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The grandiose narcissism*self-esteem interaction: dynamic Nomological networks of grandiose narcissism and self-esteem

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Abstract

Some scholars treat grandiose narcissism and self-esteem as independent predictors. This has led to creating one nomological network for grandiose narcissism and one nomological network for self-esteem. However, some evidence shows that grandiose narcissism and self-esteem interact to predict outcomes. Hence, some features of the nomological networks of one construct (e.g., self-esteem) might depend on levels of the other (e.g., grandiose narcissism). To advance understanding of this implication, we related the grandiose narcissism*self-esteem interaction to parameters previously used to describe grandiose narcissism and self-esteem as independent constructs (i.e., Five Factor Model [FFM] traits, dark-personality constructs, and impulsivity constructs). Regarding FFM traits, grandiose narcissism*self-esteem predicted (a) higher Agreeableness, (b) higher Conscientiousness, and (c) higher Openness. Regarding dark-personality constructs, grandiose narcissism*self-esteem predicted (a) lower psychopathy, (b) lower Machiavellianism, and (c) lower vulnerable narcissism. Regarding impulsivity constructs, grandiose narcissism*self-esteem predicted (a) lower Negative Urgency, (b) lower Positive Urgency, (c) lower lack of Premeditation, and (d) lower lack of Perseverance. We discuss implications and limitations.

Keywords Dark triad · Impulsivity · Narcissism · Self-esteem · Personality · Self-regulation

Across areas in psychology including developmental, social, Industrial/Organizational, and clinical, there is a long-standing interest in how self-evaluations relate to how people think, feel, and behave (Brummelman et al., 2018; Hyatt et al., 2018; Sedikides et al., 2004). In this literature, two forms of self-evaluations are typically differentiated: grandiose narcissism (GN) and self-esteem (Brummelman et al., 2018; Hyatt et al., 2018; Sedikides et al., 2004; Tracy et al., 2009). It may be tempting to construe GN as exaggerated self-esteem, but the two evaluations are distinct constructs. GN involves evaluating the self's superiority,[1] whereas self-esteem involves evaluating the self's adequacy[2] (Brummelman et al., 2018; Raskin & Terry, 1988; Rosenberg, 1965; Sedikides, 2021). Generally, the available research on these constructs suggests that GN and self-esteem are about weakly-to-moderately related and occasionally unrelated (Brummelman et al., 2018; Richardson et al., 2021; Sedikides, 2021).

GN and self-esteem presumably have a complex relationship that is not yet fully clarified (Brummelman

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[1] Narcissism can manifest in grandiose or vulnerable forms. We discuss the distinction between these two forms later in the manuscript. At this point, suffice it to say that the evidence and theorizing we discuss is relevant to the grandiose form or GN. GN is rated as more prototypical of narcissism-proper by psychologists, clinicians, and lay people (Miller et al., 2018). In this paper, like other papers (Hart, Richardson et al., 2021; Hyatt et al., 2018), GN is studied globally. GN blends multiple related components (e.g., adaptive and maladaptive components), yet it can still be studied globally (Sedikides, 2021).

[2] Self-esteem can reference explicit or implicit, trait-based (or chronic) or state-based, and global or domain-specific self-evaluations. In this paper, self-esteem only references explicit, chronic, and global self-evaluation (Brummelman et al., 2018).

et al., 2018; Hyatt et al., 2018; Richardson et al., 2021; Sedikides, 2021). Towards understanding this relationship, independent effects of the constructs on outcomes are frequently compared (Brummelman et al., 2018; Hyatt et al., 2018; Richardson et al., 2020). For example, GN and self-esteem diverge on Agreeableness (GN relates to low Agreeableness and self-esteem to high Agreeableness) and converge on high Extraversion and approximately average openness (Hyatt et al., 2018); self-esteem (relative to GN) relates more strongly to high Conscientiousness and indicators of self-constraint (i.e., low impulsivity) and low Neuroticism (Hyatt et al., 2018). Also, whereas GN relates positively to aversive and largely dysfunctional personality constructs in the Dark Triad (DT; Paulhus & Williams, 2002), self-esteem relates negatively to these constructs (Hyatt et al., 2018). In sum, GN and self-esteem are both agentic constructs, but GN is antagonistic and somewhat functionally maladaptive (e.g., high impulsivity), whereas self-esteem is communal and functionally adaptive (e.g., low impulsivity; Hyatt et al., 2018; Sedikides, 2021).

Yet, a burgeoning line of investigation exists on the possibility that GN and self-esteem interact to relate to outcomes (Hart et al., 2021b; Richardson et al., 2020, 2021). For example, if GN, in part, reflects a pursuit for glory and if self-esteem promotes a prosocial orientation (Raskin et al., 1991; Wallace, 2011), then self-esteem may point this grandiose-narcissistic pursuit in a more prosocial and socially acceptable direction. Also, low self-esteem seemingly limits how someone high in GN can reasonably strive for superiority. If people view the self as worthless and have a goal to be superior, then they seem limited to degrading others as a means to accomplish the superiority goal (e.g., "I am worthless, but I am still better than these other losers!"). By contrast, if people view the self as worthy and have a goal to be superior, then they can seek accomplishments as means to attain the superiority goal without degrading others. Hence, we speculated that the nomological networks of GN and self-esteem should be dynamic and vary depending on levels of the other construct. If the correlates of one construct change at levels of the other, the proposition of a single nomological network per each construct is an imprecise and potentially misleading proposition. The present work seeks to examine an interactive effect of GN and self-esteem on criterion variables from three frameworks that have contributed to contemporary descriptions (nomological networks) of GN and self-esteem: (1) Five Factor Model (FFM) traits, (2) dark-personality constructs, and (3) impulsivity-relevant traits (Hyatt et al., 2018). Below, we briefly describe some of the main features of these three frameworks.

FFM

The intent behind the FFM was to faithfully represent variability in peoples' personalities with as few trait domains as possible (i.e., balance precision and parsimony, respectively; McCrae & Costa Jr., 1999). The FFM posits that Agreeableness, Conscientiousness, Openness, Extraversion, and Neuroticism are the five core domains of personality. Agreeableness is typified by pro-sociality (e.g., cooperativeness and politeness). Conscientiousness is typified by dutifulness, self-regulation toward goals, and orderliness. Openness is typified by a broad range of interests, enjoyment of art, and a preference for adventure. Extraversion is typified by sociability and assertiveness. Finally, Neuroticism is typified by the frequent and intense experience of negative emotions (e.g., fear, sadness, and anger). These FFM traits appear across cultures and seem robust to changes in the methods that are used to extract them (McCrae, 2002). Some scholars believe that FFM traits are the most fundamental individual differences and argue that that alternative trait-based personality models (e.g., HEXACO) can be understood within the FFM structure (Anglim & O'connor, 2019; Vize et al., 2021).

Dark-Personality Constructs

Although the precise number of "dark-personality" constructs is debatable (e.g., Marcus & Zeigler-Hill, 2015), Paulhus and Williams (2002) introduced the DT to isolate narcissism, psychopathy, and Machiavellianism as "the offensive yet non-pathological personalities" (p. 556). Psychopathy is marked by antisocial tendencies, impulse-control deficiencies, reduced capacities for empathy and remorse, and an erratic lifestyle (Jonason & Tost, 2010; Jones & Paulhus, 2014; Mahmut et al., 2011; Malesza & Ostaszewski, 2016). Machiavellianism is marked by cynicism and tactical manipulation (Monaghan et al., 2016).

The DT includes "narcissism," but "narcissism" in the DT is defined narrowly in terms of grandiose features (Paulhus & Williams, 2002). According to one model (Crowe et al., 2019), narcissism can arise in either a grandiose or vulnerable form. GN is characterized by extraversion and indifference/resilience to criticism (Hart et al., 2017; Miller et al., 2010). In first encounters, people high in GN come across as narcissistic, emotionally stable, and likeable (Miller et al., 2011). In contrast, vulnerable narcissism is characterized by contingent self-esteem, detachment, reactivity to criticism, social anxiety, hyper-competitiveness, and disinhibition (Atlas & Them, 2008; Luchner et al., 2011; Miller et al., 2011). In first encounters, people

high in vulnerable narcissism are not described as "narcissistic," but rather as more shy and emotionally unstable (Miller et al., 2011). People higher in both narcissism variants admit to being narcissistic, and they are each entitled and prone to aggression and selfish behavior (Konrath et al., 2014; Miller et al., 2011). Hence, in this light and consistent with prior work (Hyatt et al., 2018), we considered vulnerable narcissism along with psychopathy and Machiavellianism as dark-personality construct *criterion* variables that could be used to differentiate the networks of GN and self-esteem.

Impulsivity Traits

Based in factor-analytic evidence of impulsivity scales and the FFM as a theoretical guidepost, Whiteside and Lynam (2001) proposed a four-factor model of impulsivity traits that includes: Sensation Seeking, Negative Urgency, lack of Premeditation, and lack of Perseverance. Sensation Seeking (i.e., seeking thrilling experiences) is consistent with impulsivity from the perspective of Extraversion. Negative Urgency (i.e., making rash decisions when in a negative mood) is consistent with impulsivity from the perspective of Neuroticism. Lack of Premeditation (i.e., not considering action consequences) and lack of Perseverance (i.e., not staying focused on tasks that are subjectively unpleasant) are consistent with impulsivity from the perspective of Conscientiousness.[3] A fifth scale was since added to this model (Lynam et al., 2006) to account for rash decision-making in a positive mood (i.e., Positive Urgency). The five impulsivity traits (collectively falling under "UPPS-P") are presumably comprehensive in their coverage of impulsivity features.

The Present Research

Toward conceptualizing the dynamic nomological networks of GN and self-esteem vis-à-vis these three frameworks, we considered that GN*self-esteem relates negatively[4] to (a) externalizing conduct problems (Barry et al., 2003), (b) reactive and unprovoked aggression (Fanti & Henrich, 2015; Hart et al., 2019a; Hart et al., 2021c), (c) low altruism and low moral-identity internalization (Hart et al., 2019b), (d) "unbridled agency" (i.e., endorsing agentic vs. communal values to a greater extent; Richardson et al., 2020), (e) vulnerable narcissism (Hart et al., 2021b), (f) a constellation of self-presentation tactics projecting disagreeable identities (e.g., mean and scary) versus moral or upstanding identities (e.g., a role model; Hart et al., 2021b), and (g) avoiding integrative communication with a provocateur (i.e., a signifier of Openness; Hart et al., 2021c).

Given links between GN*self-esteem on aggression (and low altruism), conduct problems, and avoiding integrative communication, we posited that GN*self-esteem would relate positively to the following FFM traits: Agreeableness (H1), Conscientiousness (H2), and Openness (H3). Indeed, low altruism is a feature of Agreeableness (Graziano & Tobin, 2019), externalizing conduct problems and aggression are manifestations of Agreeableness and Conscientiousness (Miller et al., 2008), and integrative processing and communication is a manifestation of Openness (McCrae, 2009). So, per each increment in self-esteem, we anticipated that GN would be less negatively or more positively related to Agreeableness, Conscientiousness, and Openness. Put differently, per each increment in GN, we anticipated that self-esteem would relate more positively to Agreeableness, Conscientiousness, and Openness.

The available evidence does not link the GN*self-esteem interaction to Extraversion. In one study, GN*self-esteem was positively related to status motivation (Hart et al., 2021c). However, another study showed that GN*self-esteem negatively related to prizing agency values and possessing agency efficacies (Richardson et al., 2021). In two other studies, GN*self-esteem was unrelated to tactical behavior portraying Extraversion-relevant identities (e.g., friendly and competent; Hart et al., 2021b). Hence, we remained open concerning relations between the GN*self-esteem interaction and Extraversion.

The available evidence does not link the GN*self-esteem interaction to Neuroticism. On the one hand, some correlates of the GN*self-esteem interaction (e.g., aggression) could implicate Neuroticism (Widiger, 2009). On the other hand, GN*self-esteem is unrelated to self-reported chronic negative affect (Richardson et al., 2021) and negative affect induced following provocations (Hart et al., 2019a). Hence, we remained open concerning relations between the GN*self-esteem interaction and Neuroticism.

Regarding the dark personality constructs we studied as criteria, we posited that GN*self-esteem would be negatively related to (a) psychopathy (H4), (b) Machiavellianism (H5), and (c) vulnerable narcissism (H6). Indeed, just as GN*self-esteem relates to externalizing conduct problems,

[3] These impulsivity traits should not be confused with broader FFM traits that cover more content. Consider Extraversion, which is inclusive of features of Sensation Seeking (e.g., "excitement seeking") in addition to gregariousness, cheeriness, and assertiveness. Also, in some cases, FFM traits and their related UPPS-P impulsivity traits assess wholly different constructs. Consider differences between Negative Urgency and Neuroticism. Negative Urgency refers to rash decision making when in a negative affective state; however, Neuroticism mainly assesses the intensity and frequency of these negative affective states (i.e., the domain of Neuroticism) but not the impulsive responding to these states.

[4] This means that GN relates more negatively (or less positively) to outcomes as self-esteem increases; or, self-esteem relates more negatively (or less positively) to outcomes as GN increases.

aggression, lack of altruism, unbridled agency, and socially undesirable self-presentation, so do psychopathy, Machiavellianism, and vulnerable narcissism relate to many or all these criteria (Furnham et al., 2013; Hart et al., 2022; Muris et al., 2017). Also, H4-H6 can be inferred from H1 and H2 because psychopathy, Machiavellianism, and vulnerable narcissism relate negatively to Agreeableness and Conscientiousness. Finally, as we noted, H6 has already received support from a prior study (Hart et al., 2021b). Per each increment in self-esteem, GN would be less positively related to psychopathy, Machiavellianism, and vulnerable narcissism; per each increment in GN, self-esteem would be more negatively related to psychopathy, Machiavellianism, and vulnerable narcissism.

Pertaining to H5, we posited sub-predictions in recognition of Machiavellianism's multidimensional composition. Machiavellianism and psychopathy could be conflated in common measures (Miller et al., 2017). However, recognition of the multidimensional nature of Machiavellianism supports differentiating it from psychopathy (Monaghan et al., 2016). According to one perspective, Machiavellianism is composed of the reliance on manipulation and exploitation to achieve one's goals (called "tactics") and a distrustful and negative opinion of others (called "views;" Monaghan et al., 2016). Tactics is a shared feature between Machiavellianism and psychopathy, but views is rather unique to Machiavellianism (Monaghan et al., 2016). In that regard, GN*self-esteem appears related to various antagonistic criteria (e.g., aggression, exploitation, lack of helping; Fanti & Henrich, 2015; Hart et al., 2019a) that, in theory, can be based in features associated with tactics or views. Hence, we presumed that GN*self-esteem would be negatively related to tactics (H5a) and views (H5b). Per each increment in self-esteem, GN would be less positively related to tactics and views; per each increment in GN, self-esteem would be more negatively related to tactics and views.

Regarding UPPS-P impulsivity traits, we posited that GN*self-esteem would be positively related to UPPS-P impulsivity traits (H7). Indeed, GN*self-esteem relates to aggression and externalizing symptoms (Barry et al., 2003; Fanti & Henrich, 2015; Hart et al., 2019a; Hart et al., 2021c), which themselves are related to all or some UPPS-P traits (see Bresin, 2019; Pérez Fuentes et al., 2016). For example, a meta-analysis inclusive of all UPPS-P traits except Positive Urgency showed that Sensation Seeking, Negative Urgency, lack of Premeditation, and lack of Perseverance predict enhanced aggression (Bresin, 2019); Positive Urgency was not considered but it is likely implicated in aggression, too, as aggression is also inspired by positive affect, such as being enthused about the prospect of causing harm or obtaining revenge (see Chester, 2017; Hart et al., 2021a). Links between GN*self-esteem and the impulsivity traits are consistent with H4-H6 because psychopathy and Machiavellianism both relate positively to Negative and Positive Urgency, and psychopathy alone relates positively to lack of Premeditation and lack of Perseverance (Kiire et al., 2020). Per each increment in self-esteem, GN would be less positively or more negatively related to Sensation Seeking, Negative Urgency, Positive Urgency, lack of Premeditation, and lack of Perseverance; per each increment in GN, self-esteem would be more negatively or less positively related to Sensation Seeking, Negative Urgency, Positive Urgency, lack of Premeditation, and lack of Perseverance.

With the possible exception of H6, the literature does not provide secure evidence regarding any of these hypotheses. For example, only one study has profiled the GN*self-esteem interaction on all Big-Five/FFM traits (Hart et al., 2019b). It revealed that GN*self-esteem related positively to Openness but was unrelated to the other traits. Secure conclusions cannot be drawn from this study because Big-Five/FFM traits were measured with the Ten-Item Personality Inventory (TIPI; Gosling et al., 2003). The TIPI is narrow in coverage, and its validity and reliability estimates are poorer than longer measures (Gosling et al., 2003). No studies have profiled the GN*self-esteem interaction on longer FFM measures that respect the breadth of the traits or on psychopathy, Machiavellianism, or impulsivity constructs. The present study included an improved measure of FFM traits along with measures of psychopathy, Machiavellianism, vulnerable narcissism, and UPPS-P impulsivity traits as criterion variables.

Method

Participants and Procedure

A power analysis suggested that a sample size of 395 participants is sufficient to detect a small interactive effect (f^2 = .04) with an alpha of .05 and power at .80. Of note, the present data was collected in conjunction with a separate project requiring a substantially larger sample size. As such, we collected 943 cases from Amazon's MTurk. Of these, we only retained cases that provided complete data. To enhance data quality, we excluded 157 cases for failing an initial "CAPTCHA" automated responding check, 23 cases for failing 2/2 attention probes asking participants to indicate a specific scale response, and four cases

Table 1 Descriptive Statistics, and Grandiose Narcissism's and Self-Esteem's Bivariate Relations to Criterion Variables

	1	2	*M*	*SD*	α
1. Grandiose Narcissism	–	.24**	2.75	0.64	.71
2. Self-Esteem	.24**	–	4.71	1.28	.90
Five-Factor Model Traits					
3. Agreeableness	−.36**	.19**	3.71	0.61	.77
4. Conscientiousness	.02	.51**	3.68	0.60	.80
5. Openness	−.12**	.03	3.34	0.57	.66
6. Extraversion	.56**	.40**	3.31	0.70	.84
7. Neuroticism	−.27**	−.68**	2.89	0.68	.79
Dark Personality					
8. SD3-Psychopathy	.47**	−.32**	2.28	0.79	.83
9. SD3-Machiavellianism	.38**	−.20**	3.07	0.74	.82
10. TDM4-Machiavellianism	.16**	−.36**	3.36	0.83	.67
11. TDM4-Tactics	.02	−.20**	2.88	1.10	.68
12. TDM4-Views	.20**	−.33**	3.68	1.05	.67
13. Vulnerable Narcissism	.05	−.37**	3.03	0.70	.77
Impulsivity					
14. Sensation Seeking	.29**	.02	2.51	0.76	.73
15. Negative Urgency	.00	−.45**	2.37	0.74	.78
16. Positive Urgency	.23**	−.30**	2.12	0.76	.81
17. Lack of Premeditation	.06	−.29**	1.84	0.64	.80
18. Lack of Perseverance	.00	−.26**	1.82	0.61	.73

SD3 = Short Dark Triad; TDM4 = Two-Dimensional Machiavellianism IV

* = $p < .05$; ** = $p < .01$

for invariable responding across personality indices (final $N = 485$; $M_{age} = 36.20$, $SD_{age} = 12.71$; 61.9% Caucasian; 66.4% female).[5] This study was approved by the IRB at the University of Alabama and adheres to the Declaration of Helsinki; all participants provided informed consent for their participation.

Measures

After consenting, participants completed the following personality measures in a random order, then were debriefed and compensated (for descriptives, see Table 1):

Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965)

The RSES is a 10-item index of global and trait self-esteem. Participants rated (dis) agreement (1 = *strongly disagree*; 7 = *strongly agree*) with each item. Items were averaged. The RSES is recognized as an appropriate measure for assessing global feelings of adequacy (Brummelman et al., 2018), and it has been used frequently in research examining interactions between GN and self-esteem (see Hart et al., 2021b).

Short Dark Triad (SD3; Jones & Paulhus, 2014)

The SD3 assessed GN, sub-clinical psychopathy, and Machiavellianism by rating (dis) agreement (1 = *disagree strongly*; 5 = *agree strongly*) with 27 total statements (nine items per construct). Items were averaged into their constituent factors.

Hence, GN was operationalized via the SD3. Previous studies examining the interaction between GN and self-esteem assessed GN with the Narcissistic Personality Inventory (NPI) or a variant of this measure (see Barry et al., 2003; Hart et al., 2019b; Richardson et al., 2020, 2021). In that context, the SD3-GN scale shows extensive relations to the NPI ($r = .87$; Jones & Paulhus, 2014). Given concerns about fatigue and apathy, we felt it was justified to reduce the narcissism items from 40 (NPI) to 9 (SD3) with apparently little reduction in variance (Jones & Paulhus, 2014). Also, given our interest in global GN (as in Hart et al., 2021b; Richardson et al., 2021), the SD3-GN scale is sufficient.

International Personality Item Pool-NEO-60 (IPIP-NEO-60; Maples-Keller et al., 2017)

The IPIP-NEO-60 is a validated index of FFM personality traits that also allows for facet-level analyses. Participants rated how accurately (1 = *very inaccurate*; 5 = *very accurate*) 12 items representing each personality-trait factor were of them. Items were averaged into the constituent five factors: Agreeableness, Conscientiousness, Openness, Extraversion, and Neuroticism.

The Two-Dimensional Machiavellianism-IV (TDM4; Monaghan et al., 2016)

The TDM4 is a variant of the MACH-IV scale (Christie & Geis, 1970) that addresses psychometric problems with that scale. Participants reported (dis) agreement (1 = *strongly disagree*; 7 = *strongly agree*) with 10 total statements indexing Machiavellian Tactics (four statements) and Machiavellian Views (six statements). These scores were averaged into a composite and also constituent factors. This study was collected along with another study on Machiavellianism, so we capitalized on multiple Machiavellianism indices.

[5] Participants completed other measures as part of a different study in the session. Data and materials are available at: https://osf.io/35k6b/?view_only=d09abaa2844e4b1aa7a73b679a001b2b. All supplemental tables referenced are also located at this link.

Table 2 Multiple Regression Results and Simple-Slopes

	Step 1				Step 2		GN Simple Slopes		Self-esteem Simple Slopes	
	GN		Self-esteem		GN*Self-esteem		@ Low Self-esteem	@ High Self-esteem	@ Low GN	@ High GN
	β	*p*	β	*p*	β	*p*	β	β	β	β
Five-Factor Model Traits										
Agreeableness	**−.43**	< .001	**.30**	< .001	**.16**	< .001	**−.57**	**−.28**	**.18**	**.47**
Conscientiousness	**−.11**	.007	**.54**	< .001	**.14**	.001	**−.22**	.02	**.44**	**.68**
Openness	**−.14**	.004	.07	.150	**.16**	< .001	**−.27**	.01	−.05	**.24**
Extraversion	**.49**	< .001	**.28**	< .001	−.03	.368	**.52**	**.46**	**.30**	**.25**
Neuroticism	**−.11**	.001	**−.65**	< .001	−.05	.158	−.07	**−.16**	**−.62**	**−.70**
Dark-Personality										
SD3-Psychopathy	**.58**	< .001	**−.46**	< .001	**−.21**	< .001	**.76**	**.38**	**−.31**	**−.69**
SD3-Machiavellianism	**.45**	< .001	**−.31**	< .001	−.08	.066	**.51**	**.38**	**−.26**	**−.39**
TDM4-Machiavellianism	**.26**	< .001	**−.42**	< .001	**−.18**	< .001	**.41**	.09	**−.30**	**−.62**
TDM4-Tactics	.07	.138	**−.22**	< .001	**−.12**	.009	**.17**	−.04	**−.13**	**−.34**
TDM4-Views	**.29**	< .001	**−.40**	< .001	**−.16**	< .001	**.43**	**.15**	**−.29**	**−.57**
Vulnerable Narcissism	**.15**	< .001	**−.41**	< .001	**−.09**	.041	**.23**	.07	**−.35**	**−.51**
Impulsivity										
Sensation Seeking	**.30**	< .001	−.05	.248	−.06	.201	**.35**	**.25**	−.01	−.11
Negative Urgency	**.12**	.005	**−.48**	< .001	**−.12**	.004	**.22**	.01	**−.40**	**−.61**
Positive Urgency	**.32**	< .001	**−.38**	< .001	**−.15**	< .001	**.45**	**.18**	**−.27**	**−.54**
Lack of Premeditation	**.14**	.002	**−.32**	< .001	**−.12**	.007	**.24**	.03	**−.24**	**−.45**
Lack of Perseverance	.07	.127	**−.28**	< .001	**−.18**	< .001	**.22**	−.09	**−.15**	**−.46**

GN = grandiose narcissism; SD3 = Short Dark Triad; TDM4 = Two-Dimensional Machiavellianism-IV; "Low" = (−1 Standard Deviation); "High" = (+1 Standard Deviation); Bold values indicate $p < .05$

The Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997)

The HSNS assessed vulnerable narcissism. Participants reported how true (1 = *very uncharacteristic or untrue*; 5 = *very characteristic or true*) 10 statements were of them. Items were averaged.

Urgency, Lack of Premeditation, Lack of Perseverance, Sensation Seeking, Positive Urgency, Impulsive Behavior Scale – Short Form (UPPS-P-SF; Cyders et al., 2014)

The UPPS-P-SF is a validated variant of the widely used UPPS-P (Lynam et al., 2006). Participants rated (dis) agreement (1 = *agree strongly*; 4 = *disagree strongly*) with 20 total items (5 per facet) indexing their tendencies for Sensation Seeking, Negative Urgency, Positive Urgency, lack of Premeditation, and lack of Perseverance. Items were averaged into constituent factors. We recoded scale responses such that higher scores indicate more impulsivity.

Results

Analytic Technique

We first report preliminary analyses that addressed some bivariate relations (Table 1). Next, we report the primary analyses, which examined GN*self-esteem effects on each outcome. Each outcome was submitted to a separate hierarchical multiple regression with GN (z-scored) and self-esteem (z-scored) at Step 1 and their interaction at Step 2 (Table 2). Our primary interests pertained to the GN*self-esteem effects at Step 2. Given interactions at Step 2, we also report simple slopes (a) relating GN to each outcome at both "low" self-esteem (self-esteem scores that are −1 SD from the mean) and "high" self-esteem (self-esteem scores that are +1 SD from the mean), and (b) relating self-esteem to each outcome at both "low" GN (GN scores that are −1 SD from the mean) and "high" GN (GN scores that are +1 SD from the mean). We discuss effect size based in Cohen's (1988) benchmarks.

Preliminary Analyses

GN, Self-Esteem, and Bivariate Relationships

For bivariate relations pertaining to GN, self-esteem, and criterion variables, please see Table 1 (for a full correlation matrix please see Table S1). GN and self-esteem were weakly positively related. Over 94% of the variance in each measure was unique. This approximate orthogonality highlights the realism in conceptualizing, for example, GN at different levels of self-esteem or vice versa. As for the FFM, GN was negatively related to Agreeableness and Neuroticism and positively related to Extraversion; it was also weakly negatively related to Openness. Self-esteem was positively associated with Agreeableness, Conscientiousness and Extraversion but was negatively associated with Neuroticism (for similar findings, Hyatt et al., 2018).

As for dark-personality constructs, GN was positively related to psychopathy, SD3-Machiavellianism, TDM4-Machiavellianism, and TDM4-Views (but not TDM4-Tactics). Self-esteem was negatively related to psychopathy, SD3-Machiavellianism, TDM4-Machiavellianism, TDM4-Tactics, TDM4-Views, and vulnerable narcissism. Relations seemed largely consistent with prior research (Hyatt et al., 2018; Muris et al., 2017).

As for impulsivity constructs, GN was positively related to Sensation Seeking and Positive Urgency. Self-esteem was negatively related to Negative Urgency, Positive Urgency, lack of Premeditation, and lack of Perseverance. Relations seemed largely consistent with available findings (Hyatt et al., 2018; Miller et al., 2010).

However, the point of this paper is that some of these relations are a dynamic function of levels of the other self-evaluation construct. We address this idea below.

Primary Analyses: GN*Self-Esteem on Outcomes

FFM Traits Consistent with H1-H3, GN*self-esteem related positively to Agreeableness, Conscientiousness, and Openness (Table 2). GN at low self-esteem is characterized by a strong negative relation to Agreeableness, a weak negative relation to Conscientiousness, a moderate negative relation to Openness, a strong positive relation to Extraversion, and no relation to Neuroticism. GN at high self-esteem is characterized by a weak negative relation to Agreeableness, no relation to Conscientiousness and Openness, a strong positive relation to Extraversion, and a weak negative relation to Neuroticism. The betas relating GN at high self-esteem to Agreeableness, Conscientiousness, and Openness ($\beta_{average} = -.08$) were, on average, .27 units less negative than betas relating GN at low self-esteem to these outcomes ($\beta_{average} = -.35$).

Self-esteem at low GN is characterized by a weak positive relation to Agreeableness, a strong-to-moderate positive relation to Conscientiousness, no relation to Openness, a moderate positive relation to Extraversion, and a strong negative relation to Neuroticism. Self-esteem at high GN is characterized by a strong positive relation to Agreeableness, a very strong positive relation to Conscientiousness, a weak positive relation to Openness, an about moderate positive relation to Extraversion, and a strong negative relation to Neuroticism. The betas relating self-esteem at high GN to Agreeableness, Conscientiousness, and Openness ($\beta_{average} = .46$) were, on average, .27 units more positive than betas relating self-esteem at low GN to these outcomes ($\beta_{average} = .19$).[6]

Dark-Personality Constructs Supporting H4-H6, GN*self-esteem related negatively to psychopathy, Machiavellianism constructs (except SD3-Machiavellianism), and vulnerable narcissism. GN at low self-esteem is characterized by a very strong positive association to psychopathy, a strong positive association SD3 Machiavellianism, a moderate positive association to TDM-4 Machiavellianism, a weak positive association to TDM-4 Tactics, a moderate positive association to TDM-4 Views, and a weak positive association to vulnerable narcissism. GN at high self-esteem is characterized by moderate positive relations to both psychopathy and SD3-Machiavellianism and weak positive relation to TDM-4 Views. The betas relating GN at high self-esteem to the dark-personality measures ($\beta_{average} = .17$) were, on average, .25 units less positive than betas relating GN to these measures at low self-esteem ($\beta_{average} = .42$).

Self-esteem at low GN was negatively related to the dark-personality measures with most of these relations being about moderate in size ($\beta_{average} = -.27$). Self-esteem at high GN was negatively related to the dark-personality measures with most of these relations being moderate-to-strong in size ($\beta_{average} = -.52$).

Impulsivity Largely supporting H7, GN*self-esteem related negatively to all impulsivity traits except Sensation Seeking. GN at low self-esteem is characterized by weak positive relations to Negative Urgency, lack of Premeditation, lack of Perseverance and about moderate positive relations to Sensation Seeking and Positive Urgency. GN at high self-esteem is characterized by positive relations to Sensation Seeking (about moderate) and Positive Urgency (about weak). The betas relating GN to the impulsivity constructs at high self-esteem ($\beta_{average} = .08$) were, on average, .22 units less positive than betas relating GN to these constructs at low self-esteem ($\beta_{average} = .30$).

[6] Supplemental Table S2 presents analyses with FFM facets as outcomes. The interaction had either a significant positive or null relation to each facet within Agreeableness, Conscientiousness, and Openness; the interaction had null relations to each facet within Extraversion and Neuroticism.

Self-esteem at low GN was unrelated to Sensation Seeking but related about weakly-to-moderately negatively to all other impulsivity constructs ($\beta_{average} = -.21$). Self-esteem at high GN was unrelated to Sensation Seeking but related about strongly-to-moderately negatively to all the other impulsivity constructs ($\beta_{average} = -.43$).[7,8]

Discussion

Broadly, by linking GN*self-esteem interaction to these three broad frameworks (FFM; dark-personality constructs; UPPS-P), the findings add context to understanding previous evidence linking the GN*self-esteem interaction to externalizing problems, aggression and low altruism, and unbridled agency (Fanti & Henrich, 2015; Hart et al., 2019a; Hart et al., 2019b; Richardson et al., 2020, 2021). Indeed, the GN*self-esteem interaction relates to FFM Agreeableness, Conscientiousness, and Openness. Not surprisingly, given these trait-level correlates, GN*self-esteem was negatively related to dark-personality constructs that predispose antisocial behavior, including unidimensional psychopathy, vulnerable narcissism, and features of Machiavellianism that are shared with psychopathy (i.e., tactical and exploitative manipulation) and those that are more unique to Machiavellianism (i.e., cynical and distrustful views). Although these features alone can predispose maladaptive and antisocial behavior (e.g., aggression and conduct problems), the GN*self-esteem interaction was also found to relate to various aspects of impulsivity, including those linked to emotional dysregulation (e.g., Negative and Positive Urgency) and problems with planning or self-regulation of goals (e.g., lack of Premeditation and lack of Perseverance). Hence, the findings link GN*self-esteem to broad features that are known to have extensive effects on important social outcomes (e.g., Bogg & Roberts, 2013; Graziano & Tobin, 2019; Muris et al., 2017; Pérez Fuentes et al., 2016).

That said, the data suggest problems with describing GN and self-esteem as a single network of correlates. Given the noted interaction effects, no single nomological network for GN or self-esteem emerged; each construct had a dynamic set of relations to the criterion variables that changed as the other construct changed. To make this matter more concrete, consider just three examples. First, Table 2 reports the effect of GN on psychopathy (i.e., Step 1) is large at the mean level of self-esteem ($\beta = .58$). However, Table 2 demonstrates that the effects of GN on psychopathy at low levels of self-esteem is massive ($\beta = .76$). In this case, we might conclude that narcissism, just as Machiavellianism, is the same construct as psychopathy (Miller et al., 2017). In contrast, Table 2 also demonstrates that the effects of GN on psychopathy at high levels of self-esteem ($\beta = .38$) is about moderate, thus (potentially) supporting theories pronouncing GN as a construct that is brighter and more distinguishable from other DT constructs (Rauthmann & Kolar, 2012).

Second, Table 2 reports the effect of GN on lack of Premeditation at Step 1 ($\beta = .14$) as statistically significant. Hence, a multiple-regression analysis would suggest that GN (partialled from self-esteem) is weakly positively associated with a lack of Premeditation, supporting some prior theorizing (Vazire & Funder, 2006). However, consider that this slope of GN is estimated at the mean-level of self-esteem. Table 2 demonstrates that the effects of GN on lack of Premeditation at high levels of self-esteem is non-significant ($\beta = .03$). In this latter case, the evidence seemingly contradicts theories linking GN to a lack of Premeditation (Vazire & Funder, 2006).

Third, imagine we wished to compare self-esteem's and GN's relations to the study outcomes (see Table 2) via a profile-similarity analysis. If we conceptualize the correlates of self-esteem and GN as static, we can compare GN's profile of relations (at any level of self-esteem) to self-esteem's profile of relations (at any level of GN) and be unconcerned about reaching different conclusions. Yet, an omnibus indicator of profile similarity between GN (at low self-esteem) and self-esteem (at high GN) reveals *highly divergent* profiles ($ICC_{DE} = -.72$), and an omnibus indicator of profile similarity between GN (at high self-esteem) and self-esteem (at low GN) reveals practically unrelated (*slightly divergent*) profiles ($ICC_{DE} = -.16$). The three examples from our data expose why it could be misleading to presume that correlates of GN and self-esteem are static rather than dynamic.

Unfortunately, it is not uncommon for researchers to implicitly deny that GN and self-esteem interact in modeling. In fact, whenever researchers include GN and self-esteem as joint predictors in modeling (without testing for an interaction: Donnellan et al., 2005; Hart et al., 2019b; Sedikides et al., 2004; Tracy et al., 2009), they are

[7] We addressed possible complicating effects of gender. We re-ran the main analyses upon controlling for gender at Step 1, interactions involving gender with self-esteem or GN at Step 2, and the three-way interaction at Step 3. Because six participants did not indicate gender, these analyses involved 479 participants. We examined whether any statistical conclusions changed regarding the effects of GN*self-esteem at Step 2 on any outcome. Only one statistical conclusion changed: GN*self-esteem was *significantly* negatively related to Neuroticism ($p = .042$). The Step 3 interaction effects were non-significant across all outcomes. This means the GN*self-esteem relations do not significantly vary by gender (see supplemental output on OSF, Table S3).

[8] We took an additional step to ensure our conclusions were not influenced by poor data quality. We excluded any participant that we deemed as finishing too quickly (less than eight minutes or less than about 2.5 s per item). This led to analyzing $N = 460$; we re-ran the main analyses and checked whether statistical conclusions changed regarding the effect of the GN*self-esteem on any outcome. No statistical conclusions changed (see supplemental output on OSF, Table S4).

estimating the effects of one construct (i.e., GN) at one level of the other construct (i.e., self-esteem). This is, as we have noted, problematic when GN and self-esteem interact to predict the criterion; in this case of interaction, there is no *one* "pure" GN or self-esteem estimate that should be reported but, in reality, distinguishable effects of each construct at levels of the other that often go unreported. In the end, when researchers wish to study GN and self-esteem jointly, it would be prudent to test for an interaction. This is consistent with general advice when using multiple regression without interaction terms; the predictors must be shown to not interact for the results to be interpreted (Darlington & Hayes, 2017). If designs are not sufficiently powered to detect an interaction, then it might be wise to assume an interaction and report simple effects of one of the constructs at higher and lower levels of the other construct (see Darlington & Hayes, 2017).

Of course, the GN*self-esteem interaction did not relate to all the outcomes we studied. In fact, it was unrelated to Extraversion, Neuroticism, and Sensation Seeking. Null relations to Extraversion and Neuroticism might reflect the fact that Extraversion may be a particularly central feature of GN (Crowe et al., 2019) and low Neuroticism may be a particularly central feature of self-esteem (Widiger, 2009). As such, relations between GN and Extraversion or between self-esteem and Neuroticism are unlikely to change without a fundamental change to the nature of GN and self-esteem. GN*self-esteem's null relation to Sensation Seeking could be understood as based in confounding between Sensation Seeking and Openness. Recall that GN*self-esteem was positively related to Openness, and Openness was positively related to Sensation Seeking ($r = .16$). People high in Openness are adventurous but not reckless (McCrae, 2009). So, by partialling Openness from Sensation Seeking, one would be removing some of the innocuous (non-reckless) variance from Sensation Seeking. This partialled index of Sensation Seeking would therefore be more reckless and maladaptive, and this index may relate negatively to GN*self-esteem. To check, we ran a multiple regression: Sensation Seeking was the criterion; GN, self-esteem, and Openness were inserted as predictors at Step 1; the GN*self-esteem effect was inserted at Step 2. The GN*self-esteem interaction was significant ($\beta = -.09$, $p = .039$). The analysis tentatively suggests a link between GN*self-esteem and a riskier approach to Sensation Seeking. This analysis is post-hoc, and the interactive effect is weak; hence, these findings should be interpreted with caution. We hope future research can further scrutinize this idea by directly assessing people's inclinations toward non-risky (e.g., hiking in a new place) and risky "adventures" (e.g., getting into a street fight).

Broadly, the findings are consistent with the suggestion that self-esteem may be a particularly important psychological resource for individuals high in GN (Hart et al., 2019b). If true, the mechanism(s) whereby self-esteem acts as a resource for individuals high in GN would be important to study. High self-esteem may function as a communal orientation that guides narcissistic grandiosity striving toward more socially desirable behaviors, much like temporary priming of a communal orientation (Finkel et al., 2009). It is also possible that low self-esteem compels tearing others down as a means to seem superior (Hart et al., 2019a); if the self is worthless, the path to seeming superior involves making others seem particularly worthless. High self-esteem affords setting goals that are oriented towards expressing one's sense of high value, and such goals require self-control (e.g., low impulsivity) and a sense of accountability and duty (features of Conscientiousness) but are less reliant on meanness or manipulative behavior (e.g., low Agreeableness). Furthermore, low self-esteem may create pathological self-focused attention (Ingram, 1990) that promotes self-concerns in people with narcissistic features (e.g., greater concern over one's deservingness) that support antagonistic and impulsive expressions (Vazire & Funder, 2006). In this case, the GN*self-esteem interaction could relate to enhanced social-cognitive processing and skill (Vonk et al., 2015). When self-worth doubts are removed, people higher in GN can focus on others to a greater extent, which can promote better recognition of others' emotions and goals. This process may support more prosocial behavior and help inhibit tendencies toward antisocial behavior (Lyons et al., 2010). Perhaps in hopes of a better understanding of the process, future studies might examine the implications of *manipulating* narcissism and self-esteem on these or other mechanistic outcomes. For example, it could be interesting to know whether instilling a sense of high (vs. low) self-regard might reduce relations between GN and self-centered thinking and entitlement in the moment.

Of course, this study is not without limitations. First, although we relied on a rather large sample, the findings cannot be securely generalized to different sample frames (e.g., children; different cultures). For example, GN measures seem to function differently in Eastern vs. Western cultures, so our results might lack applicability to Eastern cultures (c.f. Zuo et al., 2016). Future research is needed to study the correlates of GN*self-esteem in different cultures. Second, the present conclusions are limited to operations we used, so future research is required that includes alternative operations of the constructs we assessed. One idea would be to involve a multidimensional indicator of psychopathy such as the Self-Report Psychopathy Scale (SRP; Paulhus et al., 2017). The SRP includes four facets of psychopathy that cover a great deal of scope: Interpersonal Manipulation, Callous Affect, Erratic Living, and Criminal Tendencies. An additional idea is to consider relating GN*self-esteem to alternative dark-personality constructs that we did not consider here, such as sadism (Paulhus, 2014). Sadism refers to

enjoyment of cruelty. People higher in GN may enjoy cruelty to a greater extent as their self-esteem drops because seeing others degraded is presumably the main means they pursue to feel superior to others. Third, although self-reports of personality are valid, they are still open to reporting biases (e.g., social desirability, judgment errors). To address this weakness, future research might include observer ratings of the constructs we studied (e.g., FFM traits, dark-personality constructs, impulsivity traits) and potentially other features we did not study (e.g., entitlement). Relatedly, we urge future research to consider behavioral measures that embody the broader traits that we assessed via self-report (e.g., tasks that assess planning and goal perseverance). Obviously, no single study can provide a complete picture of the GN*self-esteem interaction or its implications. More work is needed with different criterion variables and different operationalizations of the variables we included.

Declarations

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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