

# The dark core of personality and socially aversive psychopathology

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## Abstract

**Objective:** Although dark traits as studied in mainstream personality research and socially aversive psychopathology as studied in abnormal psychology intend to account for the same classes of behavior, their degree of conceptual and, consequently, empirical correspondence has remained limited at best. We aim to overcome this divide by demonstrating clear convergence between the common core of all dark traits (the Dark Factor of Personality, D) and the four prominent instances of socially aversive psychopathology: narcissistic, antisocial, paranoid, and borderline tendencies.

**Method:** In a large-scale, eight-month longitudinal study we assessed D, basic personality (the six HEXACO dimensions), and narcissistic, antisocial, paranoid, and borderline tendencies at time 1 ( $N = 2,329$ ) and the latter aversive tendencies again at time 2 ( $N = 668$ ) using different inventories.

**Results:** D predicted all instances of socially aversive psychopathology cross-sectionally and longitudinally, with a large effect size on average, beyond the six HEXACO dimensions and even beyond the very same instances (measured through a different inventory).

**Conclusions:** Bridging mainstream personality and abnormal psychology, the findings reveal strong, theory-consistent correspondence between dark traits and socially aversive psychopathology once dark traits are viewed through the lens of their common core, D.

## KEYWORDS

D factor, dark traits, HEXACO, socially aversive psychopathology

## 1 | INTRODUCTION

Ethically and socially aversive behaviors cause severe challenges for societies at many levels. In mainstream personality research, such behaviors are often attributed to “a set of socially aversive traits in the subclinical range” (Paulhus, 2014, p. 421). Among these so-called *dark traits*, there are

three particularly prominent ones—the “dark triad,” that is, Machiavellianism, narcissism, and psychopathy (Furnham, Richards, & Paulhus, 2013; Paulhus & Williams, 2002)—and a growing number of others such as amoralism (Knežević, 2003), greed (Krekels & Pandelaere, 2015), moral disengagement (Bandura, 2016; Moore, Detert, Klebe Treviño, Baker, & Mayer, 2012), sadism (O’Meara, Davies, & Hammond,

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2011), or spitefulness (Marcus, Zeigler-Hill, Mercer, & Norris, 2014), to name only a few.

In abnormal psychology, in turn, relatively enduring tendencies to engage in socially aversive behaviors are attributed to certain personality disorders or—in the more sub-clinical range—accentuations, especially narcissistic, antisocial, paranoid, and borderline tendencies. Whereas these instances of socially aversive psychopathology were traditionally viewed as qualitatively different categorical diagnoses, there is growing consensus to describe them in terms of extreme and maladaptive levels of continuous personality traits (Lynam & Widiger, 2001; Miller, Lynam, Widiger, & Leukefeld, 2001; Widiger, Lynam, Miller, & Oltmanns, 2012; Widiger & Trull, 2007).

In particular, in the field of psychopathology, stable tendencies of socially aversive behavior are ascribed to the *antagonism* trait domain (Widiger et al., 2019; Wright et al., 2012) which is simply defined as a tendency toward “behaviors that put the individual at odds with other people” in the American Psychiatric Association’s (APA) *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; APA, 2013). Conceptually the same domain is also found in suggestions for the International Classification of Diseases (ICD)-11, although termed “dissociality” therein (Tyrer, Reed, & Crawford, 2015). Across such clinical classification systems as well as the theoretically grounded Hierarchical Taxonomy of Psychopathology (HiTOP; Kotov et al., 2017), this antagonism domain is commonly described as the counterpart of (normal) basic personality dimensions as defined in models of personality structure. In particular, antagonism has been linked to low Agreeableness as per the Five-Factor model (Gore & Widiger, 2013; Widiger et al., 2019) and low Honesty-Humility as per the HEXACO model (Ashton & Lee, in press-b; Ashton, Lee, de Vries, Hendrickse, & Born, 2012; Gaughan, Miller, & Lynam, 2012; Miller, Gaughan, Maples, & Price, 2011). Correspondingly, meta-analyses have shown that low (Five-Factor) Agreeableness is a key feature of narcissistic, antisocial, paranoid, and borderline tendencies (Samuel & Widiger, 2008; Saulsman & Page, 2004). In summary, socially aversive psychopathology—of which narcissistic, antisocial, paranoid, and borderline are the prominent instances—is seen as an expression of antagonism and thus (very) low levels of (Five-Factor) Agreeableness or (HEXACO) Honesty-Humility in particular.

Although both dark traits and instances of socially aversive psychopathology are intended to account for the same classes of behavior, the degree of conceptual correspondence between the two approaches from (a) mainstream personality psychology and (b) clinical psychopathology is limited (Miller & Campbell, 2008). More specifically, only for two concepts, there is actually clear terminological and conceptual overlap: First, narcissism denotes both a dark trait and an instance of socially aversive psychopathology with very

similar meaning. Second, the dark trait psychopathy has—despite the use of different terms—considerable conceptual overlap with antisocial psychopathology. Indeed, both narcissism and psychopathy/antisocial “migrated” from clinical into mainstream personality research (Furnham et al., 2013), thus explaining their strong correspondence.

However, there are also specific dark traits that do not appear to be conceptually related to or measured as part of socially aversive psychopathology, “underscoring their largely unappreciated relevance to abnormal psychology” (Thomaes, Brummelman, Miller, & Lilienfeld, 2017, p. 835). For example, moral disengagement or spitefulness are neither explicitly represented in instances of socially aversive psychopathology (i.e., the concepts are not mentioned in the corresponding literature), nor in the definitions of the antagonism facets as per the DSM-5 (manipulativeness, deceitfulness, grandiosity, attention seeking, callousness, and hostility). Correspondingly, there is little to no content overlap in the actual items of the more traditional Structured Clinical Interview (First, Gibbon, Spitzer, Williams, & Benjamin, 1997) or the more recent Personality Inventory for DSM-5 (PID-5; Krueger, Derringer, Markon, Watson, & Skodol, 2012) with items from scales assessing moral disengagement (Moore et al., 2012) or spitefulness (Marcus et al., 2014). In other words, the way in which socially aversive psychopathology is currently thought of and measured appears to miss out on some (aspects of) dark traits, as though to imply that the latter bear no relevance for psychopathology.

Conversely, there are instances of socially aversive psychopathology for which there appears to be no corresponding dark trait or set of dark traits. This holds in particular for paranoia (Thomaes et al., 2017), a term which is not even mentioned in recent seminal reviews on dark traits (Furnham et al., 2013; Jonason, Webster, Schmitt, Li, & Crysel, 2012; Paulhus, 2014), nor is its most prominent manifestation, generalized distrust (i.e., suspiciousness in terms of the DSM-5 and PID-5 facets). This is particularly surprising given that distrust was traditionally considered a key feature of Machiavellianism (Christie & Geis, 1970). Similarly, there is only limited conceptual correspondence between dark traits and borderline (Miller et al., 2010), although the latter comprises aspects of hostility and especially reactive irritability and anger (often in response to minor irritations) and can thus also be considered antagonistic (i.e., low agreeable). Compared to the narcissistic, antisocial, and paranoid psychopathology, however, other features that do not necessarily relate to socially aversive behavior (e.g., negative affectivity) are arguably more prominent in borderline.

In any case, the apparent misfit between concepts relied on to explain the same classes of behavior in mainstream personality research versus abnormal psychology is clearly unsatisfactory, especially because “although dark traits are prevalent in nonclinical populations, they do place individuals at risk

for maladjustment, including psychopathology” (Thomaes et al., 2017, p. 836). In line with Thomaes and colleagues, we argue that—beyond originating from historically different viewpoints (personality, i.e., any number of continuous traits vs. clinical, i.e., few categories of qualitatively distinct disorders)—this lack of correspondence may also be attributable to limited theoretical integration, especially in the dark trait literature. Specifically, dark traits have long been considered as related, but ultimately independent constructs, despite substantial associations between them (for meta-analyses, see Muris, Merckelbach, Otgaar, & Meijer, 2017; O’Boyle, Forsyth, Banks, Story, & White, 2015; Vize, Lynam, Collison, & Miller, 2018) and despite evidence for “a single latent Dark Core, as compared with [...] independent constructs” (Bertl, Pietschnig, Tran, Stieger, & Voracek, 2017, p. 140). Indeed, empirical studies have often focused on the (statistically) unique aspects of dark traits which is a theoretically and methodologically problematic approach (Miller, Vize, Crowe, & Lynam, 2019; Sleep, Lynam, Hyatt, & Miller, 2017), because it actively hinders integration by ignoring whatever is common to dark traits. Finally, attempts of theoretical integration (Diebels, Leary, & Chon, 2018; Hodson et al., 2018; Jonason, Li, Webster, & Schmitt, 2009; Jones & Figueredo, 2013; Vize, Collison, Miller, & Lynam) have typically been limited to the dark triad components and thus ignored the majority of dark traits including those traits that seem ill-represented in socially aversive psychopathology (such as moral disengagement or spitefulness, see above).

Recently, however, extant theoretical efforts have been broadened and integrated to spell out the common core of *all* dark traits, that is, the general underlying tendency from which dark traits arise as specific manifestations. Based on its operationalization as the common factor of all dark trait indicators, this common core is called the *dark factor*, or simply *D* (Moshagen, Hilbig, & Zettler, 2018). Evidence shows (a) that across items from scales designed to measure 12 different dark traits there is a first factor explaining 27% of the variance (and no other factor explaining more than 3%), (b) that *D* subsumes dark traits (often close to entirely) independently of the specific dark trait indicators included to model *D*, (c) that most specific dark traits fail to predict any aversive outcomes beyond *D*, and (d) that *D* predicts the development of some dark traits better than the dark traits predict themselves, even when *D* is modeled without corresponding indicators (e.g., *D* modeled without spitefulness items is a better predictor of spitefulness four years later than spitefulness itself) (Moshagen et al., 2018; Moshagen, Zettler, & Hilbig, 2020; Zettler, Moshagen, & Hilbig).

Theoretically, *D* is defined as “the general tendency to maximize one’s individual utility—disregarding, accepting, or malevolently provoking disutility for others—, accompanied by beliefs that serve as justifications” (Moshagen et al., 2018, p. 657). Once dark traits are represented thus—as mere

flavored manifestations of an underlying tendency involving (subjectively justified) utility maximization at the cost of others—the conceptual correspondence between dark traits and (instances of) socially aversive psychopathology is actually quite striking. Indeed, every instance of socially aversive psychopathology can be directly linked to a definitional aspect of *D*: *D* is the tendency to invoke disutility for others either in pursuit of one’s own utility maximization (i.e., antisocial) or as a matter of revenge and reactive anger (i.e., borderline), and it involves beliefs that serve as justifications such as one’s own superiority and entitlement (i.e., narcissistic) or generalized distrust (i.e., paranoid). This strongly implies that there should be substantial empirical correspondence between *D* and socially aversive psychopathology, not only for those instances of socially aversive psychopathology that are conceptually represented among the dark traits (i.e., narcissism and antisocial/psychopathy), but also among those instances that are not (i.e., paranoid and borderline). This is the first key prediction we aim to test herein.

Importantly, it has been argued that *D* is not merely the counterpart of basic traits such as (Five-Factor) Agreeableness or (HEXACO) Honesty-Humility or any other basic personality dimension (Moshagen et al., 2018; Moshagen, Zettler, Horsten & Hilbig, 2020), suggesting that *D* will account for variance in socially aversive psychopathology beyond basic personality. In theory, *D* represents the commonalities of all dark and aversive traits alike, but it is distinct from the low pole of Agreeableness or Honesty-Humility (or some combination of such dimensions) in several defining features, especially the representation of sadistic and spiteful tendencies and the broad inclusion of justifying beliefs (see Moshagen et al., 2018). This implies that the common core of dark traits, *D*, and the common feature of instances of socially aversive psychopathology, antagonism, should entail shared variance beyond basic personality. Thus, a strict test requires that *D* and all instances of socially aversive psychopathology remain associated once controlling for all relevant dimensions of basic personality—specifically those known to account for most variance both in dark traits (and thus *D*) and socially aversive psychopathology (and thus antagonism).

Finally, as sketched above, *D* is conceptualized as the fluid, underlying tendency of all dark traits such that any particular aversive tendency is essentially a (flavored) manifestation of *D*. Consequently, *D* should shape all dark and aversive traits, and thus also socially aversive psychopathology even beyond measures of the same instances of socially aversive psychopathology themselves. Stated generally, manifestations of an underlying dispositional tendency ought to be shaped by this tendency. In the present context, one’s level in a specific aversive trait should be due to one’s level in *D* (the common underlying tendency of all dark and socially aversive traits) and thus, longitudinally speaking, *D* must predict such a trait beyond the trait itself (cf. Zettler et al.). For

example, one's level of paranoia should be determined not only by one's previous level of paranoia but also by one's previous level in D (which should hold even when additionally controlling for basic personality traits, see above).

Taken together, one can derive the following predictions concerning the link between D and prominent instances of socially aversive psychopathology: D is substantially positively related to all instances of socially aversive psychopathology, that is, narcissistic, antisocial, paranoid, and borderline tendencies (a), and these associations hold beyond basic personality traits (b), and beyond the specific socially aversive tendencies themselves (c). We tested these predictions by linking a short measure of D (longitudinally) to well-established measures of socially aversive psychopathology. To critically test whether D indeed predicts instances of socially aversive psychopathology beyond basic personality, we controlled for all basic personality dimensions as per the HEXACO Model of Personality (Ashton & Lee, 2007; Ashton, Lee, & De Vries, 2014; Zettler, Thielmann, Moshagen, & Hilbig, 2020). Relying on this model has the advantages that (a) it includes Honesty-Humility which has been argued to represent the common core of dark traits (Hodson et al., 2018; Vize et al.) and which is the closest proxy of D among all basic personality dimensions (latent  $r \sim .80$ , Moshagen et al., 2018), (b) it is known to account for the full Five-Factor model variance but not vice versa (Ashton & Lee, in press-a), and (c) it is superior in accounting for psychopathology as compared to the Five-Factor model (Ashton & Lee, in press-b; Ashton et al., 2012; Gaughan et al., 2012; Miller et al., 2011). In short, controlling for the HEXACO dimensions yields a particularly strict test. Finally, we controlled for essentially the same instances of socially aversive psychopathology, simply measured via another inventory. As such, we not only expected that D will, for example, longitudinally predict paranoia, but that it will do so beyond basic personality (all HEXACO dimensions) and, in addition, beyond a (different) measure of paranoia. In testing these predictions, we aim to demonstrate that the conceptual gaps between dark traits and socially aversive psychopathology can be bridged by focusing on the "aversive essence" of traits as conceptualized in D.

## 2 | METHODS

### 2.1 | Study design and participants

All data relevant to the present study were assessed at two measurement occasions,<sup>1</sup> run via a professionally managed online panel in Germany to obtain a diverse sample and adhering closely to established standards for online experimenting (Reips, 2002). Each occasion started with participants providing informed consent and demographics and ended with full debriefing. Participants received a flat fee

(determined by the panel provider) for every measurement occasion completed.

The first measurement occasion (T1) involved an initial sample of 2,430 participants, of whom 101 were excluded based on insufficient language skills ( $n = 4$ ) and response times in the personality questionnaires suggesting nonserious participation (i.e., time per item  $< 2$  s on average;  $n = 97$ ). The  $N = 2,329$  participants in the finally retained sample (52.6% female) were aged between 18 and 77 ( $M = 39.7$ ,  $SD = 13.4$ ) years, native (94.0%) or fluent (6.0%) in the study language (German), and showed diverse educational backgrounds with 13.1% holding a certificate of secondary education (German: Hauptschulabschluss), 25.9% a general certificate of secondary education (German: mittlere Reife), 30.4% a vocational diploma or university-entrance diploma (German: Fachabitur or Abitur), and 30.2% a university/college degree.

For the second measurement occasion (T2)—conducted with a time lag ranging from 235 to 253 days and thus approximately eight months—participants from T1 were re-invited with data matching achieved through anonymous random codes (and checked for inconsistencies using demographic data provided by the participants). The required sample size for T2 was set to  $N = 652$  based on an a priori power analysis, aiming to achieve high power ( $1 - \beta = .95$ ) on  $\alpha = .05$  to detect even a small  $R^2$  increase ( $f = .02$ ) when adding one predictor (D) to seven (six basic personality dimensions from the HEXACO model and one specific measure of socially aversive psychopathology). A total of 670 individuals participated at T2, of whom two were excluded based on low response times in the personality questionnaires indicating nonserious participation (see T1).<sup>2</sup> Thus, the final sample at T2 comprised  $N = 668$  participants who were comparable to the full T1 sample on all relevant measures (all Cohen's  $d < .15$ ), thus ruling out bias due to selective dropout.

### 2.2 | Measures

Materials used are provided at the Open Science Framework (OSF; <https://osf.io/jstza/>). At T1, participants first completed the (German) 60-item version of the HEXACO-PI-R (HEXACO-60, Ashton & Lee, 2009; Moshagen, Hilbig, & Zettler, 2014), using a five-point Likert-type scale, ranging from "strongly disagree" to "strongly agree." Next (using the same response scale), we measured D and the four instances of socially aversive psychopathology (narcissistic, antisocial/psychopathy, paranoid, and borderline) in random order. As a short measure of D, we relied on a subset of 22 items (see Appendix Table A1) from the original studies by Moshagen et al. (2018) which had involved 96 items from nine different dark traits (scales), assessing egoism, Machiavellianism, moral disengagement, narcissism, psychological entitlement, psychopathy, sadism, self-interest, and spitefulness. Based

on their loadings on the common factor (D) in a bifactor specification (see Supporting Information of Moshagen et al., 2018), we selected the most highly loading items (the median loading across the selected items was .53), while retaining at least one item per dark trait scale (to ensure sufficient breadth) but no more than four (to ensure that no one dark trait dominates the measurement of D). A 3-year follow-up study to Moshagen et al. (2018) with  $N = 355$  revealed a strong longitudinal association ( $r = .83$ ) between the 22-item scale and the full 96-item scale and highly comparable associations with basic personality dimensions and convergent criteria (such as moral identity, perspective taking, aggression, and self-centeredness).

As measures of socially aversive psychopathology, we relied on two inventories: At T1, the 18-item Narcissistic Admiration and Rivalry Questionnaire (NARQ, Back et al., 2013) was used to assess narcissistic tendencies with a six-point Likert-type scale ranging from “strongly disagree” to “strongly agree.” Second, to assess antisocial/psychopathy, paranoid, and borderline tendencies, we used the corresponding subscales of the German version (Engel & Groves, 2013) of the Personality Assessment Inventory (PAI, Morey, 1991), which contains 24 items per subscale to be answered on a four-point Likert-type scale ranging from “false” to “completely true.”

At T2, participants completed different measures of the four instances of socially aversive psychopathology (narcissistic, antisocial/psychopathy, paranoid, and borderline)<sup>3</sup>—again, presented in random order—namely, the German short version (Collani, 2014) of the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988) containing 17 items, a German translation of the short form of the Self-Report Psychopathy Scale III (SRP-SF; Paulhus, Neumann, & Hare, 2017) containing 28 items, and the German translation (Schmitt, Gollwitzer, Maes, & Arbach, 2005) of the Paranoia Scale (Fenigstein & Vanable, 1992) containing 20 items. All were answered on a five-point Likert-type scale ranging from “strongly disagree” to “strongly agree.” To assess borderline, we implemented a German version of the semi-structured clinical interview Borderline Personality Disorder Severity Index (Arntz et al., 2003), containing 63 items in total, 21 of which are only presented in a contingent fashion (i.e., when previous responses require further specification in follow-up questions).

### 3 | RESULTS

Descriptive statistics, internal consistencies, and zero-order correlations for all relevant variables across both measurement occasions can be found in the appendix (Table A2). The raw data and analysis scripts are available at the OSF (<https://osf.io/jstza/>), along with supplementary analyses (testing for

potential bias due to item overlap across constructs, relevant interaction effects between certain personality dimensions, and confirming all results when controlling for age and gender). Considering the full sample from the first measurement occasion, we found the typical rank-order of correlations between D and the six HEXACO dimensions, in particular Honesty-Humility ( $r = -.59$ ), followed by Agreeableness ( $r = -.33$ ), and Conscientiousness ( $r = -.16$ ), all  $p < .001$  (all other  $|r| < .10$ ). Multiple regression revealed that, taken together, the six HEXACO dimensions accounted for a substantial proportion of variance in D ( $R^2_{\text{adj}} = .41$ , see analyses on the OSF). Moreover, across the two measurement occasions, all instances of socially aversive psychopathology showed strong associations ranging from  $r = .58$  (borderline) to  $r = .68$  (narcissistic), despite the use of different inventories across time.

Supporting the first main prediction that D would account for all instances of socially aversive psychopathology (at both measurement occasions), we found medium-to-large or large correlations between D and these instances ( $.39 \leq r \leq .68$ ) with the sole exception of borderline at T2 for which only a small albeit significant correlation was observed ( $r = .13$ ,  $p < .001$ ). The sample size weighted average correlation (using Fisher  $z$  transformation; Field, 2001) between D and all instances of socially aversive psychopathology was  $r = .51$  and thereby larger than the corresponding average correlation between any one instance of socially aversive psychopathology and all the other instances ( $.32 \leq r \leq .43$ ). More specifically, none of the instances of socially aversive psychopathology was associated with all others as consistently as was D. For example, narcissism as per the NPI was mainly associated with narcissism as per the NARQ ( $r = .68$ ) and strongly with both measures of antisocial/psychopathy (mean  $r = .46$ ), but related far less strongly to the two measures of paranoia (mean  $r = .20$ ) and virtually unrelated to the two measures of borderline (mean  $r = .06$ ). Thus, once represented by D, the overlap across instances of socially aversive psychopathology was actually stronger and more consistent than their zero-order associations would suggest. The findings are thus compatible with a common-cause model for the instances of socially aversive psychopathology in which D represents the common cause. Given their lower average associations across all instances of socially aversive psychopathology, HEXACO Honesty-Humility (mean  $r = .37$ ) and Agreeableness (mean  $r = .29$ ) could not be considered superior representations of this common cause.

To test the second main prediction—that D explains unique variance beyond basic personality in all instances of socially aversive psychopathology—we conducted hierarchical multiple regressions for each instance of socially aversive psychopathology (four at T1 and four at T2) separately, predicted by all six HEXACO dimensions, D, or all together.

The corresponding results can be found in Table 1. As can be seen, D explained incremental variance beyond the six HEXACO dimensions in every instance of socially aversive psychopathology, both cross-sectionally and longitudinally with the exception<sup>4</sup> of borderline at T2. Of note, D explained an average of approximately 10% and up to 20% *additional* variance beyond the six HEXACO dimensions in the instances of socially aversive psychopathology. Moreover, descriptive comparisons of the standardized regression coefficients revealed that D was actually the strongest predictor of each instance of socially aversive psychopathology, again with the exception of borderline at T2.

Finally, to test the third main prediction—that D longitudinally explains unique variance in all instances of socially aversive psychopathology once controlling for basic personality and the very same instances of socially aversive psychopathology—we extended the above hierarchical multiple regressions. For each instance of socially aversive psychopathology measured at T2, a regression was run, adding all six HEXACO factors and the same instance of socially aversive psychopathology (as measured at T1) in a first step and then, in a second step, D. D longitudinally explained incremental variance in every instance of socially aversive psychopathology (accounting for up to 6% of additional variance, all  $p < .01$ ), except in borderline ( $\Delta R^2 = .001, p = .38$ ). Details for each regression can be found in the analysis file on the OSF.

## 4 | DISCUSSION

Dark traits as studied in mainstream personality research and socially aversive psychopathology as studied in abnormal psychology yield only limited conceptual (and operational) overlap (Miller & Campbell, 2008; Thomaes et al., 2017),

despite the common aim of spelling out the dispositional basis of the same socially and ethically aversive behaviors. We herein argued that much closer correspondence between these approaches can be expected once considering the common core of all dark traits—that is, the Dark Factor of Personality, D (Moshagen et al., 2018), which entails clear conceptual links to prominent instances of socially aversive psychopathology: D involves invoking disutility for others as a consequence of one's own utility maximization (i.e., antisocial) or for the sake of revenge (i.e., borderline), accompanied by justifying beliefs such as one's own superiority and entitlement (i.e., narcissistic) or generalized distrust (i.e., paranoid).

In an eight-month longitudinal study, we found that D was substantially related to all instances of socially aversive psychopathology, that is, narcissistic, antisocial/psychopathy, paranoid, and—albeit less so—borderline. D also predicted noteworthy incremental variance in all instances of socially aversive psychopathology (except for one measurement of borderline) beyond the six dimensions of the HEXACO model of personality (Ashton & Lee, 2007; Ashton et al., 2014), typically turning out to be the strongest predictor descriptively. Finally, again with the exception of borderline, D continued to account for incremental variance in all instances of socially aversive psychopathology longitudinally, even when additionally controlling for these instances themselves (as measured through a different inventory).

As such, the zero-order associations clearly confirm the to-be-expected correspondence between D and socially aversive psychopathology for those instances with clear conceptual overlap: Narcissistic and antisocial/psychopathy, both of which were essentially imported from abnormal into mainstream personality research (Furnham et al., 2013). More importantly, results confirm similarly strong correspondence between D and paranoid psychopathology—a link that has

**TABLE 1** Hierarchical multiple regression results

	$\Delta R^2$	$\Delta R^2$	$R^2$	Standardized regression coefficients						
	D>HEXACO	HEXACO>D		D	HH	Em	eX	AG	CO	OP
T1 narcissistic	<b>.20</b>	<b>.09</b>	<b>.55</b>	<b>.58</b>	<b>-.19</b>	.01	<b>.19</b>	<b>-.06</b>	.02	<b>.12</b>
T1 antisocial/psychopathy	<b>.07</b>	<b>.13</b>	<b>.41</b>	<b>.34</b>	<b>-.22</b>	<b>-.21</b>	<b>.06</b>	<b>-.05</b>	<b>-.24</b>	<b>.09</b>
T1 paranoid	<b>.15</b>	<b>.13</b>	<b>.39</b>	<b>.51</b>	<b>.09</b>	<b>.06</b>	<b>-.31</b>	<b>-.13</b>	.04	.04
T1 borderline	<b>.04</b>	<b>.31</b>	<b>.47</b>	<b>.27</b>	<b>-.02</b>	<b>.26</b>	<b>-.26</b>	<b>-.25</b>	<b>-.19</b>	<b>.09</b>
T2 narcissistic	<b>.11</b>	<b>.20</b>	<b>.45</b>	<b>.43</b>	<b>-.21</b>	<b>-.10</b>	<b>.28</b>	.00	.06	<b>.19</b>
T2 antisocial/psychopathy	<b>.12</b>	<b>.05</b>	<b>.38</b>	<b>.45</b>	<b>-.12</b>	<b>-.16</b>	.01	<b>-.08</b>	<b>-.11</b>	<b>.08</b>
T2 paranoid	<b>.08</b>	<b>.11</b>	<b>.28</b>	<b>.36</b>	.06	.06	<b>-.28</b>	<b>-.15</b>	.01	<b>.09</b>
T2 borderline	.003	<b>.23</b>	<b>.25</b>	.07	.00	<b>.21</b>	<b>-.31</b>	<b>-.13</b>	<b>-.05</b>	<b>.19</b>

Note:  $\Delta R^2_{D>HEXACO}$  refers to the incremental variance explained by D beyond all six HEXACO factors. Vice versa,  $\Delta R^2_{HEXACO>D}$  refers to the incremental variance explained by the six HEXACO factors beyond D.  $R^2$  and the standardized regression coefficients refer to Step 2 of each regression including the six HEXACO dimensions (HH, Honesty-Humility, Em, Emotionality; eX, Extraversion; AG, Agreeableness; CO, Conscientiousness; OP, Openness) and D. Effects displayed in boldface are significant at  $p < .01$ .  $N = 2,329$  for T1;  $N = 668$  for T2.

received little to no attention to date. Indeed, prime aspects of paranoia such as suspiciousness and/or generalized distrust are concepts largely absent in the recent dark trait literature (for an exception see Dahling, Whitaker, & Levy, 2009), even though early work had already pointed to the key relevance of distrust for socially aversive behaviors (Christie & Geis, 1970). In any case, the finding is not only in line with but actually strongly implied by the theory of D, because generalized distrust—believing that others are ruthless utility maximizers—is a crucial justification for one's own utility maximization (Bicchieri, 2005; López-Pérez, 2012; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2018) which, in turn, is a defining feature of D.

Similarly, we are the first to demonstrate some—though notably less—correspondence between D and borderline tendencies. The pattern is plausible given that borderline includes socially aversive aspects such as vengefulness and reactive anger. At the same time, the notably smaller effect sizes are also entirely plausible, since borderline comprises primary features such as affective instability and disinhibition (Lynam & Widiger, 2001; Miller et al., 2010; Mullins-Sweatt & Widiger, 2006), neither of which are theoretically or operationally relevant for D (Moshagen et al., 2020). In other words, borderline is simply less aversive<sup>5</sup> than the other instances studied herein and thus less strongly associated with D which subsumes those and only those aspects of dark traits that render them socially and ethically aversive. By implication, one would expect that other instances of psychopathology—such as avoidant or dependent tendencies—that are not (primarily) socially aversive cannot be accounted for by D.

Importantly, the zero-order associations also reveal that D is broader than any specific dark trait or instance of socially aversive psychopathology: D predicted narcissistic, antisocial/psychopathy, paranoid, and (more weakly) borderline tendencies consistently, whereas none of these instances was associated with the respective other three as consistently and strongly. In other words, all instances of socially aversive psychopathology were—on average—more strongly related to D than to all of the remaining instances of socially aversive psychopathology. Thus, links across instances of socially aversive psychopathology were less consistent. For example, narcissistic mainly predicted itself over time (measured via a different inventory) as well as antisocial/psychopathy, but it predicted both paranoid and borderline notably less so. Overall, this pattern of results is in line with the claim that D represents the general underlying tendency from which all dark or socially aversive traits arise as more specific, flavored manifestations which, in turn, may comprise further features beyond D.

The latter conclusion is still more strongly supported by the finding that D predicted all instances of socially aversive psychopathology (except for borderline) over and

above each instance predicted itself. For example, D longitudinally explained variance in narcissistic (as measured with the NPI; Raskin & Terry, 1988) beyond narcissistic (as measured with the NARQ; Back et al., 2013). As such, our results also show that D conforms to the principle of “indifference of the indicator” (Spearman, 1927), not requiring a specific set of indicator variables, as long as a sufficient number of indicator variables related to different aversive tendencies are included (Moshagen et al., 2018, 2020).

In addition, the incremental prediction of socially aversive psychopathology by D (beyond the same instances of socially aversive psychopathology) also rules out that the substantial variance accounted for by D is merely due to extreme wording of items. Specifically, one may contend that extreme item wording contributes to the ability of D to account for socially aversive psychopathology beyond basic personality (HEXACO) dimensions which tend to be assessed via less extremely worded items. However, since socially aversive psychopathology is measured via similarly extremely worded items across measurement occasions, the incremental variance accounted for by D cannot be attributed to an artifact of item wording.

Finally, the finding that D accounts for substantial variance in dark traits and socially aversive psychopathology beyond the full range of basic personality traits (i.e., HEXACO) corroborates accumulating evidence (Moshagen et al., 2020) that—despite substantial associations—D is not simply the low pole of any one basic personality dimension such as Honesty-Humility, Agreeableness, Conscientiousness, or some additive combination of these (indeed our supplementary analyses also rule out the interaction representing “disconstraint” as a combination of Agreeableness and Conscientiousness, cf. Markon, Krueger, & Watson, 2005). Moreover, it appears that there is more (socially aversive variance) to socially aversive psychopathology than simply antagonism defined as the low pole of Agreeableness—as implied by the DSM-5 or the HiTOP (Kotov et al., 2017). That is, whereas it is indeed “the *overlap* between [dark trait] constructs, which appears to be related to interpersonal antagonism” (Vize, Collison, Miller, & Lynam, 2018, p. 47, emphasis added), it may be an oversimplification to consider the latter merely the counterpart of Agreeableness or Honesty-Humility. As a particularly striking example, consider the prediction of paranoid (T1) for which adding a 22-item measure of D to the 60-item HEXACO-PI-R (covering six broad dimensions) almost doubled the proportion of explained variance (from  $R^2 = .24$  to  $R^2 = .39$ ). Such findings are difficult to reconcile with the notion that the main common feature of dark traits and/or socially aversive psychopathology is merely (very) low Agreeableness or Honesty-Humility. The latter may well adequately represent the common core

of the dark triad (Vize et al.), but it cannot fully account for the entire breadth of all dark traits and instances of socially aversive psychopathology.

In summary, we show that dark traits and socially aversive psychopathology can be bridged conceptually and, as a consequence, empirically by considering the common core of dark traits as defined by D. Prior literature has typically fostered an impression of limited conceptual convergence that is theoretically unsatisfactory (Miller & Campbell, 2008; Miller et al., 2019; Thomaes et al., 2017). In contrast to this impression, dark traits and socially aversive psychopathology can be shown to be substantially related once their considerable overlap is represented by D. Even though specific dark traits like moral disengagement or spitefulness are not explicitly represented in socially aversive psychopathology (conceptually or operationally), it would thus be premature to conclude that they actually play no clear role. Once these and other dark traits are represented by their common core (operationalized herein with several items originally stemming from scales measuring, among other dark traits, moral disengagement or spitefulness), associations with socially aversive psychopathology are quite notable. Conversely, although neither paranoid nor borderline tendencies are systematically considered in the recent dark trait literature, these instances of socially aversive psychopathology are clearly linked to the common core of dark traits. As such, the traditional approach of considering an undefined (and growing) number of more or less specific dark traits with unknown distinctiveness (Miller et al., 2019)—while ignoring their common core—has clearly obscured the bigger picture that actually conceptually reconciles mainstream personality research with abnormal psychology.

## 5 | CONFLICT INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## ENDNOTES

- <sup>1</sup> The full project involved tasks not pertinent to the present hypotheses which were assessed at completely separate measurement occasions. Note that no other psychopathology or personality scales were assessed and no other analyses relevant to the present hypotheses conducted.
- <sup>2</sup> This exclusion criterion was fixed a priori. We did not consider the Borderline Personality Disorder Severity Index (see details below) in the response times because the presentation of several items of this questionnaire is contingent on previous responses, thus making it impossible to define a fixed minimum time for completion of the questionnaire.
- <sup>3</sup> Note that, at T2, we also re-assessed the HEXACO-60 and, more importantly, the 22-item scale for D, simply to be able to assess re-test reliabilities which ranged from  $r_{tt} = .76$  for D to  $r_{tt} = .85$  for HEXACO Openness to Experience.
- <sup>4</sup> Specifically, the effect was marginally significant ( $p < .05$ ) in a one-sided test (that can arguably be applied here given the directed hypothesis) and dropped to  $p = .02$  when controlling for age and gender (see supplementary analyses); however, in light of the substantial statistical power and the very small effect size, it seems most adequate to treat the result for borderline cautiously.
- <sup>5</sup> Indeed, borderline is practically unrelated to actively exploitative behavior and, correspondingly, Honesty-Humility (Hepp et al., 2014; Thielmann, Hilbig, & Niedtfield, 2014).

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## APPENDIX

TABLE A1 Items used to measure D

No	Item	Original dark trait (scale)
1	Things should go my way	Psychological entitlement
2	People who mess with me always regret it	Psychopathy
3	Part of me enjoys seeing the people I do not like fail even if their failure hurts me in some way	Spitefulness
4	Some people have to be treated roughly because they lack feelings that can be hurt	Moral disengagement
5	I feel entitled to more of everything	Psychological entitlement
6	It's wise to keep track of information that you can use against people later	Machiavellianism
7	Having a lot of money is not one of my goals in life <sup>a</sup>	Self-interest
8	I have humiliated others to keep them in line	Sadism
9	It's true that I can be mean to others	Psychopathy
10	Most people deserve respect <sup>a</sup>	Machiavellianism
11	I have hurt people because I could	Sadism
12	Considering the ways people grossly misrepresent themselves, it's hardly a sin to inflate your own credentials a bit	Moral disengagement
13	I would be willing to take a punch if it meant that someone I did not like would receive two punches	Spitefulness
14	Never tell anyone the real reason you did something unless it is useful to do so	Egoism
15	I do not feel that I'm any more deserving than others <sup>a</sup>	Psychological entitlement
16	I'll say anything to get what I want	Psychopathy
17	Whatever it takes, you must get the important people on your side	Machiavellianism
18	I know that I am special because everyone keeps telling me so	Narcissism
19	It is hard to get ahead without cutting corners here and there	Egoism
20	There have been times when I was willing to suffer some small harm so that I could punish someone else who deserved it	Spitefulness
21	You should wait for the right time to get back at people	Machiavellianism
22	I would enjoy hurting someone physically, sexually, or emotionally	Sadism

<sup>a</sup>Reverse coded.

**TABLE A 2** Means, standard deviations (in parentheses), internal consistencies (Cronbach's alpha, in italics on the diagonal), and zero-order correlations between all focal variables

Variable	Range	M (SD)	Correlations																		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15				
1. D	1-5	2.21 (0.56)	.89																		
2. HH	1-5	3.57 (0.61)	-.59***	.74																	
3. Em	1-5	3.12 (0.59)	-.09***	-.05*	.77																
4. eX	1-5	3.30 (0.60)	-.09***	.06**	-.26***	.79															
5. AG	1-5	3.17 (0.50)	-.33***	.24***	-.12***	.13***	.70														
6. CO	1-5	3.64 (0.51)	-.16***	.17***	-.04	.26***	.01	.74													
7. OP	1-5	3.27 (0.67)	-.08***	.04*	-.01	.22***	-.00	.15***	.78												
8. T1 narcissistic	1-6	2.56 (0.74)	.68***	-.53***	-.08***	.14***	-.28***	-.04	.11***	.89											
9. T1 antisocial/psychopathy	1-4	1.80 (0.37)	.53***	-.46***	-.23***	.02	-.19***	-.29***	.03	.42***	.80										
10. T1 paranoid	1-4	2.08 (0.44)	.51***	-.25***	.10***	-.36***	-.32***	-.10***	-.05***	.27***	.30***	.89									
11. T1 borderline	1-4	2.11 (0.43)	.39***	-.30***	.34***	-.41***	-.41***	-.30***	-.02	.21***	.38***	.60***	.84								
12. T2 narcissistic	1-5	2.29 (0.70)	.50***	-.39***	-.20***	.31***	-.19***	.06	.22***	.68***	.42***	.13***	.07	.91							
13. T2 antisocial/psychopathy	1-5	1.59 (0.45)	.57***	-.41***	-.17***	-.03	-.28***	-.20***	.03	.42***	.61***	.32***	.32***	.50***	.90						
14. T2 paranoid	1-5	2.19 (0.71)	.40***	-.22***	.12***	-.32***	-.32***	-.12***	.01	.26***	.27***	.63***	.54***	.26***	.47***	.92					
15. T2 borderline	1-7	1.75 (0.76)	.13***	-.13***	.31***	-.37***	-.23***	-.14***	.10*	.08*	.16***	.36***	.58***	.04	.23***	.46***	.93				

Note: N = 2,329 for all correlations among T1 variables (i.e., variables 1-11); N = 668 for all correlations involving T2 variables (i.e., variables 12-15).

\*\*\*p < .001; \*\*p < .01; \*p < .05.