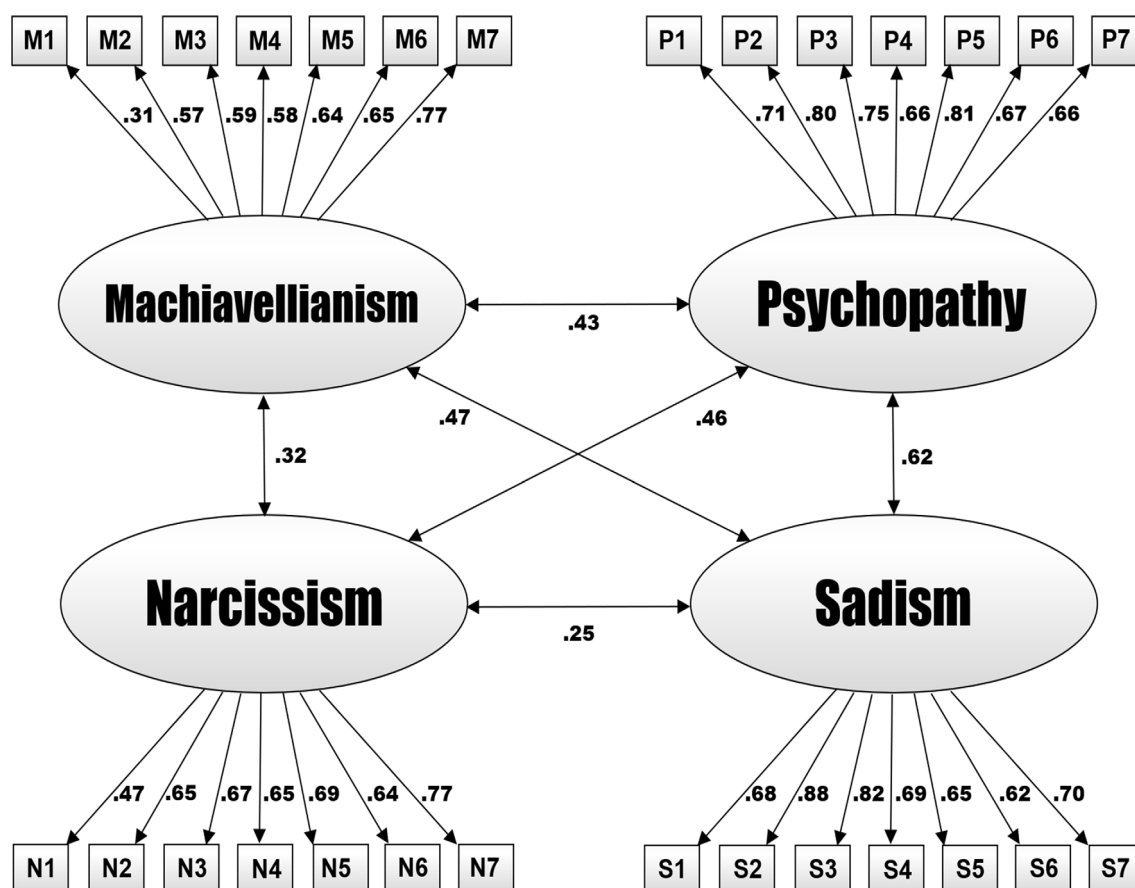


Figure 1. Full 28-item CFA from Study 3.

correlations with personal adjustment.<sup>5</sup> The pattern is similar to that in Study 2, that is, the SD4 subscales show little sign of maladjustment. But, as usual, narcissists claim superior adjustment (Rose & Campbell, 2004).

In sum, our final step of abbreviating the 37 items into the 28-item instrument appears to have been successful. The four-factor structure was confirmed in a new, large, and geographically separate sample. And construct validity was advanced further by showing that the pattern of external correlates was coherent and consistent with previous research. The final questionnaire, ready for administration, is presented in the Appendix.

## General Discussion

Our goal of separating items tapping four oblique constructs was daunting, to be sure. After much ado, this overall goal

was largely realized: We sought to justify empirically the recent addition of sadism to the pantheon of dark personalities now known as the Dark Tetrad (Buckels et al., 2013; Chabrol et al., 2009; Johnson et al., 2019; Paulhus, 2014; Plouffe et al., 2017). Although they have parallels in personality disorders, it is everyday variants that have been the focus of our research. Socially offensive, if not malevolent in nature,<sup>6</sup> these personality traits vary to a surprising degree in non-forensic, non-clinical samples (e.g., college students, workers, community samples).

To operationalize the expanded constellation, we had to capture sadism while avoiding excessive overlap with the other three dark personalities. Reaching this goal required carving out the unique aspects of each construct. At the same time, we kept the questionnaire length manageable and applied the label, Short Dark Tetrad or SD4. During the process of instrument development, we made a number of substantive as well as psychometric advances.

<sup>5</sup> This study did not include any direct indicators of interpersonal adjustment. Using agreeableness as an indirect indicator, we replicated the pattern in Study 2, that is, all subscales except narcissism show significant interpersonal maladjustment.

<sup>6</sup> In fact, these tendencies may prove adaptive in some contexts (Mededović, Petrović, Želeskov-Đorić, & Savić, 2017; Paulhus, Westlake, Calvez, & Harms, 2013).

**Table 4.** Subscale means by gender and reliabilities in Study 3

SD4 Subscale	Men	Women	<i>d</i>	Reliability	
	Mean (SD)	Mean (SD)		$\alpha$	$\omega$
Narcissism	3.16 (0.67)	2.88 (0.76)	.39	.80	.80
Machiavellianism	3.62 (0.65)	3.26 (0.65)	.55	.75	.76
Psychopathy	2.14 (0.76)	1.82 (0.68)	.44	.81	.81
Sadism	2.88 (0.81)	2.02 (0.80)	1.07	.81	.81

Note. *N* = 660. Data columns are item means of responses collected in 5-point format. All sex differences were significant at  $p < .001$ , with males scoring higher.

**Table 5.** Intercorrelations of SD4 subscales in Study 3

SD4 Subscale	Narcissism	Machiavellianism	Psychopathy	Sadism
Narcissism	(.80)	.22 [.15, .29]	.36 [.29, .42]	.20 [.13, .27]
Machiavellianism		(.75)	.32 [.25, .38]	.37 [.30, .44]
Psychopathy			(.81)	.51 [.45, .56]
Sadism				(.81)

Note. *N* = 660. All correlations were significant at  $p < .001$ . Values in square brackets are 95% confidence intervals for the correlations. Alpha reliabilities are on the diagonal.

**Table 6.** Correlations of SD4 subscales with the Big Five and personal adjustment in Study 3

Variable	Narcissism	Machiavellianism	Psychopathy	Sadism
Extraversion	.49 [.43, .55]	-.08 [-.16, .00]	.20 [.13, .28]	-.01 [-.09, .07]
Agreeableness	-.05 [-.12, .03]	-.31 [-.38, -.24]	-.39 [-.45, -.32]	-.41 [-.47, -.35]
Conscientiousness	.11 [.04, .19]	-.22 [-.29, -.14]	-.24 [-.31, -.16]	-.23 [-.30, -.15]
Neuroticism	-.20 [-.27, -.13]	.11 [.03, .18]	.04 [-.04, .11]	-.01 [-.08, .07]
Openness	.30 [.22, .36]	.07 [.00, .15]	.10 [.02, .17]	.09 [.01, .16]
Personal adjustment	.31 [.24, .38]	-.18 [-.26, -.11]	-.10 [-.17, -.02]	-.09 [-.16, -.01]

Note. *N* = 660. All values  $> |.10|$  are significant at  $p < .01$ . Values in square brackets are 95% confidence intervals for the correlations.

## Psychometric Contributions

### Reliabilities

Despite their brevity, the final four 7-item subscales had acceptable psychometric properties. The equal number of items was more than just an esthetic flourish: It helped equate the alpha and omega reliabilities across subscales. Reaching that balance precludes potentially misleading inferences down the line. A reliability advantage could mislead researchers into over-attributing the impact of that measure relative to the other three.

### Reversals

One critical decision was to remove all reversed items. Although increasingly recommended (e.g., Curran, 2016; Savalei & Falk, 2014; Schmitt & Stults, 1985), that removal had consequences: One was the increase in alpha

reliabilities compared to the precursor instrument, SD3. Now the alphas are in the optimal range recommended by Simms and Watson (2007).<sup>7</sup> A potentially unfortunate consequence of reversal elimination is the inflation of subscale intercorrelations due to common contamination with acquiescent responding (McCrae et al., 2001; Paulhus, 1991). To address this possibility, we controlled for acquiescence using the method developed by Soto and colleagues (2008). Little change was observed in the subscale intercorrelations.

### Machiavellianism Versus Psychopathy

The factoring of the final four measures yielded another benefit: Machiavellianism and psychopathy are now distinguished more cleanly. As with the shift of the five factor model when a sixth was added to create the HEXACO

<sup>7</sup> They recommended that item intercorrelations be in the range .12–.50. In Study 2, our mean item intercorrelations ranged from .16 to .49.



(de Vries, de Vries, de Hoogh, & Feij, 2009), our addition of sadism fortuitously yielded a better separation of two of the original dark personalities. In the meta-analysis by Muris and colleagues (2017), the mean intercorrelation of Machiavellianism and psychopathy was .58 (p. 188). Even in the original Short Dark Triad article, that value was .47 (Jones & Paulhus, 2014). Here, by contrast, the intercorrelation of Machiavellianism and psychopathy was only .31 in Study 2 and .32 in Study 3.

### Age Confound

It appears that age of respondent is a confounding factor in dark personality research: In particular, subscale intercorrelations tend to be higher in MTurk than in student samples. In Study 1, the original factor intercorrelations ( $Mdn = 0.45$ ) fell to .35 and .27, for respondents under 30 and 25, respectively. A likely reason for this phenomenon is that, across the board, interpersonal malevolence diminishes with age (Barbaree et al., 2009; Olver & Wong, 2015): That pattern is common to all of the Dark Triad (Fox & Rooney, 2015; Veselka et al., 2011). Thus uncontrolled age effects collapse the dark side factor structure to some degree. This explanation for excessive correlations often observed among dark variables may alleviate the concern expressed by some MTurk researchers (e.g., Muris et al., 2017). In the future, we recommend that MTurk researchers be wary of this confound, and if necessary, control for age.<sup>8</sup>

### Labels

We also sought to reduce defensiveness at both test administration and feedback. In fact, we found that provision of a euphemistic identity label prior to each subscale (see Hogan et al., 2007) was innocuous, that is, use of such labels in Study 3 had little effect (compared to Study 2) on the subscale means or the subscale intercorrelations. Hence, the instrument may be administered with or without the labels.

However, the softening of labels should increase acceptability of this measure in contexts where feedback to respondents is necessary. Years of feedback indicated that “dark” descriptors were too threatening for use in some government, business and work settings (see Hogan et al., 2007). The standard psychological labels may be ideal for communication among social scientists, but may unnerve respondents as well as administrators who are obligated to give feedback to respondents. This reticence has been especially acute in non-Western countries. Bottom line: Users can choose to include the labels or not.

## Theoretical Contributions

During the course of our three studies, several key theoretical challenges arose and tentative answers emerged.

### Sadism Versus Psychopathy

The current stand-alone measures of sadism (ASP, SSIS, VAST, CAST) share a common drawback – they overlap substantially with psychopathy. This confound could be fatal in research attempting to distinguish the two constructs. To some researchers, the solution is to collapse the two constructs. We are not alone in disputing that course of action (O’Connell & Marcus, 2019; Hare, Cooke, & Hart, 1999; Johnson et al., 2019; Mokros, Osterheider, Hucker, & Nitschke, 2011; Međedović, & Petrović 2018).

The issue was addressed directly in a recent paper by Johnson and colleagues (2019): They showed that separating the subscales of the CAST – direct physical, direct verbal, vicarious – clarified the overlap. Of the three, the direct physical subscale overlapped most strongly, and the vicarious subscale, least strongly, with the psychopathy factor. We found the same pattern: The items that best separate from psychopathy are largely vicarious: watching violent sports, violent media, and live fist-fights. Although originally intended to represent all three facets, our new subscale minimizes physical sadism items.

To us, these findings suggest that psychopathy content is most critical to direct engagement with victims. The accompanying angry, fearless, impulsive aspects of psychopathy are not evident in everyday sadism. The latter folks gravitate toward vicarious rewards where a safe distance can be maintained: Retaliation is thereby precluded and rationalization is facilitated: The benefit is undiluted pleasure (Buckels et al., 2019).

### Dominance

Some writers have argued that sadism is all about exerting dominance (Nell, 2006). The clinical literature acknowledges this syndrome under the label *tyrannical sadism* – one of the variants distinguished by Millon (1996). And two of the current stand-alone measures include dominance (subjugation, humiliation) as a central component of sadism (O’Meara et al., 2011; Plouffe et al., 2017). According to this conception, cruel behavior embodies the mastery of one human being over another.

We were skeptical that trait dominance underlies everyday sadism. The traditional concept of trait dominance subsumes interpersonal success, achievement, status, and respect (Horowitz & Strack, 2010). It is best measured as the vertical axis of the interpersonal circumplex (Hopwood et al., 2013; Zimmerman & Wright, 2017). The recent report by Southard, Noser, Pollock, Mercer, and Zeigler-Hill (2015) included sadism in a comprehensive examination of how dark personalities load on the two circumplex axes – dominance (agency) and nurturance (communion). Sadism loaded on nurturance; but not on dominance.

<sup>8</sup> Because their age range is typically restricted, this caveat is less important in student samples.

In our Study 1, we measured those axes and confirmed the independence of sadism from trait dominance. Again, sadism did correlate (negatively) with nurturance.

### Adjustment

A fundamental tenet in clinical research is that personality disorders are accompanied by pronounced psychological dysfunction (e.g., Millon, 1996). By contrast, our Dark Tetrad research on subclinical samples uncovered little dysfunction. Here, we clarify that contrast by distinguishing personal versus interpersonal adjustment. No maladjustment is evident on the former, that is, intrapsychic distress. On the latter, however, maladjustment can be pronounced. In fact, callousness toward others can be seen as a defining feature.

### Sexual Behavior

Originally, we hypothesized that a penchant for casual, recreational sex would have impulsive roots, thereby linking it most closely with psychopathy (e.g., Egan & Duff, 2019; Prentky & Knight, 1986; Visser, 2019). Contrary to this assumption, the sex items clung to the sadism factor in Study 1. Therefore, we removed them from the psychopathy subscale and reconsidered our rationale.<sup>9</sup> Because the sex items lacked blatant sadistic content (e.g., “Casual sex sounds like fun”), we hesitated to simply add them to the sadism scale. Instead, we wondered whether global sexual appetite might be implicated and wrote a simple sex drive item for Study 2. The link with sadism was replicated: Apparently, those who enjoy cruelty – even vicariously – report having a high sex drive. And that empirical association may have been under-estimated by our use of a single item for sex drive.

The sexuality-sadism link is certainly reminiscent of controversial claims made by Freud and The Marquis de Sade. Perhaps there is some sexual flavor to sadism; or some sadistic overtones to sex – even in everyday samples (Burris & Leitch, 2016). Given the large sex difference in sadism, the aggressive symbolism of penetration may be more than symbolic. Or perhaps testosterone underlies both variables (Provenzano, Dane, Farrell, Marini, & Volk, 2017; Welker, Lozoya, Campbell, Neumann, & Carré, 2014).

No doubt there are sexuality-sadism links in two unique variants: criminal sexuality (Mokros, Schilling, Weiss, Nitschke, & Eher, 2014) and BDSM participants (Sagarin, Lee, & Klement, 2015). However, individuals with unrestricted sexuality abound in normal samples (Kastner & Sellbom, 2012; Simpson & Gangestad, 1991). Popular depictions of sadistic behavior in film, television, sports (e.g., Game of Thrones, MMA) may be powerful instigators of arousal (Foulkes, 2019). Well-known misattribution

dynamics (Zillman, 1971) may actually promote some individuals – especially those with unrestricted sexuality – to associate the two emotions.<sup>10</sup>

Nevertheless, we acknowledge research linking sociosexuality to other dark personalities (Lee et al., 2013; Reise & Wright, 1996; Schmitt et al., 2017; Visser, 2019). Moreover, our sadism-sexuality finding was not predicted in advance and more focused research is necessary to confirm the singular strength of this association.

## Limitations and Future Directions

The present research package was restricted to self-report questionnaires. As such, it complements the burgeoning reports of behavioral research that validates self-reported sadism (e.g., Buckels et al., 2013; Chester & DeWall, 2018; Chester et al., 2019; Greitemeyer & Sagioglou, 2017; Pfattheicher & Schindler, 2015; Rogers et al., 2018). Both approaches now indicate that, in “everyday” samples, sadistic tendencies can be distinguished from other dark variables.

Consensus is emerging that the distinctive ingredient in sadism is the reward value of (doing and/or viewing) cruel behavior. Whereas psychopaths are indifferent to others’ suffering, sadists find it appealing. The former may exploit cruelty for its instrumental value; the latter value its intrinsic rewards. Future research should address that difference experimentally (see Jones & Paulhus, 2010, 2017).

Alternatively, there may be a clue in the sadist’s fondness for fire-setting and vandalism (Pfattheicher, Keller, & Knezevic, 2019). If so, sadism may be part of a broader and deeper motivation to undermine social structure (Goldstein, 2013). Such anarchistic tendencies may embody the second law of thermodynamics with a social form of entropy-seeking.

## Lumping Versus Splitting

Some researchers prefer to err on the side of parsimony and argue for reducing the number of dark factors. Most notable is the single-factor model advanced by Moshagen, Hilbig, and Zettler (2018). Our mandate is differentiation. Indeed the “big tent” seems likely to enlarge with further research (Marcus & Zeigler-Hill, 2015).

Other models are being explored (Neumann, 2020). Most elegant and inclusive, in our opinion, is a hierarchical model with Honesty-Humility subsuming all four dark traits (Paulhus & Klaiber, in press). Thus the Dark Tetrad traits do not fall at the same level as the broad personality factors

<sup>9</sup> There is precedent in the Mededović (2017) study, where the link between sadism and sexuality remained even after controlling for psychopathy.

<sup>10</sup> Again, acting out sadistic behavior may require the impulsivity of psychopathy (Kastner & Sellbom, 2012).

tapped by the Big Five or HEXACO, but are nestled within one of them (Lee & Ashton, 2004; Zettler, Thielmann, Hilbig, & Moshagen, 2020).

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## History

Received September 7, 2019

Revision received April 18, 2020

Accepted April 22, 2020

Published online July 27, 2020

EJPA Section / Category Personality

## Open Data

The Study 1 details and software syntax can be found in the online supplementary materials at <https://osf.io/kh2c7/>.

## Funding

This report draws on research supported by the Social Sciences and Humanities Research Council of Canada.

## ORCID

Delroy L. Paulhus

 <https://orcid.org/0000-0001-8527-7567>

## Delroy L. Paulhus

Department of Psychology  
University of British Columbia  
Vancouver, BC V6T 1Z4  
Canada  
[dpaulhus@psych.ubc.ca](mailto:dpaulhus@psych.ubc.ca)

Appendix

Short Dark Tetrad (SD4)

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
1	2	3	4	5

Rate your agreement with each statement using the above 5-point scale:

Identity 1: "Crafty"

- 1. It's not wise to let people know your secrets.
- 2. Whatever it takes, you must get the important people on your side.
- 3. Avoid direct conflict with others because they may be useful in the future.
- 4. Keep a low profile if you want to get your way.
- 5. Manipulating the situation takes planning.
- 6. Flattery is a good way to get people on your side.
- 7. I love it when a tricky plan succeeds.

Identity 2: "Special"

- 1. People see me as a natural leader.
- 2. I have a unique talent for persuading people.
- 3. Group activities tend to be dull without me.
- 4. I know that I am special because people keep telling me so.
- 5. I have some exceptional qualities
- 6. I'm likely to become a future star in some area.
- 7. I like to show off every now and then.

Identity 3: "Wild"

- 1. People often say I'm out of control.
- 2. I tend to fight against authorities and their rules.
- 3. I've been in more fights than most people of my age and gender.
- 4. I tend to dive in, then ask questions later.
- 5. I've been in trouble with the law.
- 6. I sometimes get into dangerous situations.
- 7. People who mess with me always regret it.

Identity 4: "Mean"

- 1. Watching a fist-fight excites me.
- 2. I really enjoy violent films and video games.
- 3. It's funny when idiots fall flat on their face.
- 4. I enjoy watching violent sports.
- 5. Some people deserve to suffer.
- 6. Just for kicks, I've said mean things on social media.
- 7. I know how to hurt someone with words alone.

Note. Items can be administered with or without the sub-headings.