Research Article

The Dispositional Essence of Proactive Social Preferences: The Dark Core of Personality vis-à-vis 58 Traits

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Abstract

Individuals differ in how they weigh their own utility versus others'. This tendency codefines the dark factor of personality (D), which is conceptualized as the underlying disposition from which all socially and ethically aversive (dark) traits arise as specific, flavored manifestations. We scrutinize this unique theoretical notion by testing, for a broad set of 58 different traits and related constructs, whether any predict how individuals weigh their own versus others' utility in proactive allocation decisions (i.e., social value orientations) beyond D. These traits and constructs range from broad dimensions (e.g., agreeableness), to aversive traits (e.g., sadism) and beliefs (e.g., normlessness), to prosocial tendencies (e.g., compassion). In a large-scale longitudinal study involving the assessment of consequential choices (median $N = 2,270$; a heterogeneous adult community sample from Germany), results from several hundred latent model comparisons revealed that no meaningful incremental variance was explained beyond D. Thus, D alone is sufficient to represent the social preferences inherent in socially and ethically aversive personality traits.

Keywords

personality, social preferences, social value orientation, dark traits, D factor, open data, open materials

Socially aversive and unethical behaviors—from everyday individual antisocial or illegal activities to large-scale cases of exploitation, fraud, or worse—pose severe threats on various levels. In an effort to explain corresponding behaviors of individuals, personality psychology has long focused on aversive (sometimes called "dark") traits (Furnham et al., 2013; Marcus & Zeigler-Hill, 2015; Paulhus & Williams, 2002)—that is, relatively enduring tendencies of affect, thought, and behavior, such as greed (Krekels & Pandelaere, 2015), Machiavellianism (Christie & Geis, 1970), or sadism (O'Meara et al., 2011).

Many aversive traits show considerable conceptual and empirical overlap, and there is strong evidence for a common denominator among them (Bertl et al., 2017; McLarnon & Tarraf, 2017; Muris et al., 2017; O'Boyle et al., 2015; Schermer & Jones, 2020; Schreiber &

Marcus, 2020; Vize et al., 2018; Watts et al., 2017). Indeed, this is unsurprising given that all these traits are intended to account for some forms of aversive behavior. Correspondingly, their common core, the so-called *dark factor of personality* (D), has been defined as "the 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). In line with this definition, D predicts diverse behaviors that involve utility maximization at others' expense (Bader et al., in press; Moshagen et al., 2018; Moshagen, Zettler,

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Horsten, & Hilbig, 2020) and beliefs that can serve to justify such behaviors (Hilbig et al., in press; Horsten et al., 2021; Moshagen, Zettler, & Hilbig, 2020).

Importantly, D is theoretically conceptualized as the (fluid) underlying disposition from which all aversive traits arise as specific, flavored manifestations (Moshagen et al., 2018; Moshagen, Zettler, & Hilbig, 2020; Zettler et al., 2021). Thus, much as the *g* factor of intelligence captures the general-mental-ability component of any ability-related task, D is assumed to represent what makes any aversive trait aversive. In turn, whereas aversive traits by their very nature entail features of the general disposition of D (i.e., subjectively justified utility maximization at others' expense), the traits may differ in (a) how prominently a particular defining feature of D is represented in a trait and (b) which nonaversive features that lie outside the scope of D a trait may additionally entail (if any). For example, the defining feature of D that individuals malevolently provoke disutility on others is particularly prominent in sadism, whereas the defining feature of D that individuals hold justifying beliefs is particularly prominent in narcissism. Moreover, narcissism may involve the unique and per se nonaversive aspect of vulnerability (Crowe et al., 2019; Starlinger et al., 2022), which lies outside the scope of D.

Consequently, the crucial theoretical notion prescribes that individuals' general tendency to engage in utility maximization at others' expense is essentially determined by D and not by whatever aspects a trait may encompass beyond D. Stated simply, to the extent that any aversive trait accounts for how much individuals weigh their own utility over others', it does so because of D. Arguably, this is a bold theoretical stance and thereby a clear advantage, as it sets a high empirical hurdle for the theory to overcome (Meehl, 1967; Platt, 1964). Moreover, this claim is unique to the theory of D in that it is not shared by any other constructs previously suggested as representations of the commonalties of aversive traits—for example, low levels of Big Five Agreeableness (e.g., Vize et al., 2021) or HEXACO Honesty-Humility (Hodson et al., 2018).

Here, our overall goal is to test the deductively derived prediction that aversive traits do not account meaningfully for how individuals weigh their own versus others' utility above and beyond D. To this end, one must rely on a to-be-predicted criterion that reflects, as directly as possible, this relative weighting of own versus others' utility. Fortunately, this very relation is directly reflected in the assessment of social value orientations, or SVOs, representing the proactive aspects of social preferences (Fehr & Klaus, 1999; Messick & McClintock, 1968; Murphy & Ackermann, 2014; Van Lange, 1999; Van Lange et al., 1997). Specifically, to measure these preferences in a directly observable and

Statement of Relevance

People differ in their tendency to engage in socially and ethically aversive behaviors such as aggression, cheating, crime, manipulation, violence, and many more. In part, these are thought to be driven by various aversive ("dark") traits such as psychopathy, narcissism, greed, or spitefulness. However, despite some nuanced differences, all these traits can be understood as manifestations of a single, underlying disposition: the dark factor of personality (D). The present work tests this claim by showing that none of the 58 different traits and dispositional beliefs we considered meaningfully add to the explanation of the extent to which individuals place their own gains above those of other people. In conclusion, D represents the shared core across a plethora of aversive personality traits.

consequential manner (so as to represent actual behavior; Baumeister et al., 2007; Murnighan & Wang, 2016; Thielmann et al., 2021), individuals are repeatedly asked to unilaterally distribute a valued resource (typically money) between themselves and another anonymous individual. The decisions are structurally designed to produce a single continuous measure representing the relative weights assigned to own versus others' utilities (Balliet et al., 2009; Fiedler et al., 2013; Murphy et al., 2011). This relative weight will thus serve as the to-be-predicted criterion for the present study, operationalized by the well-established Social Value Orientation (SVO) Slider Measure (Murphy et al., 2011) that has previously been linked to D (Horsten et al., 2021; Moshagen, Zettler, & Hilbig, 2020).

Importantly, the broader or more comprehensive the set of possible aversive traits considered, the higher the probability of falsifying the to-be-tested prediction that aversive traits account for own versus others' utility entirely due to D. Thus, a strict test ought to encompass any potentially aversive trait, that is, any stable tendency that conceptually relates to how individuals weigh their own versus others' utility. Therefore, positively connoted, prosocial traits—such as Honesty-Humility (Ashton et al., 2014) or compassion (Hwang et al., 2008)—are also relevant, given that their low pole may also imply utility maximization at others' expense. Moreover, one may consider stable attitudes and beliefs, both prosocial and aversive in naming—for example, moral idealism (Forsyth, 1980) or social dominance orientation (SDO; Sidanius & Pratto, 1999). In fact, because any stable tendency conceptually overlapping with how individuals weigh their own versus others' utility could have an aversive component, the above

prediction is tested most strictly if practically all such tendencies are put to the test.

As detailed below, we considered 58 candidate traits (for simplicity were herein use the term for all contructs considered, including stable beliefs). Although perfect comprehensiveness necessarily remains an elusive goal, this is—to best of our knowledge—the most comprehensive set of potentially aversive traits ever studied in combination to scrutinize the prediction that aversive traits do not meaningfully predict how individuals weigh their own versus others' utility beyond D.

Method

Data were collected in the context of the Prosocial Personality Project (PPP), a large-scale longitudinal project assessing various traits (and similar constructs; see below) conceptually related to prosocial versus aversive behavior. Traits were selected on the basis of (a) a recent meta-analysis on the link between 51 personality traits and prosocial behavior (Thielmann et al., 2020) and (b) a thorough literature search to identify further potentially relevant traits and constructs linked to prosociality, very broadly defined. This resulted in the inclusion of a total of 73 traits in the PPP, which were assessed at different measurement occasions and which provided the basis for the current investigation. Moreover, the PPP included the SVO Slider measure (described below) and thus a consequential measure of the relative weight individuals assign to own versus others' utility. A detailed documentation of the PPP—including information on all constructs assessed per measurement occasion, documentation of publications based on the PPP, and information on sample compositions, data quality checks, and a priori defined exclusion criteria—is available on the Open Science Framework (OSF; https://osf.io/m2abp/). The data used here stem from seven different measurement occasions of the PPP (see Table 1). All measurement occasions involved voluntary participation based on fully informed consent. Studies followed protocols and procedures preapproved by the local institutional review board, and there was no deception of participants (Hilbig et al., 2022).

Data for the PPP were collected online via a professional panel provider in Germany, and this allowed us to recruit a large and heterogenous sample in terms of age, gender, profession, income, and educational background. The first measurement occasion (T1) was completed by 4,585 participants (2,356 female, 2223 male, 6 diverse) covering a broad age range from 18 to 78 years (M = 40.2 years, SD = 13.0). T1 participants were then reinvited to take part in the subsequent measurement occasions.

The SVO Slider

The SVO Slider (Murphy et al., 2011) is a well-established paradigm to assess social value orientations, providing a consequential measure of how individuals weigh their own relative to others' utility. It was included at T5 of the PPP and completed by 2,707 participants (1,284 female; aged 18–96, M = 43.5 years, SD = 12.5).[1] In this paradigm, participants make six independent decisions, allocating outcomes (i.e., points that are worth money) to themselves and an unknown, randomly determined other individual. The six items (displayed in Fig. 1) are designed to allow for the exact identification of any combination of decision weights assigned to own versus others' outcomes and, thus, utility. In particular, individuals consistently maximizing joint outcomes (prosocial type) must have assigned positive weight (1) to their own and others' outcomes; individuals consistently maximizing own outcomes while disregarding others' (individualistic type) must have assigned positive weight (1) to their own but zero weight (0) to others' outcomes; and an individual consistently maximizing the difference between own and others' outcomes (competitive type) must have assigned positive weight (1) to their own but negative weight (−1) to others' outcomes (Murphy & Ackermann, 2014). All other combinations of weights are theoretically also possible—for example, zero weight (0) to own outcomes and positive weight to others' outcomes (1), that is, pure altruism—but these make up fewer than 3% of all cases empirically (Murphy et al., 2011).

We explained to participants that the task would incur a bonus payment (€0.20 per 10 points ultimately earned). Participants were informed that half of them would be randomly assigned to each possible role (sender or receiver) and that exactly one of the six decisions was going to be drawn at random to determine their payment. Participants earned a bonus payment between €0.30 and €2.00 (M = €1.55, SD = €0.30) paid out separately and privately by the panel provider, thus preserving full anonymity among participants and between participants and researchers. Items were presented to participants one at a time in random order.

In line with common procedures and as recommended (Murphy et al., 2011), participants' decisions were combined into a single continuous index of the relation between own versus others' outcomes, the so-called SVO angle, by

$$\text{SVO}° = \arctan\left(\frac{(\bar{A}_o - 50)}{(\bar{A}_s - 50)}\right), \tag{1}$$

where $\bar{A}_o$ is the mean allocation for the other and $\bar{A}_s$ is the mean allocation for oneself across the six decisions,

Item 1	self	85	85	85	85	85	85	85	85	85
		◯	◯	◯	◯	◯	◯	◯	◯	⊗
	other	85	76	68	59	50	41	33	24	15
Item 2	self	85	87	89	91	93	94	96	98	100
		⊗	◯	◯	◯	◯	◯	◯	◯	◯
	other	15	19	24	28	33	37	41	46	50
Item 3	self	50	54	59	63	68	72	76	81	85
		◯	◯	◯	◯	◯	◯	◯	◯	⊗
	other	100	98	96	94	93	91	89	87	85
Item 4	self	50	54	59	63	68	72	76	81	85
		◯	◯	◯	◯	◯	◯	◯	◯	⊗
	other	100	89	79	68	58	47	36	26	15
Item 5	self	100	94	88	81	75	69	63	56	50
		⊗	◯	◯	◯	◯	◯	◯	◯	◯
	other	50	56	63	69	75	81	88	94	100
Item 6	self	100	98	96	94	93	91	89	87	85
		⊗	◯	◯	◯	◯	◯	◯	◯	◯
	other	50	54	59	63	68	72	76	81	85

Fig. 1. Items of the SVO Slider measure. Crossmarks indicate the choices of prototypical competitors—that is, assigning positive weight (1) to their own outcomes, but negative weight (−1) to others' outcomes. SVO = social value orientation.

with greater values indicating more prosocial weights (i.e., others' outcomes receive a nonzero positive weight) and smaller values indicating individualistic or even competitive weights (i.e., others' outcomes receive zero or negative weight).

D and Candidate Traits

At T1 of the PPP (and thus with the largest temporal distance from the SVO Slider, namely 110 days on average), D was measured via the German version (Bader et al., 2022) of the item set identified by Moshagen, Zettler, & Hilbig (2020), involving 70 items in total (35 reverse keyed). Example items included "I'll say anything to get what I want" or "I cannot imagine how being mean to others could ever be exciting" (reverse keyed).

To arrive at a comprehensive and suitable set of candidate traits for the present investigation (i.e., to test for their ability to predict the relative weights individuals assign to their own versus others' utility above and beyond D), it was necessary to identify and select

relevant candidate traits from the PPP. To this end, all traits measured in the PPP by the end of 2020 were scrutinized in terms of their conceptual overlap with how individuals weigh their own versus others' utility (as operationalized in the SVO Slider), with a view to both their definition and their item content. To avoid biases, we sought corresponding ratings from (a) two of the present authors who neither had access to the data from the PPP nor had been involved in the selection of traits for the PPP and (b) two entirely independent experts studying social value orientations. All raters independently judged each trait for its conceptual overlap with the criterion (i.e., the SVO angle), assigning it either (a) clear overlap, (b) potential overlap, or (c) clearly no overlap. On the basis of these ratings, we excluded all traits that were judged by at least three of the four raters to involve no overlap. This led to exclusion of 15 traits[2] and thus 58 were retained. Table 1 provides an overview of all 58 traits, along with definitions, questionnaires and example items, reliabilities (as estimated in the present data; see the statistical analysis section below), and measurement occasion (i.e., when each included in the PPP).

Table 1. Candidate Traits Along With Their Definitions, Operationalizations, and Measurement Occasion, and Whether They Were Also Assigned to the Strict Set of Traits Involving Unequivocal Conceptual Overlap With the Criterion

Construct	Definition	Questionnaire	Number of items (ω)	Example item	Measurement occasion	Strict set
Basic/broad traits						
Antagonism	Behaviors that put the individual at odds with other people, including an exaggerated sense of self-importance and a concomitant expectation of special treatment, as well as a callous antipathy toward others, encompassing both unawareness of others' needs and feelings, and a readiness to use others in the service of self-enhancement (American Psychiatric Association, 2013)	PID-5 (Maples et al., 2015)	20 (.90)	I'll stretch the truth if it's to my advantage.	T2	Yes
Big Five Agreeableness	[Individual] differences in the motivation to cooperate (vs. acting selfishly) in resource conflicts (Denissen & Penke, 2008); motivation to maintain positive relations with others (Graziano & Tobin, 2009)	NEO Five Factor Inventory (Costa & McCrae, 1992); Big Five Aspects Scales (DeYoung et al., 2007); Big Five Inventory–2 (Soto & John, 2017); IPIP-50 (Goldberg, 1992)	52 (.95)	I am someone who takes advantage of others.	T1	Yes
HEXACO Agreeableness	The tendency to be forgiving and tolerant of others, in the sense of cooperating with others even when one might be suffering exploitation by them (Ashton & Lee, 2007)	HEXACO-60 (Ashton & Lee, 2009)	10 (.75)	People think of me as someone who has a quick temper.	T1	No
HEXACO Honesty-Humility	The tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation (Ashton & Lee, 2007)	HEXACO-60 (Ashton & Lee, 2009)	10 (.76)	I think that I am entitled to more respect than the average person is.	T1	Yes
Detachment	Avoidance of socioemotional experience, including both withdrawal from interpersonal interactions, ranging from casual daily interactions to friendships to intimate relationships, as well as restricted affective experience and expression, particularly limited hedonic capacity (APA, 2013)	PID-5 (Maples et al., 2015)	20 (.91)	I don't like spending time with others.	T2	No

(continued)

Table 1. (continued)

Construct	Definition	Questionnaire	Number of items (ω)	Example item	Measurement occasion	Strict set
Disinhibition	Orientation toward immediate gratification, leading to impulsive behavior driven by current thoughts, feelings, and external stimuli, without regard for past learning or consideration of future consequences (APA, 2013)	PID-5 (Maples et al., 2015)	20 (.85)	I make promises that I don't really intend to keep.	T2	No
Stable beliefs						
Belief in a just world	[Individuals' tendency] to believe that they live in a world where people generally get what they deserve (Lerner & Miller, 1978)	Global & Personal Belief in a Just World Scale (Dalbert, 1999)	13 (.90)	I think basically the world is a just place.	T5	No
Beliefs in reciprocity	The view that both forms of [positive and negative] reciprocity are generally effective and widely used (Perugini et al., 2003)	Personal Norm of Reciprocity Scale (Perugini et al., 2003)	9 (.68)	To help somebody is the best policy to be certain that he or she will help you in the future.	T5	Yes
Competitive jungle world view	The belief that the social world is a competitive jungle characterized by a ruthless, amoral struggle for resources (Duckitt et al., 2002)	Two World View scale, short form (Sibley & Duckitt, 2009)	6 (.77)	It's a dog-eat-dog world where you have to be ruthless at times.	T5	Yes
Dangerous world view	The belief that the social world is a dangerous and threatening place in which good, decent people's values and way of life are threatened by bad people (Duckitt et al., 2002)	Two World View scale, short form (Sibley & Duckitt, 2009)	6 (.85)	There are many dangerous people in our society who will attack someone out of pure meanness, for no reason at all.	T5	No
Moral relativism	Advocates individualistic analysis of each act in each situation . . . Appraisals based on personal values and perspective rather than universal moral principles (Forsyth, 1980)	Ethics Position Questionnaire (Forsyth, 1980)	6 (.82)	Moral standards should be seen as being individualistic; what one person considers to be moral may be judged to be immoral by another person.	T5	No

(continued)

Table 1. *(continued)*

Construct	Definition	Questionnaire	Number of items (ω)	Example item	Measurement occasion	Strict set
Normlessness	Expectancy that socially unapproved behaviors are required to achieve given goals (Seeman, 1959)	Normlessness Scale (Kohn & Schooler, 1983)	4 (.65)	If something works, it doesn't matter whether it is right or wrong.	T5	Yes
Social dominance orientation	A general attitudinal orientation toward intergroup relations . . . [such that] one desires that one's in-group dominate and be superior to out-groups (Pratto et al., 1994)	SDO7 Scale (Ho et al., 2015)	8 (.83)	An ideal society requires some groups to be on top and others to be on the bottom.	T3	No
Sensitivity to befallen injustice	[Tendency to] look at social situations more often from a social-comparison point of view and therefore discover more instances of injustice (Schmitt et al., 1995)	Sensitivity to Befallen Injustice scale (Schmitt et al., 1995)	18 (.95)	I am taken advantage of by others.	T5	No
Trait cynicism	A general attitude of contempt or skepticism about human beings and their values . . . [belief] that everyone has a price; that ideals are easily shown up to be empty when they conflict with self-interest (Vice, 2011)	Cynicism Scale (Chowdhury & Fernando, 2013)	5 (.83)	Most people would tell a lie if they could gain by it.	T5	No
Trust beliefs	[The tendency to expect] goodwill and benign intent (Yamagishi & Yamagishi, 1994)	General Trust Scale (Yamagishi & Yamagishi, 1994)	6 (.91)	Most people are basically good and kind.	T5	No
Ultimate-justice beliefs	[Belief in] the promise of higher justice—perhaps in another world or within a larger time frame (Maes & Schmitt, 1999)	Ultimate justice beliefs scale (Schmitt et al., 1995)	6 (.93)	Someday, everyone has to make amends for the harm they have done.	T5	No
Aversive (dark) traits						
Amoralism-crudelia	Manifested by sadistic, brutal and destructive behaviors (Gvozden et al., 2015)	AMR40 (Knežević, 2003)	13 (.88)	Doing good deeds brings joy to the heart.	Follow-up 2020-05b	Yes
Amoralism-frustralia	Manifested by resentment and a dark picture of reality which rationalize personal manipulation and Machiavellianism (Gvozden et al., 2015)	AMR40 (Knežević, 2003)	14 (.76)	The ends do not always justify the means.	Follow-up 2020-05b	Yes
Competitiveness	An individual's desire to get ahead of others and striving for individual achievements (Chen & West, 2008)	Individualism-Collectivism Scale (Chen & West, 2008)	8 (.86)	I want to be the best every time I compete.	T3	Yes

(continued)

Table 1. *(continued)*

Construct	Definition	Questionnaire	Number of items (ω)	Example item	Measurement occasion	Strict set
Egoism	The excessive concern with one's own pleasure or advantage at the expense of community well-being (Weigel et al., 1999)	Egoism Scale (Weigel et al., 1999)	12 (.85)	It is hard to get ahead without cutting corners here and there.	Follow-up 2020-05b	Yes
Envy	Negative emotional response to another person's superior quality, achievement, or possession, in which the envier either desires the advantage or wishes that the envied person lacks it (Lange & Crusius, 2015)	Benign and Malicious Envy Scale, Malicious Envy subscale (Lange & Crusius, 2015)	5 (.88)	If other people have something that I want for myself, I wish to take it away from them.	T4	Yes
Exploitativeness	The state, condition, quality, or degree of unfairly or cynically using another person or group for profit or advantage (Brunell et al., 2013)	Interpersonal Exploitativeness Scale (Brunell et al., 2013)	6 (.86)	It doesn't bother me to benefit at someone else's expense.	T3	Yes
Greed	The dissatisfaction of not having enough, combined with the desire to acquire more (Seuntjens et al., 2015)	Dispositional Greed Scale (Seuntjens et al., 2015)	7 (.86)	I always want more.	T3	Yes
Machiavellianism	(a) Manipulativeness, (b) callous affect, and (c) a strategic-calculating orientation (Jones & Paulhus, 2014)	Short Dark Triad (Jones & Paulhus, 2014)	9 (.84)	Make sure your plans benefit yourself, not others.	T3	Yes
Moral disengagement	Allows those inclined to morally disengage to behave unethically without feeling distress (Moore et al., 2012)	Propensity to Morally Disengage Scale (Moore et al., 2012)	8 (.80)	Some people have to be treated roughly because they lack feelings that can be hurt.	Follow-up 2020-05b	No
Narcissism (NARQ)	A grandiose view of the self, a strong sense of entitlement and superiority, a lack of empathy, and a need for social admiration (Back et al., 2013)	NARQ – Short (Leckelt et al., 2018)	6 (.83)	I react with annoyance if another person steals the show from me.	T3	No
Narcissism (SD3)	Ego-reinforcement is the all-consuming motive (Jones & Paulhus, 2014)	SD3 (Jones & Paulhus, 2014)	9 (.75)	I know that I am special because everyone keeps telling me so.	T3	Yes
Negative reciprocity	Negative reciprocators are sensitive to negative interpersonal behavior . . ., [and] they prefer to use negative sanctions (Perugini et al., 2003)	Personal Norm of Reciprocity Scale (Perugini et al., 2003)	9 (.90)	I am willing to invest time and effort to reciprocate an unfair action.	T4	No
Psychological entitlement	A stable and pervasive sense that one deserves more and is entitled to more than others (Campbell et al., 2004)	Psychological Entitlement Scale (Campbell et al., 2004)	9 (.88)	I honestly feel I'm just more deserving than others.	Follow-up 2020-05b	Yes

(continued)

Table 1. *(continued)*

Construct	Definition	Questionnaire	Number of items (ω)	Example item	Measurement occasion	Strict set
Psychopathy (SD3)	Deficits in affect (i.e., callousness) and self-control (i.e., impulsivity; Jones & Paulhus, 2014)	SD3 (Jones & Paulhus, 2014)	9 (.74)	It's true that I can be mean to others.	T3	Yes
Psychopathy (SRP-III)	A personality trait characterized by enduring antisocial behavior, diminished empathy and remorse, and disinhibited or bold behavior (Muris et al., 2017)	SRP-III (Paulhus et al., 2009)	32 (.87)	You should take advantage of other people before they do it to you.	Follow-up 2020-05a	Yes
Sadism	A person who humiliates others, shows a longstanding pattern of cruel or demeaning behavior to others, or intentionally inflicts physical, sexual, or psychological pain or suffering on others (O'Meara et al., 2011)	Short Sadistic Impulse Scale (O'Meara et al., 2011)	10 (.83)	Hurting people would be exciting.	T3	Yes
Self-centeredness	[The tendency] to be self-centered, indifferent, or insensitive to the suffering and needs of others (Gottfredson & Hirschi, 1990)	Self-Control Scale, Self-centeredness subscale (Grasmick et al., 1993)	4 (.73)	I try to look out for myself first, even if it means making things difficult for other people.	T3	Yes
Self-interest	Pursuit of gains in socially valued domains, including material goods, social status, recognition, academic or occupational achievement, and happiness (Gerbasi & Prentice, 2013)	Self-Other Interest Inventory (Gerbasi & Prentice, 2013)	9 (.86)	I am constantly looking for ways to get ahead.	T3	Yes
Selfishness	An inordinate focus on one's own welfare, regardless of the well-being of others (Raine & Uh, 2019)	Selfishness Questionnaire (Raine & Uh, 2019)	24 (.93)	When it comes to helping myself or helping others, I tend to help myself.	T3	Yes
Spitefulness	A preference that would harm another but that would also entail harm to oneself; this harm could be social, financial, physical, or an inconvenience (Marcus et al. 2014)	Spitefulness Scale (Marcus et al., 2014)	17 (.89)	It might be worth risking my reputation in order to spread gossip about someone I do not like.	Follow-up 2020-05b	Yes
Victim sensitivity	[Individual differences in] perceptions of and reactions to . . . suffered . . . injustice (Schmitt et al., 2010)	Justice Sensitivity Scale (Schmitt et al., 2010)	10 (.90)	It bothers me when others receive something that ought to be mine.	T3 + T4[a]	No

(continued)

Table 1. *(continued)*

Construct	Definition	Questionnaire	Number of items (ω)	Example item	Measurement occasion	Strict set
Prosocial tendencies						
Altruism	Sharing, helping, taking care of, and feeling emphatic with others and their needs or requests (Caprara et al., 2005)	Prosocialness Scale (Caprara et al., 2005)	16 (.92)	I try to help others.	T3	Yes
Collectivism	Perceiving the self as a part (or an aspect) of a collective (Singelis et al., 1995)	Individualism and Collectivism Scale–Revised (Singelis et al., 1995)	16 (.81)	I usually sacrifice my self-interest for the benefit of my group.	T3	Yes
Compassion	Feelings, cognitions, and behaviors that are focused on caring, concern, tenderness, and an orientation toward supporting, helping, and understanding the others (Sprecher & Fehr, 2005)	Santa Clara Brief Compassion Scale (Hwang et al., 2008)	5 (.84)	I would rather engage in actions that help others, even though they are strangers, than engage in actions that would help me.	T3	Yes
Empathy	A set of constructs, related in that they all concern responsivity to others but are also clearly discriminable from each other (Davis, 1983)	Interpersonal Reactivity Index (Davis, 1983)	14 (.86)	I often have tender, concerned feelings for people less fortunate than me.	T3	Yes
Fairness concerns	[Tendency to] treat all people the same according to notions of fairness and justice (Ruch et al., 2010)	Values in Action Inventory of Strengths (Peterson & Seligman, 2004)	5 (.85)	I treat all people equally regardless of who they might be.	T3	Yes
Guilt proneness	Predisposition to experience negative feelings about personal wrongdoing, even when the wrongdoing is private (T. R. Cohen et al., 2012)	Five-Item Guilt Proneness Scale (T. R. Cohen et al., 2014)	5 (.81)	After realizing you have received too much change at a store, you decide to keep it because the sales clerk doesn't notice. What is the likelihood that you would feel uncomfortable about keeping the money?	T3	Yes
Humility	Nondefensive willingness to see the self accurately, including both strengths and limitations (Peterson & Seligman, 2004)	Values in Action Inventory of Strengths (Peterson & Seligman, 2004)	5 (.66)	I do not act as if I am a special person.	T3	Yes

(continued)

Table 1. (continued)

Construct	Definition	Questionnaire	Number of items (ω)	Example item	Measurement occasion	Strict set
Justice sensitivity – other	How readily [people] perceive situations to be unjust and how strongly they react to subjective injustice—cognitively, emotionally, and behaviorally; vulnerability to the adverse consequences of injustice (Baumert et al., 2014)	Justice Sensitivity Scale, short form (Baumert et al., 2014) (observer, beneficiary, perpetrator perspectives)	6 (.80)	I feel guilty when I enrich myself at the expense of others.	T3	Yes
Moral idealism	[Tendency to] idealistically assume that desirable consequences can, with the "right" action, always be obtained (Forsyth, 1980)	Ethics Position Questionnaire, Moral Ideology subscale (Forsyth, 1980)	6 (.87)	A person should make certain that their actions never intentionally harm another even to a small degree.	T3	Yes
Moral identity	One kind of self-regulatory mechanism that motivates moral action (Aquino & Reed, 2002)	Self-Importance of Moral Identity Scale (Aquino & Reed, 2002)	10 (.78)	It would make me feel good to be a person who has these characteristics (i.e., is caring, compassionate, fair, friendly, generous, helpful, hardworking, honest, kind)	T3	Yes
Positive reciprocity	Positive reciprocators are sensitive to positive interpersonal behavior . . . , [and] they prefer to use positive sanctions (e.g., to reward somebody; Perugini et al., 2003)	Personal Norm of Reciprocity Scale (Perugini et al., 2003)	9 (.78)	I am ready to undergo personal costs to help somebody who helped me before.	T4	No
Social-welfare concerns	The extent to which people are concerned with the welfare of our society in general (Haesevoets et al., 2018)	Theories of Self-Relative-to-Other Behavior Scale, Prosocial subscale (Gerbasi & Prentice, 2013)	3 (.71)	It is the total amount of benefit that everyone receives that matters most.	T3	Yes
Trust propensity	A general willingness to trust others, regardless of social and relationship-specific information (Frazier et al., 2013)	Trust Propensity Scale (Frazier et al., 2013)	4 (.82)	I usually trust people until they give me a reason not to trust them.	T5	No
Unmitigated communion	A focus on others to the exclusion of the self, resulting in the neglect of one's own needs (Helgeson & Fritz, 1998)	Revised Unmitigated Communion Scale (Helgeson & Fritz, 1998)	9 (.80)	I always place the needs of others above my own.	T3	Yes

(continued)

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Table 1. *(continued)*

Construct	Definition	Questionnaire	Number of items (ω)	Example item	Measurement occasion	Strict set
Self-control, responsibility, and risk						
Aggressiveness	Consists of four subtraits. Physical and verbal aggression, which involve hurting or harming others.... Anger, which involves physiological arousal and preparation for aggression.... Hostility, which consists of feelings of ill will (Buss & Perry, 1992)	Buss-Perry Aggression Questionnaire (Buss & Perry, 1992)	29 (.90)	At times I feel I have gotten a raw deal out of life.	T4	Yes
Concern for reputation	People's concern about their position and reputation within the group (de Cremer & Tyler, 2005)	Concern for Reputation Scale (de Cremer & Tyler, 2005)	7 (.88)	I wish to have a good reputation.	T4	No
Consideration of future consequences	A stable individual difference in the extent to which people consider distant versus immediate consequences of potential behaviors (Strathman et al., 1994)	Consideration of Future Consequences Scale-14 (Joireman et al., 2012)	12 (.84)	I consider how things might be in the future and try to influence those things with my day-to-day behavior.	T4	No
Life history strategy	A K-selected life-history strategy allocates an individual's bioenergetic and material resources preferentially to somatic effort over reproductive effort and to parental and nepotistic effort over mating effort emphasizing the survival of individual organisms (whether self, offspring, or kin) over the production of new ones (Figueredo et al., 2006)	Mini-K (Figueredo et al., 2006)	20 (.73)	I don't give up until I solve my problems.	Follow-up 2020-05a	No
Psychoticism	A dispositional variable or trait predisposing people to functional psychotic disorders of all types (Eysenck, 1995)	Eysenck Personality Questionnaire–Revised (Eysenck et al., 1985)	32 (.82)	I stop to think things over before doing anything.	Follow-up 2020-05a	No
Social responsibility	[Willingness to follow the] norm prescribing that the individual should help those who are dependent upon him (Berkowitz & Daniels, 1964)	Social Responsibility Scale (Berkowitz & Daniels, 1964)	8 (.83)	I am the kind of person that people can count on.	T4	Yes

Note: The definitions provided in the second column are verbatim citations from the respective references. The average temporal distance between measurement of the traits and assessment of social value orientation was 110 days for T1, 69 days for T2, 49 days for T3, 26 days for T4, 0 days for T5 (the SVO Slider was part of this measurement occasion), 61 days for follow-up 2020-05a, and 58 days for follow-up 2020-05b. ω = latent factor reliability; SDO = Social dominance orientation; SD3 = Short Dark Triad; NARQ = Narcissistic Admiration and Rivalry Questionnaire; SRP-III = Self-Report Psychopathy Scale–III.

[a]The two items from the short scale were collected at T3, and the remaining items were collected at T4.

However, because some of these traits received mixed ratings and because the inclusion of only marginally relevant traits might bias the overall picture (reducing the mean proportion of explained incremental variance of the traits beyond D), we additionally checked the results for a strict subset of traits rated as having unequivocal conceptual overlap with the criterion. For this strict set, we retained only those 37 traits that were judged to involve clear overlap by at least three raters (see the final column of Table 1).

Statistical Analysis

All analyses reported herein were based on structural equation modeling of raw scores using *lavaan* (Rosseel, 2012). First, for each of the 58 candidate traits, we estimated a baseline model, specifying D as a single latent factor, the candidate trait as a single latent factor (each indicated by their respective items), and the SVO angle as an observed variable, always using pairwise complete data. This model served to gauge the latent zero-order associations of D, the candidate trait, and the SVO angle as well as the reliability (ω) of D and the candidate trait. Model fits were acceptable with a median root-mean-square error of approximation of .06 and a median standardized root-mean-square residual of .05. For detailed results, see the OSF supplement (https://osf.io/jnmda).

To model D, we used only the short 16-item set (Moshagen, Zettler, & Hilbig, 2020) because this was comparable with the candidate traits in terms of number of items and reliability (ω = .86 for D and median ω = .84 for candidate traits; for reliability of each candidate trait, see Table 1). Thus, given that we accounted for measurement error through latent modeling and computed the incremental variance explained by each candidate trait above a measure of D that was similar in terms of reliability, we can rule out the possibility that any such differences biased the comparisons. Nonetheless, we also reran all analyses and double-checked results using the full 70-item set for D,[3] which led to results confirming all conclusions (despite generally smaller increments of variance explained by candidate traits, as must be expected).

To test our main hypothesis, three extensions of the baseline model involving latent multiple regression were estimated and compared: one predicting the SVO angle by D alone, a second predicting the SVO angle by the candidate trait alone, and a third predicting the SVO angle by D and the candidate trait in combination. From these models, the increment in the proportion of variance explained by adding the candidate trait (ΔR^2) was computed and served as the key criterion of interest. Given that our median sample size ($N = 2,270$) already

yielded very high statistical power (> .95) for even a miniscule and negligible effect (ΔR^2 = .005; Jobst et al., in press), we did not consider statistical significance. Instead, we set what J. Cohen (1988) defined as a small effect (f^2 = .02; i.e., ΔR^2 = .018), "just barely escaping triviality" (p. 413), as the lower bound for a relevant effect of a candidate trait beyond D. The complete code for all analyses and supplementary results, including detailed scale descriptives for and observed correlations between all variables, are available on the OSF (https://osf.io/jnmda). The study was not preregistered.

Results

Participants' decisions on the SVO Slider were largely typical (Murphy et al., 2011), resulting in a median SVO angle of 35° (M = 32°, SD = 11°) and a range from −16.26° (perfectly consistent competitiveness; own weight 1, others' weight −1) to 61.39° (perfectly consistent prosociality; own weight 1, others' weight 1). Neither age nor gender had any influence on the SVO angle ($r = -.03$ and Cohen's $d = 0.05$, respectively). The median (latent) zero-order correlations were $|r|$ = .51 (range: .06 ≤ $|r|$ ≤ .83) between D and candidate traits, $r \sim -.27$ (median R^2 = .08) between D and the SVO angle, and $|r|$ = .17 (range: .02 ≤ $|r|$ ≤ .33) between candidate traits and the SVO angle. The median total multiple R^2 (i.e., total variance explained in the SVO angle by D and a candidate trait) was .08 (range: .07 ≤ R^2 ≤ .11).

Exact results for every single candidate trait and each model (comparison) are available in the OSF supplement (https://osf.io/jnmda). In summary, and as displayed in Figure 2, the incremental variance explained by candidate traits in the SVO angle above D was virtually zero (mean ΔR^2 = .003, median ΔR^2 = .001) and well below what was considered even a minimally relevant effect, that is, a small effect according to J. Cohen (1988). Essentially the same result was also found in the strict set of 37 traits involving unequivocal conceptual overlap with the criterion (mean ΔR^2 = .005, median ΔR^2 = .002), so we ruled out the possibility that consideration of too many irrelevant traits biased the results in favor of the hypothesis. Results were also independent of the reliability of candidate traits ($r = -.02$, p = .91).

As can also be seen in Figure 2, exactly one single candidate trait explained incremental variance larger than what was considered a minimally relevant effect. Specifically, a competitive jungle world view accounted for ΔR^2 = .028 of incremental variance beyond D (ΔR^2 = .02 when modeling D on the basis of 70 rather than 16 items), which is approximately one fourth of the total variance explained in combination with D (R^2_{mult} = .11). Of note, competitive jungle world view was also particularly strongly associated with D (r = .75). The zero-order
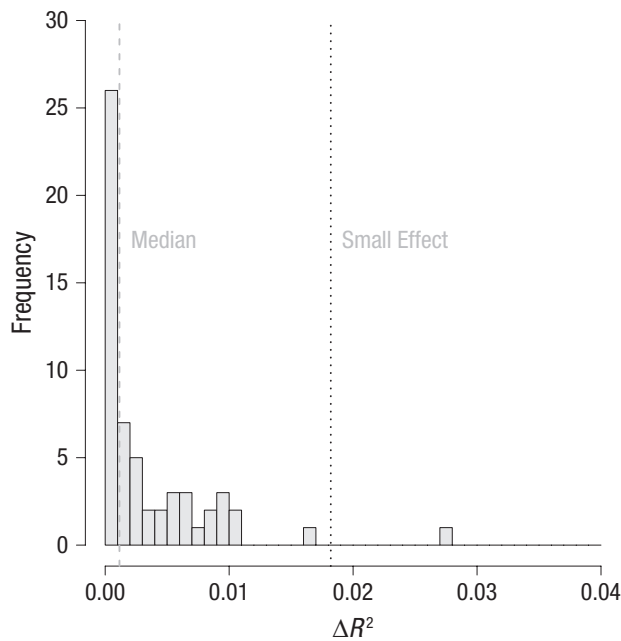
Fig. 2. Distribution of incremental proportions of variance explained (ΔR^2) by the 58 candidate traits beyond D in the social value orientation (SVO) angle. The dashed line represents the median proportion of incremental variance explained; the dotted line represents a small effect size ($\Delta R^2 = .018$) according to J. Cohen (1988) and the threshold for an effect to be considered relevant.

association between a competitive jungle world view and the SVO angle was marginally stronger ($r = -.33$) than the association between D and the SVO angle ($r = -.27$). In interpreting this difference, it must be stressed that competitive jungle world view was assessed at the same measurement occasion as the SVO slider, whereas D preceded the latter by around 110 days.

Additionally, and beyond our hypothesis, we also computed the extent to which D accounts for incremental variance in the SVO angle beyond each candidate trait. Although such an incremental effect is not strictly implied by the theory of D, it is informative of the extent to which D uniquely accounts for how individuals weigh their own versus others' utility. Across candidate traits, D added up to $\Delta R^2 = .09$ of incremental variance (mean and median $\Delta R^2 = .04$) and above what was considered a minimally relevant effect in 46 out of 58 comparisons with candidate traits (including Big Five Agreeableness, $\Delta R^2 = .045$). The remaining 12 candidate traits above which D did not account for sufficient incremental variance in the SVO angle (including HEXACO Honesty-Humility, $\Delta R^2 < .01$) were particularly highly correlated with D (median $|r| = .72$) and did not correlate with the SVO angle more strongly than D (median $|r| = .26$ vs. median $|r| = .27$). Thus, in summary, D outperformed 80% of candidate traits in accounting for the SVO angle and fared on par with the rest.

Discussion

The common core of aversive traits, D, is conceptualized as the (fluid) underlying disposition from which aversive traits arise as specific, flavored manifestations (Moshagen et al., 2018). The crucial implication of this notion is that everything aversive in a trait is due to D and, in turn, that aversive traits do not account meaningfully for how individuals weigh their own versus others' utility above and beyond D. To critically scrutinize this prediction, we tested whether and to what extent a total of 58 candidate traits and related constructs (such as stable beliefs) meaningfully predict how individuals weigh their own versus others' utility—as operationalized via a consequential measure of proactive social preferences, the SVO angle (Murphy et al., 2011)—beyond D.

Results revealed that around 10% of variance in the SVO angle can be accounted for by self-reported traits, which is at the upper end of meta-analytical effect-size estimates on the link between personality and prosocial behavior (Thielmann et al., 2020). Crucially, on average, candidate traits predicted practically no incremental variance beyond D, with 57 out of the 58 traits yielding a proportion of incremental explained variance well below a small effect size. Thus, the main prediction held not only for traits that have explicitly been called aversive (or "dark"; e.g., the Dark Tetrad: Machiavellianism, narcissism, psychopathy, and sadism), but also for broad personality dimensions (e.g., Honesty-Humility or Big Five Agreeableness), stable beliefs (e.g., belief in reciprocity, moral idealism vs. relativism), and diverse but more narrow tendencies, both positively (e.g., altruism, empathy, collectivism) or negatively (e.g., exploitativeness, competitiveness, aggressiveness, envy) related to prosociality. Thus, conclusions were consistent independent of construct breadth (broad vs. narrow; e.g., Honesty-Humility vs. humility), specific nature (behavioral tendencies vs. beliefs), or direction (positive vs. negative). Finally, results were no less favorable when D was measured more broadly (70 rather than 16 items) and was practically the same in a strict set of 37 candidate traits involving unequivocal conceptual overlap with the criterion as rated by at least three of four independent experts.

The only candidate construct predicting a meaningful portion of incremental variance in SVO beyond D was a competitive jungle world view (Sibley & Duckitt, 2009). This particular belief may comprise aversive aspects beyond D, albeit to a limited extent, and therefore not merely represent a manifestation of D. Of note, competitive jungle world view is among the constructs most highly associated with D, and both were similarly related to the SVO angle, suggesting a suppression

effect (the difference in their respective zero-order effects implies ΔR^2 = .004 only if D and competitive jungle world view were independent). Thus, future research will be required to determine whether and to what extent competitive jungle world view comprises unique aversive variance beyond D in SVO and, more importantly, in a broader array of aversive behaviors.

Indeed, particular SVO weights are essentially an abstraction of many, but certainly not all, aversive behaviors; these weights represent the essential ingredients of the proactive side in many situations of interdependence (Thielmann et al., 2021), but they do not immediately translate to situations that do not involve one specific other individual, but rather shared norms of groups or societies (Bazerman & Gino, 2012). Moreover, distributing valued outcomes between oneself and an anonymous other in an entirely calm and unthreatening setting will not fully represent situations involving severe threat, physical violence, or the like. Finally, SVO misses out on reactive aspects of social preferences (i.e., reciprocity); traits such as a negative reciprocity norm endorsement (Eisenberger et al., 2004) or vengefulness (Stuckless & Goranson, 1992) that were excluded here because of their lack of conceptual relevance for SVO may account for aversive behavior beyond D in corresponding criteria.

Of note, the main assumption here is not that SVO covers the plethora of imaginable situations that may produce aversive behavior, let alone that no candidate traits will ever explain incremental variance in any of these. On the contrary, some of the traits we considered involve certain aspects irrelevant for SVO (or social preferences more broadly) and unrelated to D that are nonetheless useful to account for other specific aversive behaviors. For example, although psychopathy adds nothing to the explanation of SVO beyond D, as shown herein, it is known to encompass disinhibition (Patrick et al., 2009). This aspect is largely irrelevant for SVO and conceptually beyond the scope of D, but it will nonetheless be relevant for certain behaviors that are both aversive and impulsive (e.g., reckless driving; Bader et al., 2022). Thus, the generalization that D will make obsolete *all* specific aversive traits in accounting for *any* aversive behavior would be premature and a gross oversimplification.

Moreover, some of the candidate traits may interact with features of the situation and they may, under certain conditions, do so beyond or independent of D. For example, in social dilemmas such as the one-shot prisoner's dilemma (Dawes & Messick, 2000; Rapoport & Chammah, 1965), there is both a possibility for exploitation (temptation) and dependence on others under uncertainty (beliefs in others; i.e., trust vs. fear)

involved, both of which determine which traits can be expressed in behavior (Thielmann et al., 2020, 2021). A trait such as HEXACO Honesty-Humility is primarily afforded by a possibility for exploitation and therefore involves an interaction in accounting for social-dilemma behavior, because temptation is necessary for Honesty-Humility to be predictive, whereas fear is neither necessary nor sufficient (Hilbig et al., 2018). Because D, by contrast, also involves justifying beliefs, including those related to distrust and thus fear of exploitation, and indeed substantially more so than Honesty-Humility (Hilbig et al., in press), one would expect no such interaction for D. Thus, the interaction found for Honesty-Humility ought to hold independent of D, which is an important implication given the present finding that Honesty-Humility and D are highly comparable when it comes to explaining SVO. On a broader theoretical level, the argument is that even traits that can be considered (flavored) manifestations of D are neither necessarily fully subsumed by, nor functionally equivalent to, D.

In conclusion, our findings are consistent with the prediction derived from the theory of D that specific traits do not meaningfully subsume "the tendency to maximize one's individual utility—disregarding, accepting, or malevolently provoking disutility for others" (Moshagen et al., 2018, p. 657) beyond D, at least in a proactive situation as represented by the SVO Slider. In other words, the extent to which any trait accounts for how individuals weigh their own versus others' utility is due to D, confirming that D captures the proactive social preferences reflected in—and thus much of the socially aversive essence of—such traits. Consequently, D serves to theoretically integrate the vast literature on aversive personality and to unite the diverse and often isolated approaches—from basic traits, personality psychopathology, so-called dark traits, prosocial traits, and diverse beliefs—currently relied on to explain socially and ethically aversive affect, thought, and behavior.

Transparency

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Acknowledgments

Notes

1. The total sample size at T5 was 2,709. However, 2 participants had a missing value on one item of the SVO Slider (we suspect because of a technical issue) and were thus excluded from the current investigation.

2. The 15 traits excluded were HEXACO Conscientiousness, HEXACO Emotionality, HEXACO Extraversion, HEXACO Openness to Experience, PID-5 Negative Affect, PID-5 Psychoticism, Negative Reciprocity Norm Endorsement, Right-Wing Authoritarianism, Vengefulness, Forgiveness, Gratitude, Risk Propensity, Sociosexual Orientation, Impulsivity, and Self-Control (for definitions and items, see the PPP documentation on the OSF). Note that several of these traits capture reactive prosociality (e.g., Forgiveness, Gratitude) and are arguably relevant for aversive behavior in situations involving a possibility for reciprocity. In the present SVO paradigm, however, there is no reactive component, and reciprocity is not afforded (Thielmann et al., 2020).

3. In these analyses, D was implemented as the general factor in a bifactor structure (Reise, 2012), so that all 70 items loaded both on the general factor representing D and on one of five specific factors representing themes within D—an approach that has been shown to constitute the superior measurement model for D (Bader et al., 2021). The general and specific factors were constrained to mutual orthogonality. Specific factors were identified by setting one unstandardized loading per factor to 1. The general factor for D was assigned a scale by fixing its variance to 1.

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