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# The Sociable and the Deviant: A Latent Profile Analysis of HEXACO and the Dark Triad

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## Abstract

This paper adopts a person-centered approach to explore how personality traits from the HEXACO and Dark Triad cluster into profiles. We examine how these emergent profiles correlate with behavioral deviance and prosociality. Three studies (total  $N=792$ ) reveal five qualitatively different latent profiles which we label: ‘emotional dysregulated’, ‘dark social recluse’, ‘all-round malevolent’, ‘socially considerate’, and ‘social narcissist’. These profiles were differentially related to self-reported deviance and prosociality, as well as behavioral expressions of deviance. In particular, the ‘all-round malevolent’ openly expressed their deviance in both word and deed. However, although the ‘social narcissist’ disguised their deviance when self-reporting, they cheated as much as the ‘all-round malevolent’ in behavioral tasks when they believed themselves unaccountable. These findings suggest that certain combinations of HEXACO and Dark Triad traits may be more pernicious than Dark Triad alone.

**Keywords** Deviance · Personality · Latent profile analysis

Workplace deviance is defined as voluntary, unethical, and norm violating behavior displayed by employees, for example, stealing, slacking, or harassing co-workers (Robinson & Bennett, 1995). Such deviance is not only unethical, but also costly. Employee theft in the retail industry alone has been estimated to cost US\$62 billion in lost revenue in a single year (Peterson, 2020). Day-to-day absenteeism and disengagement can cost one-third of an employee’s annual salary in productivity losses (Borysenko, 2022). Workplace deviance is also associated with negative team atmosphere, disrupted emotional integration, and low levels of trust (Dunlop & Lee, 2004; Qiu & Peschek, 2012). Given the unethical nature of deviance and the negative outcomes deviance has, organizational researchers and practitioners alike are interested in the antecedents of workplace deviance and prosocial behavior at work. One such antecedent is employee

personality. It is important to understand how individual differences in personality traits might predict and be used to minimize instances of workplace deviance (van Aarde et al., 2017), and to enhance prosociality at work.

To date the mainstream approach to investigating associations between personality and organizational behavior has been to examine each trait in isolation, or a few traits in interaction. While this methodology is useful for understanding main effects and simple interactions, it fails to comprehensively capture the dynamic and multiplicative nature of personality in relation to deviance. For this reason, in the current paper, we take an exploratory approach by capturing broader trait combinations and examining their relationship to both self-reported and behavioral deviance. First, in Study 1, we use latent profile analysis (LPA) to explore how HEXACO (honesty-humility, emotionality, extraversion, agreeableness, conscientiousness, and openness) and Dark Triad (narcissism, Machiavellianism, and psychopathy) cluster into distinct personality profiles. Study 1 also examines how these personality profiles relate to participants’ self-reports of workplace deviance and prosociality. Next, in Study 2, we replicated the observed personality profiles within a different cultural sample, and again examined their associations with self-reported workplace deviance and prosociality. Finally, in Study 3, we use incentivized behavioral tasks to further

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explore the profiles in relation to behavioral expressions of deviance, competition, and cooperation. In doing so, this research moves beyond one-to-one mappings of personality traits onto self-reported or behavioral measures of deviance, competition, and cooperation, exploring instead how different traits combine holistically into unique profiles that differentiate between people who commit versus restrain from showing deviant behaviors.

## Workplace Deviance: Personality as Antecedent

Destructive workplace deviance is generally defined as, “voluntary behavior that violates significant organizational norms and in so doing threatens the well-being of an organization, its members, or both” (Robinson & Bennett, 1995, p. 556). Destructive workplace deviance can be expressed in a diverse range of unethical actions targeting other employees (‘interpersonal deviance’, e.g., gossiping, harassing, or abusing co-workers), or the organization (‘organizational deviance’, e.g., wasting resources, absenteeism, stealing, or accepting kickbacks) (Robinson & Bennett, 1995). As noted, deviant workplace behaviors negatively impact both the short-term output (Qiu & Peschek, 2012) and long-term survival of companies (Dunlop & Lee, 2004), and so understanding the antecedents of workplace deviance is important. In service of this goal, factors from the two main personality - the Big Five/HEXACO (Pletzer et al., 2020) and the Dark Triad (O’Boyle et al., 2012) - have been identified as antecedents to behavioral expressions of deviance.

On the one hand, Paulhus and Williams (2002) probed the dark side of personality by grouping three socially aversive traits into the Dark Triad. First, Machiavellianism reflects the manipulative, cheating, and goal-oriented dimensions of personality. Second, narcissism comprises authoritative, exhibitionist, rebellious, and low of self-control aspects of personality. Last, psychopathy emphasizes anti-social, impulsive, and low empathy aspects of personality. Narcissism has the strongest correlation with deviance, followed by Machiavellianism and psychopathy (for a meta-analysis, see O’Boyle et al., 2012).

On the other hand, the HEXACO model was developed by Lee and Ashton (2004) to restructure and extend the widely accepted five-factor model of personality. Other than some subdomains redistributed between agreeableness and conscientiousness, the main difference is the introduction of the honesty-humility factor in HEXACO (Ashton et al., 2004). Honesty-humility captures three core qualities closely related to workplace deviance - trustworthiness, modesty, and lack of greed, (Pletzer et al., 2020). The other HEXACO factors - extraversion, emotionality, conscientiousness, agreeableness, and openness to experience - are all defined

as in the five-factor model. Honesty-humility tends to have the strongest negative correlation with workplace deviance (for a meta-analysis, see Pletzer et al., 2019), followed by conscientiousness, agreeableness, and emotionality. For the remaining two factors, while openness to experience was not correlated with workplace deviance, extraversion showed mixed results (Pletzer et al., 2019, 2020). Moving beyond main effects, Oh et al. (2011) investigated the interactive effects of honesty-humility and extraversion on workplace deviance and found high extraversion amplifies the relationship between low honesty-humility and deviant behaviors. This work starts to suggest that different patterns of traits may differentially relate to workplace deviance and prosociality.

In an attempt to bring personality models together, Strus et al. (2014) used the Circumplex of Personality Metatraits (CPM) to synthesize higher-order personality factors. The model proposes four metatraits. The metatraits Alpha (stability) and Beta (plasticity) are orthogonal and located above the five factors from the Big Five model. Additionally, metatraits Gamma and Delta are positioned in the 45 degree angle space between Alpha and Beta, each forming one of the four possible combinations of Alpha and Beta. These four combinations are Gamma-Plus (integration) which comprises a balanced configurations of the five personality factors (i.e., high on extraversion, agreeableness, conscientiousness, openness to experience, and low on neuroticism), which is warm and has a prosocial tendency; Gamma-Minus (disharmony) which is prone to being distant and cold in interpersonal relationships, depressive, and pessimistic, representing the most maladaptive metatrait; Delta-Plus (self-restraint) which is a combination of high stability and low plasticity, and thus associated with a tendency to conformism or conventionality; and Delta-Minus (sensation-seeking) that is a combination of high plasticity and low stability, thus broadly defined as impulsive, stimulation-seeking, and expansiveness in interpersonal relationships (Strus et al., 2014). In addition to the Big Five personality factors, Rogoza et al. (2022) also integrated the HEXACO personality factors into the CPM and theoretically identified the dark traits that should locate between Gamma-Minus and Delta-Minus in the CPM. Together with the Big Five or the HEXACO personality factors, the four poles of the metatraits Gamma and Delta can potentially guide testing how traits from different personality frameworks combine. Thus, the focus could be shifted from the influence of individual personality traits to the person and the configuration of personality (e.g., profiles).

While the CPM remains largely theoretical, recent studies have explored the integration of different personality frameworks into profiles using Latent Profile Analysis (LPA; e.g., Neumann et al., 2020; Wall et al., 2019). The composition of the observed profiles hint at two of the four metatrait

configurations. Specifically, a profile that resembles the Delta–Minus metatrait (loaded high on dark traits (i.e., the Dark Triad, social inhibition, negative affectivity), extraversion, neuroticism, and openness to experience); and a profile that resembles the Gamma–Plus (loaded high on extraversion, agreeableness, conscientiousness, openness to experience, and low on neuroticism and dark traits (i.e., the Dark Triad, social inhibition, negative affectivity)). The potential of LPA to integrate and synthesize independent traits not only extends early endeavors to examine the configurations of metatraits, also it offers a route to study differential attitudes and/or behavioral patterns.

For instance, by targeting HEXACO and the Dark Triad - the two personality frameworks that are commonly used to understand workplace deviance (e.g., LeBreton et al., 2017; Pletzer et al., 2020) - we might be able to yield a more coherent account of the relationship between personality, deviance, and prosociality than what is afforded by the general linear models that have been used to date. Previous work shows that the HEXACO and the Dark Triad capture distinct variance in the two core dimensions of workplace deviance (Ellen et al., 2021). Whereas the Dark Triad traits explains more collective variance in interpersonal deviance than the Big Five traits (collective  $R^2 = .13$  vs  $.07$ ), the opposite is true for organizational deviance (collective  $R^2 = .09$  vs  $.11$ ). This suggests that combining both frameworks simultaneously might yield new insights into how combinations of traits map onto self-reported and behavioral deviance (Nai, 2019).

### Alternative to Factor-Based predictors of Deviance and Prosociality: A Person-Centered Approach

Person-centered methodologies such as Latent Profile Analysis, which focus on correlations among all independent variables as a set (Wang & Hanges, 2011), have great potential in explaining how combinations of personality traits affect outcomes. Latent Profile Analysis is a clustering method that classifies individuals into subpopulations based on a set of measured indicators (Morin et al., 2017). This approach is similar to grouping variables in factor analysis, but LPA forms clusters of *individuals* based on response patterns, rather than grouping items or variables based on common variances. In essence, latent profiles can mimic simple interaction terms used in general linear models, while examining the parsimonious configuration of multiple indicators (e.g., personality) within individuals. As such, in the context of identifying differential associations between predictive and outcome variables in a heterogeneous sample, LPA has unique advantages.

For example, by adopting a model-based estimation method, rather than relying on arbitrary cutoffs, LPA minimizes variance within subgroups while maximizing the variance between subgroups (Wang & Hanges, 2011). As personality traits naturally coexist with varying levels of expressiveness, examining them as a set helps to unpack the nuances of personality as antecedent to deviance and prosociality. Given these advantages, LPA is increasingly used in organizational research (e.g., Meyer & Morin, 2016; Morin et al., 2011). For instance, LPA has been used to reveal new insights into workplace commitment (Meyer & Morin, 2016; Morin et al., 2011), job characteristics (Mäkikangas et al., 2018), workplace social support (Caesens et al., 2020), and employee motivation (Levesque–Côté et al., 2020). Using LPA to map the interrelationships between a comprehensive mix of personality traits might yield novel, shape-differentiated profiles (i.e., not just high vs. low), further elucidating the person-based antecedents of workplace deviance and prosociality; such is the goal of the current paper.

### Study 1

Study 1 aimed to explore personality profiles that might emerge from measuring a combination of HEXACO and Dark Triad traits. Via latent profile modeling, we used fit indices to determine the best-fitting model and associated personality profiles. While the focus was on how different personality profiles engage in workplace deviance, our exploratory approach also motivated us to explore how the uncovered personality profiles map onto morally relevant behaviors and attitudes. As such, we included morally relevant, prosocial variables in the study (i.e., empathy, moral identity, and prosocial tendencies). These three dimensions were selected because they are indicative of workplace deviance, and while they are associated with the broad personality traits we measured, they are distinct constructs (Kim & Cohen, 2015). Thus, they are ideal variables to evaluate the unique value of personality profiles and their nomological relationships with known antecedents and measures of workplace deviance. The design and analytical plan of this study were pre-registered<sup>1</sup> with OSF ([https://osf.io/6mxnf/?view\\_only=b8b182f32dcc499f956067db322ddaf9](https://osf.io/6mxnf/?view_only=b8b182f32dcc499f956067db322ddaf9)), and was approved by the ethical committee at the university.

### Methods

#### Participants and Procedure

Data were collected in March 2021 via Prolific, an online research recruitment platform. A total of 400 UK nationals<sup>2</sup> completed the survey (Male = 162, Female = 238;  $M_{\text{age}} = 36.00$ ,  $SD_{\text{age}} = 13.70$ ,  $\text{range}_{\text{age}} = 18$  to 80). Each

participant was compensated with £1.94, which is approximately €2.31 (at a rate of £1 to €1.19) or US\$2.43 (at a rate of £1 to \$1.25). To enhance data quality, only participants with an approval rate of >98% on the platform were recruited (Peer et al., 2014).

## Measures

Demographic information (i.e., age and gender) were obtained from participants. Then, participants were asked to rate the extent to which each of the statements accurately described themselves on 5-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree), unless otherwise specified. The negatively worded items were reversed-coded before the analyses. All measures demonstrated good reliability in the present sample (Table 1).

## Personality Traits

The personality traits of honesty–humility, emotionality, extraversion, agreeableness, conscientiousness, and openness were measured with HEXACO-60, 10 items each per subscale (Ashton & Lee, 2009). The dark triad personality

traits were measured with three separate scales. Psychopathy was measured with the Levenson Self-Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995). It contains 26 items to measure primary and secondary psychopathy. Narcissism was measured with the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1989). It contains 40 items for measuring authority, self-sufficiency, superiority, exhibitionism, exploitativeness, vanity, and entitlement. Machiavellianism was measured with the Two-Dimensional Mach-IV (TDM-IV; Monaghan, Bizumic, & Sellbom, 2016). It contains 10 items measuring Machiavellian views and tactics.

## Criterion Measurements: Deviant Behaviors and Prosociality

**Workplace Deviance.** Destructive workplace deviance was measured with the Interpersonal and Organizational Deviance Scale (Bennett & Robinson, 2000). It contains 7 items for interpersonal workplace deviance (e.g., ‘Said something hurtful to someone at work.’) and 12 items for organizational workplace deviance (e.g., ‘Discussed confidential company information with an unauthorized person.’). Items were

**Table 1** Means, SDs, reliabilities (Cronbach’s alpha), and correlations between personality traits and criterion measures (N=400)

	DDO	DDP	PT	EC	Pub	Anon	Altruism	MI	<i>M</i>	<i>SD</i>	$\alpha$
Honesty–Humility	-.39***	-.33***	.33***	.31***	-.38***	.28***	.43***	.15**	3.45	0.66	.74
Emotionality	-.00	-.13**	.07	.40***	-.05	-.04	.01	.23***	3.35	0.71	.80
Extraversion	-.05	.04	.15**	.09	.15**	.08	-.06	.28***	3.05	0.76	.85
Agreeableness	-.26***	-.33***	.51***	.37***	-.13*	.23***	.29***	.27***	3.25	0.66	.79
Conscientiousness	-.33***	-.25***	.33***	.21***	-.11*	.21***	.19***	.27***	3.64	0.63	.78
Openness	-.02	-.16**	.32***	.23***	-.13**	.26***	.17***	.20***	3.51	0.71	.78
P. Psychopathy	.34***	.41***	-.43***	-.58***	.48***	-.22***	-.56***	-.27***	2.02	0.64	.88
S. Psychopathy	.32***	.33***	-.37***	-.26***	.14**	-.15**	-.31***	-.21***	2.42	0.63	.74
Authority <sup>a</sup>	.10*	.17***	.08	-.01	.23***	.01	-.24***	.19***	3.03	0.92	.92
Self-sufficiency <sup>a</sup>	.01	.05	.14**	-.03	.07	.08	-.14**	.17***	3.34	0.71	.74
Superiority <sup>a</sup>	.15**	.11*	.01	-.00	.29***	.01	-.27***	.19***	2.73	0.81	.77
Exhibitionism <sup>a</sup>	.21***	.29***	-.19***	-.12*	.38***	-.14**	-.38***	.12*	1.95	0.72	.82
Exploitativeness <sup>a</sup>	.24***	.22***	-.05	-.12*	.21***	-.03	-.28***	.05	2.66	0.82	.79
Vanity <sup>a</sup>	.11*	.12*	-.06	-.13**	.21***	.02	-.22***	.12*	2.07	1.00	.89
Entitlement <sup>a</sup>	.17***	.18***	-.10*	-.08	.26***	-.03	-.37***	.13*	2.80	0.79	.76
Mach. Tactics	.35***	.30***	-.35***	-.38***	.28***	-.30***	-.32***	-.30***	2.13	0.71	.74
Mach. Views	.36***	.34***	-.33***	-.39***	.24***	-.20***	-.39***	-.26***	2.60	0.73	.73
<i>M</i>	2.11	1.67	3.68	3.88	2.12	3.44	3.88	3.59	–	–	–
<i>SD</i>	0.86	0.83	0.67	0.70	0.96	0.81	0.78	0.61	–	–	–
$\alpha$	.85	.83	.80	.82	.89	.84	.75	.86	–	–	–

P. Psychopathy primary psychopathy, S Psychopathy secondary psychopathy, Mach. Views Machiavellian views, Mach. Tactics Machiavellian tactics, DDO organizational destructive workplace deviant behavior, DDP Interpersonal destructive workplace deviant behavior, PT Perspective-taking, EC Empathetic concern, Pub Public prosocial tendencies, Anon Anonymous prosocial tendencies, Altruism Altruistic prosocial tendencies, MI Moral identity

<sup>a</sup>subscales of Narcissism

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

responded to on a 7-point Likert scale indicating the frequency at which those behaviors were displayed by participants (1 = Never to 7 = Daily).

**Empathy.** Empathy was measured with the Interpersonal Reactivity Index (IRI; Davis, 1980). Seven items each for empathic concern (e.g., ‘When I see someone being taken advantage of, I feel kind of protective toward them.’) and perspective-taking (e.g., ‘I believe that there are two sides to every question and try to look at them both.’).

**Moral Identity.** Moral identity was measured with the Self-importance of Moral Identity Scale (Aquino & Reed, 2002). It contains 13 items (e.g., ‘Having these characteristics is an important part of my sense of self.’), all with reference to nine stimulus traits (e.g., caring, compassionate, fair).

**Prosocial Tendencies.** Motivation to engage in prosocial behaviors was measured with the Prosocial Tendencies Measures (PMS; Carlo & Randall, 2002). We used four items each to measure public behavior (e.g., ‘When other people are around, it is easier for me to help needy others.’) and anonymous behavior (e.g., ‘I prefer to donate money anonymously.’), and five items for altruism (e.g., ‘I think that one of the best things about helping others is that it makes me look good.’ (reverse-coded)).

## Results

Means, *SDs*, correlations, and internal consistency coefficients of personality and criterion measures are reported in Table 1 (and Table S1 in Appendix 5 for correlations among personality traits).

### Latent Profile Analysis

We estimated solutions with one to six profiles, under different parameterizations. Means were allowed to vary across profiles in all solutions. The solutions estimated with more flexible parameterizations (i.e., Model 3 and 6, both assume equal or varying covariances) converged with weaker fit indices (Table A3 in Appendix 2), suggesting overparameterization in comparison to the more parsimonious models (i.e., Model 1 and 2).

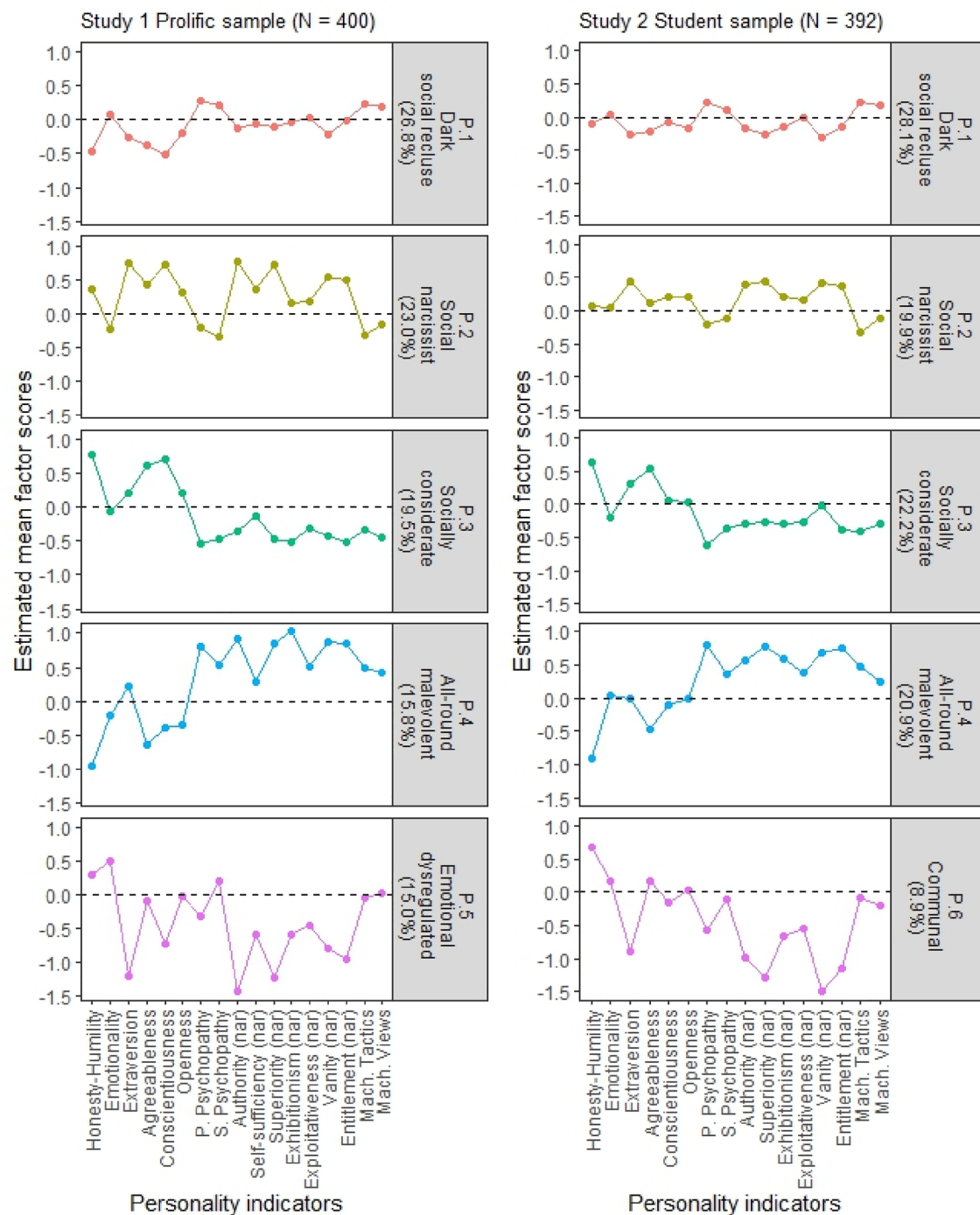
To select the best-fitting model, the percentage change in Bayesian Information Criterion (BIC) was calculated across profiles for each model parameterization. The percentage change signals the decrease in BIC of that profile solution compared to a one-profile solution. The largest percentage change is associated with Model 1’s five-profile solution and Model 2’s six-profile solution. Examining the two solutions, four of the profiles are similar in composition, and both smallest profiles are within acceptable range (Model 1’s

five-profile solution: 16%; Model 2’s six-profile solution: 12%). Considering that two of the profiles in the six-profile solution are level-different, the five-profile solution is easier to interpret, and therefore, selected as the final model that best fits the data. To assess the accuracy of the model in classifying individuals into profiles, we consulted the entropy of the five-profile solution. Entropy is a standardized index that produces values ranging from 0 to 1. A value closer to 1 indicates more precise assignment of individuals to the latent groups. The entropy of the five-profile solution is .91, implying the model can adequately differentiate the profiles. The composition of each profile is illustrated in Fig. 1 - showcasing a shape-differentiated personality profile solution (i.e., profiles are qualitatively different from each other), and the mean of each trait is reported in Table 2 (for details of LPA and model selection criteria, please see Appendix 2). In addition to the categorical profile memberships, given that LPA estimates with a probabilistic model, the classification probability of cases to different profiles was also estimated, capturing the variances among within-profile individuals (for details of additional correlation analysis with profile classification probability and outcome variables, please see Appendix 3).

Profile 1 (P.1; labeled ‘dark social recluse’) is characterized by above average psychopathic and Machiavellian tendencies, and low levels of extraversion, honesty-humility agreeableness, and conscientiousness. This suggests that members of this profile have dispositions conducive to engaging in potentially toxic and/or damaging acts, while also being socially reclusive. However, as their levels of narcissism were slightly below average, members of this group do not fit neatly into the ‘Dark Triad.’ P.1 describes 26.8% of the sample ( $n = 107$ ), while accounting for the base rate of gender in the sample, 50.6% of whom are male ( $n = 44$ ) and 49.4% of whom are female ( $n = 63$ ). The mean age of this profile is 36.19 ( $SD = 12.82$ ).

Profile 2 (P.2; labeled ‘social narcissist’) is characterized by a combination of high sociability and a narcissistic disposition. Compared to the other profiles, members of P.2 have the highest extraversion. While members of P.2 are as honest and sociable as P.3, considering their above average levels of narcissism, they are more self-centered, entitled, and enjoy receiving attention from others. P.2 describes 23.0% of the sample ( $n = 92$ ), while accounting for the base rate of gender, 40.3% of whom are male ( $n = 29$ ) and 59.7% of whom are female ( $n = 63$ ). The mean age of this profile is 36.50 ( $SD = 14.25$ ).

Profile 3 (P.3; labeled ‘socially considerate’) is characterized by its ‘warm’ personality traits. In comparison to the other profiles, members of P.3 have the highest honesty-humility and agreeableness. Additionally, the low levels of Dark Triad traits suggest that members of this group are considerate and not likely to manipulate others in social



**Fig. 1** Compositions of latent profiles on the personality trait indicators in Study 1 (left panel) and Study 2 (right panel). The line chart is plotted with standardized scores to aid interpretation

interactions. P.3 describes 19.5% of the sample ( $n=78$ ), while accounting for the base rate of gender in the sample, 47.9% of whom are male ( $n=30$ ) and 52.1% of whom are female ( $n=48$ ). The mean age of this profile is 41.47 ( $SD=14.04$ ).

Profile 4 (P.4; labeled ‘all-round malevolent’) is characterized by high scores on the Dark Triad traits. Coupled with above average extraversion, members of this group seem very sociable, manipulative, and self-serving. P.4 describes 15.8% of the sample ( $n=63$ ), while accounting for the base rate of gender in the sample, 60.3% of whom are male

**Table 2** Means of indicators for each profile ( $N = 400$ )

	P.1 (the 'dark social recluse')	P.2 (the 'social narcissist')	P.3 (the 'socially considerate')	P.4 (the 'all-round malevolent')	P.5 (the 'emotional dysregulated')
Age	36.19	36.50	41.47	28.05	36.12
Honesty–Humility	3.14	3.67	3.96	2.74	3.73
Emotionality	3.35	3.30	3.33	3.28	3.52
Extraversion	2.86	3.65	3.07	3.41	2.05
Agreeableness	3.01	3.51	3.62	2.84	3.20
Conscientiousness	3.31	4.07	4.10	3.45	3.18
Openness	3.39	3.80	3.57	3.32	3.39
Primary psychopathy	2.30	1.83	1.52	2.78	1.68
Secondary psychopathy	2.63	2.03	1.93	2.93	2.74
Authority (Nar)	2.92	3.73	2.75	3.83	1.69
Self-sufficiency (Nar)	3.21	3.90	3.21	3.69	2.54
Superiority (Nar)	2.64	3.32	2.31	3.44	1.78
Exhibitionism (Nar)	1.93	2.12	1.42	2.92	1.39
Vanity (Nar)	2.71	2.99	2.18	3.46	1.89
Exploitativeness (Nar)	1.86	2.55	1.65	2.92	1.34
Entitlement (Nar)	2.81	3.24	2.28	3.57	1.98
Machiavellian tactics	2.40	1.76	1.80	2.72	2.05
Machiavellian views	2.88	2.37	1.96	3.18	2.67

( $n=32$ ) and 39.7% of whom are female ( $n=31$ ). The mean age of this profile is 28.05 ( $SD=9.81$ ).

Profile 5 (P.5; labeled 'emotional dysregulated') is characterized by emotional instability and proneness to anxiety<sup>3</sup>. In comparison to the other profiles, members of P.5 have the lowest scores on extraversion and narcissism. This suggests that they are neither enthusiastic about socializing nor egoistic in dispositional makeup. P.5 describes 15.0% of the sample ( $n=60$ ), while accounting for the base rate of gender in the sample<sup>3</sup>, 54.6% of whom are male ( $n=27$ ) and 45.4% of whom are female ( $n=33$ ). The mean age of this profile is 36.12 ( $SD=14.04$ ).

### Validation Analysis: Association of Profiles with Self-Reported Deviant Behaviors and Prosociality

#### *Multinomial Logistic Regression for Gender and Age*

Using P.4: the 'all-round malevolent' as the reference group, we observed no gender effect in the membership of profiles (odds ratios ranges from 0.50 to 0.89,  $ps$  ranges from .09 to .79). The age effect was significant (odds ratios range from 1.05 to 1.08,  $ps$  from .02 to <.001), suggesting that participants who belong to P.4: the 'all-round malevolent' are younger than their counterparts.

#### *ANOVAs for Workplace Deviance and Prosociality*

A series of ANOVAs were used to examine differences among the five profiles on self-reported workplace deviance,

prosocial tendencies, moral identity, and empathy. As shown in Table S2 in Appendix 5, significant differences were found between profiles for all eight criterion measures ( $F(4, 395)$  ranging from 9.89 to 39.55,  $ps < .001$ ). Post-hoc pairwise comparison with Tukey adjustment for multiple testing was used to locate specific pairs of profiles that differed in mean scores in the criterion variables (Table S3 in Appendix 5). Generally, the results correspond to inferences that might be drawn from the composition of the personality profiles.

P.1: the 'dark social recluse' - reflecting the above average levels of psychopathy and Machiavellianism - self-reported the second highest in both facets of destructive workplace deviance, second lowest in empathetic concern, and below average levels in anonymous and altruistic prosocial behaviors.

P.2: the 'social narcissist' - reflecting a combination of socially adaptive and narcissistic traits - reported below average destructive deviance. Echoing their sociable side, this profile is associated with moderate levels of empathetic concern, perspective-taking, moral identity, anonymous prosocial tendency, and altruism.

P.3: the 'socially considerate' - reflecting a socially adaptive tendency - scored the lowest on destructive workplace deviance and public prosocial tendency, and above average levels in empathetic concern, altruism, and moral identity.

P.4: the 'all-round malevolent' - reflecting high levels of dark triad - self-reported the highest in both interpersonal and organizational destructive workplace deviance and

public prosocial tendency, and the lowest in perspective-taking, empathetic concern, and altruism.

P.5: the ‘emotional dysregulated’ - reflecting non-narcissistic and asocial tendencies - was associated with below average destructive workplace deviance, slightly below average perspective-taking and empathetic concern, the second lowest profile in terms of public prosocial tendencies, and the lowest on moral identity.

## Discussion

This study is the first to examine the rich constellations of traits that arise from combining the HEXACO and Dark Triad. As such, Study 1 is also the first to map the five profiles that emerge from these constellations of traits onto workplace deviance and prosociality. This adds to the literature in multiple ways. First, the five profiles provide a *qualitatively* different view on personality, contrasting the *quantitatively* different personality profiles found in previous studies (e.g., Ferguson & Hull, 2018; Neumann et al., 2020). Importantly, the composition of the profiles highlights how HEXACO and Dark Triad interact. While P.4 (the ‘all-round malevolent’) and P.3 (the ‘socially considerate’) are relatively one-sided in their compositions of HEXACO and the Dark Triad traits, P.2 (the ‘social narcissist’) scores high on both HEXACO and narcissism. Furthermore, while P.3 (the ‘socially considerate’) and P.2 (the ‘social narcissist’) shared similar patterns on the HEXACO traits, P.2 differs due to above average narcissism. Just as the Dark Triad by itself would fail to differentiate these profiles, adopting HEXACO alone would obfuscate nuanced differences between these profiles. Thus, LPA has the potential to transform individual traits into a meaningful and predictive ‘signal’ to detect deviance. Much of this predictive signal would be considered as ‘noise’ in more conventional factor-based modeling.

Second, the observed profiles differentially related to both self-reported workplace deviance and prosociality. While the relationships with deviant behaviors were rather straightforward, the three prosocial tendencies were diversely linked to different personality profiles. For instance, the high level of public prosocial tendency reported by P.4 (the ‘all-round malevolent’) implies that P.4 members recognize the strategic value of social ingratiation, using prosocial displays strategically as a means to meet personal goals. On the other hand, despite high levels of narcissism, people with P.2 (the ‘social narcissist’) self-reported workplace deviance and prosociality similarly to P.3 (the ‘socially considerate’). For example, P.3 and P.2 self-reported the highest levels of altruism and anonymous prosocial tendency. Thus, it is possible that the three Dark Triad traits do not equivalently translate into deviant behavior, contrasting with the view that the Dark Triad can form an overall latent trait (e.g., Kam

& Zhou, 2016). However, it may also be that more sociable individuals are less likely to self-report deviance and thus it is of interest to see how actual cheating behavior is distributed, which is the focus of Study 3. First, in study 2, we use a different sample to see to what extent the profiles replicate.

## Study 2

Emergent latent profiles may well be contingent to the characteristics of the sampled population, with expressed personality being in part influenced by such things as culture, age, and socioeconomic status (Daljeet et al., 2017). As such, replicating specific profile compositions or structures across populations is necessary to ensure confidence in the generalizability of our observed profiles. To this end, Study 2 explored the profile structure of HEXACO and Dark Triad among a Dutch student sample (contrasting with the general UK sample used in Study 1) and examined the extent to which the profiles and the relationships observed with self-reported deviance and prosociality found in Study 1 replicate. This study was approved by the ethical committee at the university.

## Methods

### Participants and Measures

Data collection was conducted in a Dutch university. Three hundred and ninety-two participants agreed to complete the questionnaire in a laboratory (Male = 226, Female = 165, 1 participant preferred not to disclose;  $M_{\text{age}} = 20.61$ ,  $SD_{\text{age}} = 1.90$ ,  $\text{range}_{\text{age}} = 18$  to 31). Participants earned research credits for participating, which contributed to part of their graduation requirement. Their participation in this study was completely voluntary as there were multiple advertised studies available to them that would also meet this requirement. Participants were also free to opt-out and have their responses deleted from the analyzed data.

The questionnaire used was identical to that used in Study 1.

## Results

Mean, *SDs*, internal consistency coefficients, and bi-variate correlation coefficients between personality indicators and criterion measurements are reported in Table 3. The Cronbach’s alphas were satisfactory, except for the Machiavellian views subscale from TDM-IV ( $\alpha = .57$ ) and the self-sufficiency subscale from NPI ( $\alpha = .59$ ). Upon checking the composite reliability of these two subscales, the Machiavellian views subscale and the Self-sufficiency subscale yielded .70 and .55, respectively, for composite reliability. As the

Self-sufficiency subscale did not perform satisfactorily, it was dropped from subsequent analyses. For correlations between personality traits, consult Table S4 in Appendix 5.

**Latent Profile Analysis**

Six profile solutions were fitted under each Model 1, 2, and 3 parameterizations. Following the same decision rules described in Study 1 and focusing on the percentage change in BIC across solutions, the five-profile solution with Model 1 and 2 parameterizations showed the greatest decrease in BIC compared to their one-profile solution (see Table A4 in Appendix 2). The smallest profiles in both solutions were acceptable (> 5%). After examining the compositions, Model 2’s five-profile solution showed cleaner representation of the personality profiles uncovered in Study 1 (Fig. 1). Thus, it was selected as the final model that fits the data best. The entropy of the five-profile solution is .90.

Compared to the five-profile solution in Study 1, four similar profiles were found in the current sample - P.1 (the ‘dark social recluse’), P.2 (the ‘social narcissist’), P.3 (the ‘socially considerate’), and P.4 (the ‘all-round malevolent’). The overall composition of these four profiles resembles those from Study 1 (Table S5 in the Appendix 5).

P.1: the ‘dark social recluse’ is characterized by average psychopathy, above average Machiavellianism, and below average extraversion and narcissism, representing a manipulative orientation accompanied by a low sense of self. The profile describes 28.1% of the sample (n = 110;  $M_{age} = 20.60$ ). After accounting for the base rate of gender in the sample, 50.0% of whom are male (n = 63) and 50.0% of whom are female (n = 46).

P.2: the ‘social narcissist’ is characterized by average honesty-humility and openness, moderate levels of extraversion and conscientiousness, and high scores on narcissism, representing a mix of socially desirable and self-centered traits. The profile describes 19.9% of the sample (n = 78;  $M_{age} = 20.47$ ). After accounting for the base rate of gender, 51.2% of whom are male (n = 46) and 48.8% of whom are female (n = 32).

P.3: the ‘socially considerate’ is characterized by high scores on honesty-humility and agreeableness, moderate extraversion, average conscientiousness and openness, and low scores on Dark Triad, representing a normative and socialized group of people. The profile describes 22.2% of the sample (n = 87;  $M_{age} = 20.79$ ). After accounting for the base rate of gender, 54.4% of whom are male (n = 54) and 45.6% of whom are female (n = 33).

**Table 3** Means, SDs, reliabilities (Cronbach’s alpha), and correlations between personality traits and criterion measures (N = 392)

	DDO	DDP	PT	EC	Pub	Anon	Altruism	MI	M	SD	α
Honesty–humility	-.36***	-.30***	.21***	.26***	-.27***	.17***	.40***	.10*	3.09	0.66	.72
Emotionality	-.03	-.15**	.11*	.47***	.04	.01	-.06	.31***	3.02	0.68	.76
Extraversion	.09	.09	.08	.10*	.11*	-.16**	.03	.12*	3.56	0.63	.78
Agreeableness	-.14**	-.25***	.30***	.13*	.06	.00	.15**	.23***	3.10	0.61	.72
Conscientiousness	-.21***	-.09	.19***	.13*	-.11*	.04	.08	.08	3.63	0.56	.74
Openness	-.01	-.09	.31***	.21***	-.09	.19***	.12*	.13**	3.49	0.68	.75
P. psychopathy	.32***	.37***	-.35***	-.50***	.36***	-.08	-.45***	-.27***	2.43	0.59	.83
S. psychopathy	.23***	.22***	-.23***	-.11*	.13**	.14**	-.23***	-.16**	2.42	0.54	.64
Authority <sup>a</sup>	.16**	.22***	-.05	.03	.14**	.02	-.05	.06	3.63	0.65	.86
Superiority <sup>a</sup>	.23***	.14**	-.05	.15**	.22***	-.05	-.25***	.20***	3.21	0.72	.68
Exhibitionism <sup>a</sup>	.31***	.26***	-.16**	-.01	.25***	-.15**	-.32***	.04	2.39	0.69	.75
Exploitativeness <sup>a</sup>	.29***	.20***	-.05	-.09	.12*	.02	-.12*	-.06	3.18	0.76	.79
Vanity <sup>a</sup>	.17***	.10*	-.12*	-.04	.08	-.22***	-.10*	.14**	2.95	1.01	.86
Entitlement <sup>a</sup>	.23***	.25***	-.12*	.02	.22***	-.01	-.31***	.13**	3.18	0.77	.76
Mach. tactics	.23***	.14**	-.22***	-.29***	.13*	-.08	-.17***	-.27***	2.38	0.75	.71
Mach. views	.13**	.15**	-.13**	-.15**	.19***	.11*	-.26***	-.05	2.69	0.62	.57
M	2.22	1.93	3.66	3.60	2.21	2.90	3.81	3.45	-	-	-
SD	0.74	0.94	0.59	0.64	0.87	0.85	0.74	0.56	-	-	-
α	.77	.81	.72	.82	.89	.84	.71	.83	-	-	-

P. Psychopathy Primary psychopathy, S. Psychopathy Secondary psychopathy, Mach. Tactics Machiavellian Tactics; Mach. Views Machiavellian views, DDO Organizational destructive workplace deviant behavior, DDP Interpersonal destructive workplace deviant behavior, PT Perspective-taking, EC Empathetic concern, Pub Public prosocial tendencies, Anon Anonymous prosocial tendencies, Altruism Altruistic prosocial tendencies, MI Moral identity

<sup>a</sup>subscales of Narcissism

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

P.4: the ‘all-round malevolent’ is characterized by high levels of Dark Triad and average extraversion, typifying an anti-social, manipulative, and self-centered group. The profile describes 20.9% of the sample ( $n = 82$ ;  $M_{\text{age}} = 20.53$ ). After accounting for the base rate of gender, 49.5% of whom are male ( $n = 47$ ) and 50.5% of whom are female ( $n = 35$ ).

The only new profile in this sample is P.6: the ‘communal’ is characterized by high score on honesty-humility, slightly above average emotionality, agreeableness and openness, and below average extraversion and conscientiousness, representing a pleasing, easy going and good-nature group. The profile describes 8.9% of the sample ( $n = 35$ ;  $M_{\text{age}} = 20.63$ ). After accounting for the base rate of gender, 38.1% of whom are male ( $n = 16$ ) and 61.9% of whom are female ( $n = 19$ ).

### Validation Analysis: Association of Profiles with Deviant Behaviors and Prosociality

Using the extreme profile - P.4 (the ‘all-round malevolent’) - as the reference group in the multinomial logistic regression model revealed no gender differences (odds ratio ranges from 0.63 to 1.22,  $ps$  ranges from .25 to .93) or age differences between profiles (odds ratio ranges from .92 to 1.06,  $ps$  ranges from .53 to .79).

Similar to Study 1, all criterion measures, except anonymous prosocial tendency, were significantly different between profiles (Table S6 in the Appendix 5),  $F(4, 387)$  ranging from 4.00 ( $p = .003$ ) to 20.89 ( $p < .001$ ). Altruism showed the greatest differences ( $F(4, 387) = 20.89$ ,  $p < .001$ ), followed by organizational workplace deviance ( $F(4, 387) = 14.07$ ,  $p < .001$ ), and public prosocial tendency ( $F(4, 387) = 11.75$ ,  $p < .001$ ). Consistent with Study 1, post hoc pairwise comparison revealed a similar pattern of differences between P.2 (the ‘social narcissist’), P.3 (the ‘socially considerate’), and P.4 (the ‘all-round malevolent’) (Table S7 in the Appendix 5). For P.4, we observed higher organizational ( $MD_{P.2} = 0.41$ ,  $p = .002$ ;  $MD_{P.3} = 0.68$ ,  $p < .001$ ) and interpersonal workplace deviance ( $MD_{P.2} = 0.50$ ,  $p = .004$ ;  $MD_{P.3} = 0.81$ ,  $p < .001$ ), and public prosocial tendency ( $MD_{P.2} = 0.52$ ,  $p < .001$ ;  $MD_{P.3} = 0.75$ ,  $p < .001$ ), and a lower level of altruism ( $MD_{P.2} = 0.62$ ,  $p < .001$ ;  $MD_{P.3} = 0.86$ ,  $p < .001$ ) than for P.2 and P.3.

### Discussion

Using a Dutch student sample, we replicated four of the five profiles that emerged from the general population UK sample of Study 1. Also consistent with Study 1, these four profiles mapped onto self-reported workplace deviance and prosociality in similar ways. The present study provides evidence for consistent levels of stability in the HEXACO and Dark Triad profiles across two different cultures and age ranges. Thus, increasing our confidence that

these profiles - especially P.2 (the ‘social narcissist’), P.3 (the ‘socially considerate’), and P.4 (the ‘all-round malevolent’) - reflect meaningful trait combinations that influence deviant behaviors. With reference to the criterion measures, the new profile - P.6 (the ‘communal’) - is similar to P.3 (the ‘socially considerate’) but more socially conscious. As their self-rated moral identity was the lowest, their prosocial deeds could be driven by social desirability, rather than internal moral standards. A similar profile composition was also found in a previous study using HEXACO as indicators (Espinoza et al., 2020), suggesting this profile might capture a group that are kindhearted and prone to social influence.

Consistent with previous research suggesting that the development of dark traits peak during young adulthood (ages 19–30 years; Klimstra et al., 2020), compared to the broad sample in Study 1, we noticed that the mean scores on Dark Triad were higher in this sample. This limits the variability of personality variables, reducing the contrasts between profiles.

### Study 3

While Study 1 and 2 revealed the profiles’ capacity to differentiate self-reported deviance and prosociality, there are well-known limitations of self-reported deviant behaviors (Randall & Fernandes, 1991). To overcome this limitation, Study 3 returned to the same sample of participants from Study 1, 3 months after their initial participation, inviting them to play a series of incentivized behavioral games targeted at assessing cheating and cooperative/competitive behaviors. Despite the behavioral games being presented in an abstract context, they provide an indication of how individuals behaviorally differentiate their moral actions under incentivized conditions that are relevant to workplace contexts. For example, cheating behavior is related to how honest and ethical employees will be when facing ethical tensions between self-interest and prescribed rules or norms. Moreover, while cheating is a direct manifestation of destructive deviance, cooperative/competitive behaviors capture tendencies of people to conform to group norms, which are closely (negatively) related to deviance. In addition, building on the prosocial tendencies self-reported in Study 1, we included an incentive-compatible task to measure how individuals share resources with others, which indirectly relates to deviance via trade-offs between benefits to the self vs. benefits to others. The aim of these tasks was to complement the self-reported data used in Study 1 and 2. The design and analytical plan of this study were pre-registered with OSF ([https://osf.io/p7bt3/?view\\_only=0b4de90f29e0430c9c624ed832441b96](https://osf.io/p7bt3/?view_only=0b4de90f29e0430c9c624ed832441b96)), and was approved by the ethical committee at the university.

## Methods

### Participants

Three months after the completion of Study 1, Study 1 participants were invited to participate in Study 3. 326 participants agreed to participate (Male = 141, Female = 185;  $M_{\text{age}} = 37.3$ ,  $SD_{\text{age}} = 14.0$ ,  $\text{range}_{\text{age}} = 18$  to 80). The retention rate per Profile ranged from 73.0 to 87.2%, differing significantly between profiles<sup>4</sup>. Participants were compensated at the same rate as Study 1, and received an additional monetary bonus based on their decisions made in the tasks - range from €0.10 to 0.58 (at a rate of £1 to €1.19) or US\$0.11 to 0.61 (at a rate of £1 to \$1.25) in total.

### Measures

Participants completed five behavioral tasks, and two self-report measures. Each of the behavioral tasks was consequential - participants could earn points from the tasks, and those points were later converted to pound sterling and paid as a bonus to incentivize behavior. For tasks that involved a partner and interdependent outcomes, participants were randomly paired with another participant. Following data collection, points were awarded based on the contingencies of their paired decisions. Participants were first presented with all experimental components in a counterbalanced order, followed by self-reported measurements.

### Behavioral Components

**Cheating Behaviors.** Two commonly used experimental paradigms were used to examine dishonest behaviors - the die roll task and the number matrix task (Gerlach et al., 2019). In the Die Roll Task (Fischbacher & Föllmi–Heusi, 2013), participants were requested to roll a virtual die once on an external website and then report the result of the die roll. Rolling and reporting ‘one’ earned one point, ‘two’ earned two points, etc., up to five. However, if the virtual die roll resulted in a six, no points would be awarded. Participants were encouraged to be honest, but also informed that we had no way of verifying what number they reported, thus providing ample room for cheating.

In the Number Matrix Task (Mazar et al., 2008), participants were presented with five unsolvable numeric questions. Each question consisted of a  $4 \times 3$  matrix containing a total of 12 numbers with two decimal places. They were instructed to find two numbers that could sum to 10. Each matrix was presented for 15 s, after which, participants were asked to simply indicate whether they found the two numbers or not, under the knowledge that each ‘solved’ matrix

would earn one point. Once again, here participants were given ample room to cheat.

**Cooperative/Competitive Behaviors.** The Hawk-and-Dove Game (HDG; Doebeli & Hauert, 2005; Neugebauer et al., 2008) was used to examine participants’ cooperativeness in a resource distribution dilemma. Participants were tasked with dividing resources (i.e., 40 points) between themselves and their partner. They could choose between two actions - peaceful dove or aggressive hawk, with their outcomes being interdependently tied to both party’s decisions. If both chose Dove, points were split equally (i.e., 20 points each). If one chose Dove and the other chose Hawk, the participant who chose Hawk received three quarters (i.e., 30 points), while the one who chose Dove received only one quarter (i.e., 10 points). If both chose Hawk, then both participants received 0 points. There were three rounds of the HDG. First there was a baseline round, where participants decided on their general action strategy. Then, two conditional rounds, in which participants were instructed to select their strategy specifically to (1) a hawk-acting opponent and (2) a dove-acting opponent.

**Behavioral Risk-taking.** Participants completed two rounds of Tullock’s Contest Game (Lim et al., 2014), competing with another person for a winner-takes-all prize of 150 points. Participants were informed that the winner was determined by a chance system, wherein the probability for Participant A to win the 150 points was determined by the ratio of their investment to the combined investment of both participants. For instance, if Participant A invested 30 points and Participant B invested 20 points, then Participant A had 60% chance (i.e.,  $30/(30+20)$ ) of winning the contest. This probability decreased to 30% if Participant B were to invest 70 points (i.e.,  $30/(30+70)$ ). Participants were informed that they would retain any portion of the endowment that was not invested, thus providing them with a risk-averse behavioral option.

An endowment was given at the start of each round. In the first round, each participant was endowed with a fixed 100 points, providing a baseline to evaluate participants’ risk-taking tendency. However, in the second round, the endowment amount was determined by the accuracy of participants’ estimations of their relative performance on the General Knowledge Questionnaire (GKQ) they completed in an earlier time<sup>5</sup>. The GKQ consists of twelve questions and participants were instructed to select one correct answer for each question (e.g., ‘How does one call an instant camera?’; participants chose the correct answer from the three alternatives: ‘Canon Camera,’ ‘Polaroid Camera’ and ‘Minolta Camera’). Participants were informed about the median performance of the General Knowledge Questionnaire in Study 1, and then asked to estimate their own relative standing

among all participants (in terms of percentile). They were informed that the actual endowment they received would be equal to their actual performance percentile and that if they overestimated their performance, and so overinvested in the contest, they would automatically lose the game.

**Social Value Orientation (SVO).** Social value orientation refers to the magnitude of other-regarding in an individual's decision-making. The SVO slider measure (Murphy et al., 2011) was used to evaluate participants' underlying social preference. It contains six items. All items have the same general form. Each item consists of nine pairs of options, indicating a resource allocation over joint payoffs between the decision-maker and a passive recipient. For example, in one of the items, the decision-maker's share is set at 85 across the nine options, while the recipient's share varies from 15 to 85, with no fixed interval. The decision-maker then indicates their most preferred allocation. The sum of each option may not be equivalent, and not all items are zero-sum (i.e., benefiting the recipient does not always imply a loss to the decision-maker). To calculate the SVO angle, we followed the steps in Murphy et al. (2011), first by calculating the mean of the payoffs to the decision-maker and the recipient across all six items. The SVO angles indicate a spectrum of social orientation, with the higher value suggesting a prosocial orientation and the lower value suggesting a pro-self orientation.

### Self-Reported Components

**Competitiveness and Desire to Win.** Following Lombardo (2019), four items each were used to measure participants' general competitiveness (e.g., 'I like situations in which I compete with others') and desire to win (e.g., 'I try to be the best person in the room at almost anything'). Items were rated on a 7-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree).

## Results

The means, *SDs*, and reliabilities of the measurements are presented in Table 4.

### Cheating Behavior

Responses from the Die-roll task were examined using chi-square goodness-of-fit test to compare the observed probability distribution in each profile with the theoretical probability (1/6 for each number). Only the observed distributions of P.2 (the 'social narcissist';  $X^2(5) = 24.46, p < .001$ ) and P.4 (the 'all-round malevolent';  $X^2(5) = 14.52, p = .01$ ) were significantly different from the theoretical probability. The post-hoc analysis (with Bonferroni adjustment) showed that both

P.2 (the 'social narcissist'; observed proportion = 34.29%,  $p = .001$ ) and P.4 (the 'all-round malevolent'; observed proportion = 34.78%,  $p = .006$ ) reported '5' more than expected (approximately 16.67%).

Analysis of the Number Matrix Task also indicated that the number of unsolvable matrices reported as 'solved' differed significantly across profiles,  $F(4, 321) = 3.24, p = .01$  (Table S8 in Appendix 5). However, post-hoc pairwise comparison (with Tukey adjustment) indicated that none of the pairs were significantly different from each other.

### Cooperative Behavior

In the baseline round of the Hawk-and-Dove Game (where participants were uninformed of their partner's choice), a chi-square test of independence showed 'hawk' or 'dove' choices to be unrelated to the personality profiles,  $X^2(4) = 3.44, p = .49$ . However, in the two conditional rounds (where participants were instructed to select their strategy given a hawk-acting opponent and a dove-acting opponent), we observed differences across the profiles. McNemar's test revealed members of P.1 (the 'dark social recluse';  $X^2(1) = 8.31, p = .004$ ), P.2 (the 'social narcissist';  $X^2(1) = 12.97, p < .001$ ), and P.4 (the 'all-round malevolent';  $X^2(1) = 8.65, p = .003$ ) shifted their responses when they knew their opponents had played 'hawk' versus 'dove'. Specifically, they shifted from acting 'hawk' when their opponent played 'dove' to acting 'dove' when opponent plays 'hawk', suggesting that they are sensitive to opportunities that could maximize their potential gain.

### Behavioral Risk-Taking

For the Contest Game, participants' (risky) investments differed (marginally) among the five profiles ( $F(4, 321) = 2.03, p = .09$ ; Table S8). P.2 (the 'social narcissist') invested the most, and statistically more than P.3 (the 'socially considerate';  $MD = 12.38, p = .05$ ; Table S9 in Appendix 5).

### Social Value Orientation

ANOVA also showed that SVO differed among the five profiles ( $F(4, 321) = 3.99, p = .004$ ; Table S8 in Appendix 5). In particular, P.4 (the 'all-round malevolent') scored significantly lower than P.3 (the 'socially considerate';  $MD = 8.02, p = .02$ ; Table S9 in Appendix 5) and P.5 (the 'emotional dysregulate';  $MD = 8.70, p = .02$ ).

### Competitiveness and Desire to Win

Profiles were associated with different levels of self-reported competitiveness ( $F(4, 321) = 18.57, p < .001$ ) and desire to win ( $F(4, 321) = 15.63, p < .001$ ) (Table S8 in Appendix 5).

**Table 4** Correlations between behavioral deviance variables, and self-reported competitiveness, and desire to win in Study 3 ( $N=326$ )

	1	2	3	4	5	6	7	<i>M</i>	<i>SD</i>	$\alpha$
1. Competitiveness	–							4.12	1.42	.91
2. Desire to win	.42***	–						3.91	1.40	.89
3. Risk-taking (CG)	.02	.02	–					54.44	26.55	–
4. Hawk-and-dove (ref. = Hawk)	.07	.10	.09	–				–	–	–
5. SVO	–.17**	–.28***	–.16**	–.29***	–			27.74	13.72	–
6. Dishonesty (MT)	.08	.12*	.09	.09	–.28***	–		0.74	1.07	–
7. Overconfidence (CG)	.14*	.14**	.09	.10	–.17**	.01	–	49.37	27.95	–

CG Contest game, MT Matrix task

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

P.2 (the ‘social narcissist’;  $MD=0.88$ ,  $p < .001$ ) and P.4 (the ‘all-round malevolent’;  $MD=1.54$ ,  $p < .001$ ) were significantly higher than P.3 (the ‘socially considerate’) in desire to win (Table S9 in Appendix 5).

## Discussion

The results from Study 3 demonstrate that the five personality profiles that we observed and mapped onto self-reported deviance in Study 1, are also associated with *behavioral* variations in cheating, and cooperative/competitive actions. This strengthens our confidence that the revealed profiles reliably differentiate between deviants and rule-abiders. We found that oftentimes P.2 (the ‘social narcissist’) behaves in similar ways as P.4 (the ‘all-round malevolent’), rather than their P.3 (the ‘socially considerate’) counterparts contrasting with self-reported deviance in Study 1. This finding suggests that P.2 is inclined to disguise their self-interested orientation when self-reporting, or when the stakes are low, yet does cheat and act competitively when there is an opportunity. This tendency might be driven by socially desirable norms of compliance, or impression management (e.g., as in self-signaling or social-signaling; Bodner & Prelec, 2003; Grossman, 2015).

## General Discussion

The current research demonstrates that personality traits cluster as latent profiles, and that these latent profiles differentially map onto self-reported and behavioral expressions of deviance and prosociality. Study 1 and 2 explored how HEXACO and Dark Triad formed five latent personality profiles. These profiles related differentially to self-reported destructive workplace deviance, moral identity, prosociality, and perspective-taking. Study 3 extended Study 1 and 2 with incentivized behavioral experiment tasks, where personality profiles displayed different levels of cheating, risk-taking, and competitive behaviors.

To summarize our contributions, our results showcase the usefulness of a person-centered approach to advance deviance research, refining relationships between personality and deviant behaviors within homogeneous subgroups (Wang & Hanges, 2011). Extant research has primarily focused on the effect of individual traits or limited interactions between traits, which overlooks the possibility that traits do not preserve the same linear relationship with deviance when examined as a group (Asendorpf, 2015; Daljeet et al., 2017). Specifically, when examined individually, honesty-humility and narcissism have a strong negative relationship (e.g., Fernández-del-Río et al., 2020; Lee & Ashton, 2004), which was also supported in Studies 1 and 2 of the current work. However, our findings also demonstrate a subgroup of people who have above average levels of both honesty-humility and narcissism (P.2: the ‘social narcissist’). This combination is reflected in their socially desirable answering of self-reported deviance, yet showing of selfish behavior. Thus, this mixed profile does not behave consistently across situations, compared to other profiles. To illustrate, in low-stakes situations (i.e., self-reported), P.2 (the ‘social narcissist’) is more prosocial, and reported low level of deviance, which is similar to P.3 (the ‘socially considerate’). However, in high-stakes situations (i.e., incentivized behavioral tasks), P.2 are more pro-self and focus on their personal gain, which is similar to P.4 (the ‘all-round malevolent’) than P.3. Understanding how personality from two separate frameworks relate to deviance is an important step toward establishing selection criteria, training programs, or internal control mechanisms that are sensitive to person-centered antecedent signals of deviance.

## Implications of the Current Research

Our findings have implications for the relationship between personality and destructive deviance. First, our studies revealed that personality combines in unique ways that exhibit different patterns of deviance. Echoing the Circumplex of Personality Metatraits (CPM; Strus et al.,

2014), three of the five profiles have configurations similar to the metatraits (Rogoza et al., 2022). For instance, P.1 (the ‘dark social recluse’) looks like Alpha–Minus (disinhibition), P.3 (the ‘socially considerate’) resembles the Gamma–Plus (integration), while P.4 (the ‘all-round malevolent’) falls on the opposite pole of Gamma–Minus (disharmony). This suggests the profiles uncovered are tapping into common configurations of personality. Interestingly, P.2 (the ‘social narcissist’) - the profile that has a configuration that loads high on HEXACO (except emotionality) and narcissism - was not in accord with the proposed metatraits from the CPM. P.2 responses were more context-dependent and less consistent than among people with uniformly high levels of HEXACO or Dark Triad traits. In particular, as noted P.2 was not identified as deviant in the self-reported measures (Study 1); however, in the die roll task (Study 3), where there was more moral wiggle room for deception to go unnoticed, P.2 cheated as much as P.4 (the ‘all-round malevolent’). So, even though P.2 cheated behaviorally, they did not self-report their tendency in this direction. This suggests that P.2 (the ‘social narcissist’) disguises anti-social motivations when facing public evaluation, or when stakes are low, presumably to promote a socially desirable self-image. However, when there is opportunity to maximize personal benefits via cheating behavior, they do so, especially when social sanctions are circumstantially limited.

The observed combination of HEXACO and Dark Triad casts the social narcissist as something of a self-interested social chameleon. This property might help them feign socially desirable responses, thus preventing early detection of potential internal organizational risks. Hence, we would expect in future studies of employee behavior, P.2 (the ‘social narcissist’) would likely seize opportunities to benefit themselves via ethical shortcuts, similar to P.4 (the ‘all-round malevolent’). However, given their social skills, P.2 would have an advantage over P.4 in social situations (e.g., influence, negotiations, speaking up in teams), and may therefore thrive in workplace settings, so long as their ethical short comings remain unnoticed.

Our findings also challenge the relatively simplistic ‘good vs. bad’ trait division. While it is commonplace in the literature to compartmentalize traits into light/good or dark/bad (e.g., Muris et al., 2022), this broad distinction fails to capture the nuances of personality. In the context of individual traits, for example, honest-humility can be perceived as positive when it is on the higher end, and as negative on the lower end (e.g., Dunlop et al., 2023). Moreover, despite the seemingly positive/negative valence of personality, each trait has strengths and weaknesses, positives and negatives. For example, being high on conscientious implies the person strives for perfection, is organized, diligent, and/or prudent

(Lee & Ashton, 2004); however, at the same time, they might also appear rigid and stubborn.

Additionally, when considering personality as a configuration, combinations of traits could be associated with different behavioral outcomes, versus when considering those same traits in isolation. Pletzer et al. (2019) showed in their meta-analysis that workplace deviance correlates strongly and negatively with honesty-humility, agreeableness, and conscientiousness, indicating that these are widely replicated findings. Thus, the combination of high honesty-humility, conscientiousness, and agreeableness with high narcissism in P.2 (the ‘social narcissist’), and the behavioral deviance committed by this group of people highlights the value of clustering personality traits in the examination of antecedents to deviance. A variable-centered approach with factor-based variables, such as was used in all of the studies constituting Pletzer et al.’s (2019) meta-analysis, could not have detected this subgroup. In this sense, LPA’s person-centered approach appears to provide a more realistically nuanced representation of personality and behavior. As this is a sizable group (some 25% of the samples belonging to it) and one that seems to be prone to hiding their tendency to act selfishly and unethically, this combination of traits is interesting to study further in the domain of unethical and deviant behavior.

The person-centered approach offers a somewhat different viewpoint for using personality measures as tools to understand or manage people. The lens of a holistic interpretation on personality matches with the intuitive way of mentally categorizing acquaintances. Accounting for these complexities can enrich understanding of team formation and dynamics. For example, strong extroversion could imply different behaviors depending on the levels of other traits - a socially considerate team member or a narcissistic one with good disguising skill. Such a disguise could pose ethical hazards to organizations. When opportunistic, though seemingly trustworthy employees are assigned to key positions they may be prone to abusing their power and privileges. For instance, by (re)directing resources to better serve their personal interests. This highlights the importance of comprehensive internal governance systems, that keep even apparently trustworthy decision-makers in check and accountable. For example, requiring gated procedures, like double authorization for key ethical decisions, could strengthen appropriate monitoring of employees. Our findings suggest there is value in minimizing employees’ opportunities to be tempted by deviant behaviors when unsupervised, especially for those who have a mix of sociable and narcissistic personality.

Furthermore, the findings of the current studies could inform workplace practices. For example, the application of profiles can help with team formation, given that some combinations of employees might be more compatible when they work together, depending on their personality composition.

For instance, employees with either a social narcissist or socially considerate tendency might thrive in roles that involve liaising with clients. However, they might not work well together because of their different orientation. Or, they might form a compatible team if they paired up and take on different tasks of the same project (e.g., employees with a social narcissist tendency could better negotiate with clients; employees with a socially considerate tendency could more genuinely connect with internal partners to deliver products for clients). The profiles might also be used as a tool for employees to better understand their colleagues' general tendencies in approaching situations, facilitating mutual understanding and empathy.

In addition to productivity and collaboration, group composition also influences the ethical culture of the team (Roberson & Williamson, 2010). A balanced team could enhance the ethical strengths of all members, which would be complementary to maintaining ethical guidelines. For instance, having members with socially considerate tendencies not only fosters a friendly and cooperative environment, such team members might also highlight and encourage ethical decisions and practices within the team and keep track of ethical milestones, ensuring the team delivers on their social responsibility to stakeholders. Meanwhile, although members with social narcissism or malevolent tendencies might bring ethical hazards to organizations, if balanced with socially considerate members and proper management, their strategic thinking might help identify ethical pitfalls within the team and associated processes, that might otherwise be overlooked by others, and so enhance the development of robust policies and procedures aimed at preventing unethical behaviors.

Alternatively, personality profiles also have the potential to aid the development of targeted interventions or training programs. For example, organizations might offer mental support or stress-relieving workshops for employees who are more prone to get emotionally aroused as an early intervention for burnout. Moreover, understanding the composition of teams can help in designing appropriate ethics training programs, for instance, which outward behaviors might be more prominent within the team (e.g., risk-taking or impulsive tendencies). Regular ethics trainings could also help members to identify possible alignment between their personal goals, organizational goals, and broader stakeholders' benefits. While it is not likely (nor ethical) to have teams only consist of socially considerate members, with appropriate measures and proper management, the potential of all members can be used to enhance ethical practice.

Despite their potential benefits in informing workplace practices, we should also be mindful of the possible ethical pitfalls. We could run into the problem of over-generalization if we treat profiles as fully categorical, given that variability exists within each profile. Thus, even within a single

profile, some would have more prototypical personality compositions to the profile description than others, affecting the manifestation of behaviors. Besides, the profiles indicate general behavioral tendencies of individuals; however, the influence of the environment or personal effort could also affect the manifestation. Along the same line, if important decisions were made solely based on profile membership it might potentially lead to discrimination. Taken together, personality profiles could be informative for team functioning; however, they should not override the individuality and uniqueness of employees.

### Limitations and Future Directions

First, although our approach captured both self-reported and behavioral measures of deviance, the absence of social interactions between participants is a limitation. Social relationships and the strength of norms undisputedly influence behaviors (Mischel, 1977), with the expression of traits depending on the 'strength' of the perceived situation. Personality drives behavior most strongly when the situation is ambiguous and lacks clear norms (i.e., weak situations). In the context of workplace deviance, individual differences, such as those reflected in the profiles that emerged from the current research, might be amplified or attenuated by local norms related to ethics, social responsibility, individual performance, and shared understanding of what defines success. For instance, group dynamics contribute to social norms and associated behavioral expectations, which in turn shape the expression of deviant behaviors. For example, workplace cultures and climates that prioritize ethics and have in place comprehensive internal control systems will likely limit the potential for even the dark profiles (e.g., the 'all-round malevolent') to engage in deviant behavior. Furthermore, in group settings, profiles such as the 'social narcissist', with strong concerns about their social image, might show a stronger disconnect between prosocial 'cheap talk' and pro-self-actions. Social narcissists may even express deviance in forms that are 'endorsed' by others (e.g., subtle forms of bullying to take advantage of others or the situation). Exploring how person-centered profiles interact with organizational and cultural norms is likely to be a fruitful avenue for new research.

Second, as the perceived culture of an organization, or even industry, influences the types of people that are attracted to and selected into different organizations (Schneider et al., 1995), personality profiles likely act as antecedents to career selection. For example, darker profiles might prefer workplaces that disproportionately allocate power, prestige, and remuneration to the very best performers. We can imagine that P.2 (the 'social narcissist') would thrive in management or strategic roles (e.g., public relations, marketing) due to their social skills and prioritizing of self-interest.

Alternatively, the righteous attitudes of P.3 (the ‘socially considerate’) might drive them to work in socially relevant sectors (e.g., as social workers, in non-profit organizations). Future studies might therefore explore how different personality profiles self-select into different jobs and evaluate the importance of various workplace characteristics on decision processes. Relatedly, future research can also further explore whether certain profiles would be more prevalent in different industries depending on the specific ethical climates cultivated by industry norm. In short, examining how personality profiles predict deviant behavior across different types of workplaces or industries represents an interesting avenue for further work.

Third, while a person-centered approach offers a new perspective on the relationship between personalities and deviant behaviors, it is data-driven and so contingent on sample characteristics. Further cultural differences beyond those tested in the current studies might influence how personalities manifest in behaviors and/or the prevalence of certain personalities. This study offers a glimpse into the potential of personality profiles, future studies can examine the replicability of profiles across culture and populations. Establishing consistent and replicable personality profiles across cultures may be the start of an alternative avenue to approach deviance, and human behaviors in general. In addition to cultural differences, the compositions and/or prevalence of personality profiles might also vary across demographic characteristics. However, due to regulatory restrictions, we did not collect additional demographic variables. While doing so is potentially insightful, demographic information could also be sensitive; as a first attempt to explore the compositions of personality traits, we want to avoid running the risk of discriminatory inferences being drawn from the data and associated profiles. However, without such information, it limits the generalizability of the findings to other populations that might share specific characteristics of our samples. Given proper theoretical justifications, future studies could explore how profiles might persist or differ across demographics.

Fourth, while the collection of personality measurements provides a comprehensive assessment of both HEXACO and Dark Triad, it requires substantial time investment from participants and researchers. To increase the feasibility of adopting such an approach in practice and field research, future research might explore both data- and theory-driven methods aimed at reducing the number of required questionnaire items. Moreover, while we focused on the composition of broad personality traits, future studies could explore how facets within the broader traits (e.g., honesty-humility) may cluster together, or which facet is the driving force of deviance to further reduce the measurement load in future studies. Other than self-report, there are other viable methods to measure socially sensitive constructs. For example, future studies might make use of other-ratings when measuring

personality (e.g., by colleagues and family members; Stewart et al., 2009). False consensus style questions might also be applied when measuring deviance, as individuals tend to project their own values and attitudes onto ‘average’ others (i.e., asking participants to indicate which response options others would be more likely to perform; Oostrom et al., 2017). Alternatively, with improved technologies, future studies might gamify tasks to assess personality or behaviors in virtual environment (Barends et al., 2019), or utilize algorithmic text analysis to assess personality from existing data. Such approaches might increase the reliability and validity of measuring personality by reducing context-sensitive social desirability and the mundanity of filling in long surveys. This could increase the usability and accuracy of measuring personality by reducing social desirability bias and the mundanity of filling in long surveys.

## Conclusion

Workplace deviance costs organizations financially and creates an unproductive working atmosphere. Traditionally, discrete personality traits have been used to identify the person-based antecedents of deviant behaviors, neglecting complex interactions between the traits. We used Latent Profile Analysis to examine personality in a more comprehensive way. The resulting personality profiles consistently predicted both self-reported attitudes and observed deviant behaviors.

## Endnotes

1. In the preregistration, we aimed to also explore how trait dominance and overconfidence combine with HEXACO and Dark Triad. When conducting the analyses, we realized that (1) different facets of narcissism correlate considerably with dominance; and (2) the best model solution of LPA with and without dominance and overconfidence uncovered a highly similar profile composition. Therefore, in order to sufficiently discuss the relationship between narcissism and dominance, we decided to leave out dominance and overconfidence from the current paper and potentially develop it into a separate paper. The LPA and sequent analyses with the profiles created with HEXACO, Dark Triad, dominance, and overconfidence can be provided under request.
2. There is no straightforward and established rule in determining the minimum sample size necessary for LPA. Generally, small sample sizes will lead to data sparseness (i.e., because of the increased number of response patterns, these patterns may suffer from low response

frequency). With reference to the model simulation conducted by Wurpts and Geiser (2014), which estimated a sample size of 300 would generally give confidence in estimating the model. Thus, both Study 1 and Study 2 targeted at a sample size of 400 given the large number of indicators planned to include in the model (at least 10 indicators). In order to strengthen confidence that our studies were well-powered, we conducted sensitivity power analyses to evaluate the minimum effect size that could be detected given our sample size, desired power, and alpha level. The sensitivity power analyses were conducted in G\*Power (Faul et al., 2009), using an alpha level of 5% and the sample sizes were 400 and 392 for Study 1 and Study 2 respectively. The results revealed that our studies have 80% of power to detect effects of at least  $f = .17$  (Study 1) and  $.18$  (Study 2); or 90% of power to detect effects of at least  $.20$  (both Study 1 and 2).

3. The profile description was driven by the high levels of emotionality and secondary psychopathy. While high in secondary psychopathy has a tendency to suffer from emotional arousal and correlated with anxiety, this profile also has the highest score in the anxiety facet of emotionality.
4. When compared to P.1: the ‘dark social recluse’, P.2: the ‘social narcissist’ (odds ratio = 0.48,  $p = .05$ ) and P.4: the ‘all-round malevolent’ (odds ratio = 0.41,  $p = .03$ ) had lower probabilities of participating in this second round. When compared to P.4: the ‘all-round malevolent’, P.1: the ‘dark social recluse’ (odds ratio = 2.45,  $p = .03$ ) and P.3: the ‘socially considerate’ (odds ratio = 2.51,  $p = .04$ ) had a higher probability to participate in Study 3. When compared to P.3: the ‘socially considerate’, P.4: the ‘all-round malevolent’ (odds ratio = 0.40,  $p = .04$ ) had a lower probability to participate in Study 3. Taken together, one speculation is that the dark triad traits are driving the effect, the stronger the dark triad traits, the lower the probability to continue with the study; or at least they are slower to response to the study invitation. It is important to note that there was a quota for Study 3 (80% of the sample size of Study 1), so once we reached the expected sample size, we stopped data collection.
5. The General Knowledge Questionnaire (GKQ) was part of exploratory data collected during Study 1 as a measurement of overconfidence of participants. As moving forward with the project (noted in Endnote 1), we decided to focus on the interrelations between HEXACO and Dark Triad traits. Thus, the GKQ was not described in the measurement of Study 1. However, when designing for Study 3, we think that the format of GKQ can offer an ambiguous situation that induce uncertainty in participants’ decision-making. Hence, we used it to

measure participants’ risk-taking behaviors in a high-stake situation.

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**Data availability** The data that support the findings of this study are available in OSF.

## Declarations

**Conflict of interest** The authors have no relevant financial or non-financial interests to disclose.

**Ethical approval** The study designs and methodology for the three studies were approved by the Ethics Committee Economics and Business of University of Amsterdam (Ethics approval number: EC 20210217070254 (Study 1), EC 20220222030254 (Study 2), and EC 20210518120519 (Study 3).

**Informed consent** Informed consent was obtained from all individual participants included in the three studies.

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