



Vulnerable Isolation and Enmity Concept: Disentangling the blue and dark face of vulnerable narcissism

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ABSTRACT

A theoretical model of the vulnerable half of the Narcissism Spectrum Model (NSM) – the Vulnerable Isolation and Enmity Concept (VIEC) is presented in this paper. In five studies (total $N = 2,383$), we show the personality underpinnings of the VIEC in terms of normal and pathological personality and explore the social relations of liking others and being liked. Isolation explains the role of avoidance and social withdrawal, whereas Enmity explains the role of reactive antagonism in vulnerable narcissism. We suggest that vulnerable narcissism is related to internalizing and grandiose narcissism to externalizing pathology. Through the prism of the Circumplex of Personality Metraits, we argue that the VIEC together with the Narcissistic Admiration and Rivalry Concept (NARC) covers the whole NSM.

Narcissism is described as a puzzled and enigmatic construct, full of apparent paradoxes (Back et al., 2013; Morf & Rhodewalt, 2001), which emphasizes that there is a need to deepen the theoretical understanding of narcissism itself, and the underpinning of its different forms. Within the clinical, personality, and social psychology literature, there is general agreement that there are two basic forms of narcissism: grandiose and vulnerable (Miller et al., 2017a; Pincus et al., 2009; Wink, 1991). Although both forms of narcissism are seen as equally important (Miller et al., 2016) grandiose narcissism has been studied more frequently. For example, the Narcissistic Admiration and Rivalry Concept (NARC; Back et al., 2013) explains the underlying intra- and interpersonal processes of grandiose narcissism, while these elements of vulnerable narcissism remain unexplored. In this paper, we propose a way to fill this gap in the current knowledge and understanding of vulnerable narcissism. We have developed a two-dimensional model of vulnerable narcissism, differentiating its blue and dark side. These two faces of vulnerable narcissism explain its basic underlying mechanisms in a similar way to how NARC explains grandiose narcissism. Our newly proposed model, together with NARC, fills the full space of the Narcissism Spectrum Model (NSM; Krizan &

Herlache, 2018).

1. The Narcissism Spectrum Model of grandiose and vulnerable narcissism

Although empirically grandiose and vulnerable narcissism are mostly uncorrelated (e.g., Hendin & Cheek, 1997; Foster et al., 2015; Wink, 1991), antagonism, a central feature of narcissism (Lynam & Miller, 2019), is positively related to both forms of narcissism (Miller & Campbell, 2008; Miller et al., 2016; Rogoza et al., 2018). The NSM, shown in Fig. 1 (Krizan & Herlache, 2018), the theoretical structure of narcissistic personality, is organized into one integrative semicircular framework for understanding diverse presentations of narcissism, beginning from vulnerability, through self-importance to grandiosity. A model parallel to the NSM is the trifurcated model of narcissism, which uses different labels for specific facets, namely neurotic, antagonistic, and agentic (Miller et al., 2016; Weiss et al., 2019). Therefore, both theoretical models emphasize the role of antagonism as a central dimension of narcissistic personality (Lynam & Miller, 2019) with grandiose and vulnerable phenotypes sharing this core content.

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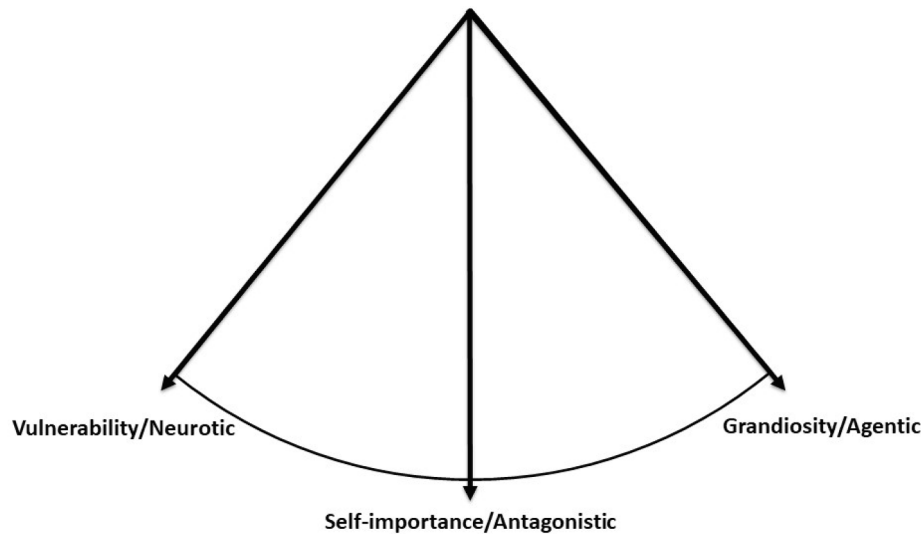


Fig. 1. Graphical representation of the Narcissism Spectrum Model/Trifurcated Model of Narcissism.

From the central point of narcissistic personality¹, that is, self-importance (i.e., the antagonistic facet – exploitative and entitled orientation towards others), the two dimensions/facets of narcissism, i.e., vulnerability (hereafter labeled as neurotic facet) and grandiosity (hereafter labeled as agentic facet) are located at an approximately 45° angle on both sides. This not only suggests that the core² of the structure of narcissism is an antagonistic orientation towards other people (Lynam & Miller, 2019), but that the two narcissistic phenotypes: vulnerable narcissism and grandiose narcissism are differentiated by their location on either side of the self-importance/antagonism. One of the main factors that is considered within the NSM as determining the position of each form of narcissism is temperament. According to the model, the agentic facet reflects an approach-dominant personality driven by reward seeking with heightened levels of self-esteem, whereas the neurotic facet reflects an avoidance-dominant personality driven by anxiety with lowered levels of self-esteem (Krizan & Herlache, 2018; Mota et al., 2020). This raises the question of whether the expressions of antagonism, given its central position within the model, should be the same in grandiose and vulnerable narcissism.

2. Agentic and neurotic expressions of antagonism

As mentioned above, there is wide agreement in the literature that antagonism (self-importance) is the central or core aspect of narcissism (e.g., Miller & Campbell, 2008; Miller et al., 2016; Krizan, 2018; Weiss et al., 2019; Rogoza et al., 2018). However, there are also some premises, that it could be expressed or manifested either in a more grandiose or more vulnerable manner. In the first case, antagonism is externalized, that is, manifested in an active and direct behavior of rivalry and aggression towards others. In contrast, the second manner of antagonism expression is internalized, that is, manifested mainly in the form of hostile feelings as well as a passive and indirect reaction. Therefore, it seems that there is a solid ground to differentiate two facets of antagonism, namely agentic and neurotic (see Krizan & Herlache, 2018; Weiss et al., 2019), which are typical for grandiose and vulnerable

Table 1
Differential Aspects of Agentic and Neurotic Antagonism.

Differential aspect	Agentic Antagonism	Neurotic Antagonism
Orientation	externalization	internalization
Mode	active	passive
Reaction toward the object	direct	indirect
Strength of stimuli evoking reaction	strong	weak
Main manifestation	rivalry behaviors	enmity feelings

narcissism, respectively. They are characterized in Table 1.

In general, narcissistic antagonism seems to be mostly reactive in nature (that is, used for the restoration of narcissistic esteem), however there might be differences in the stimuli that trigger this defensive reaction. The agentic antagonistic reaction might be triggered by a strong external stimuli (e.g., a public challenge to one's social status; Back et al., 2013), however, it could also be released in an unprovoked manner as a way to demonstrate dominance (e.g., Reidy et al., 2010). Thus, when grandiose narcissists perceive a chance to retaliate, agentic antagonism is visible in the active pursuit of status restoration, which in turn is more focused on behaviors (Back, 2018; Grapsas et al., 2020). In turn, a neurotic antagonistic reaction might not only be triggered by external threats, but also by more nuanced internal stimuli (i.e., a perceived threat; Eysenck, 2000) as they are sensitive to any interpersonal threat which might take the form of being rejected, humiliated or betrayed (Besser & Priel, 2010). When a vulnerable narcissist's self-esteem is exposed to harm, rather than trying to retaliate, they feel angry and ashamed (Krizan & Herlache, 2018; Maciantowicz & Zajenkowski, 2018; Miller et al., 2017a). Thus, the expression of neurotic antagonism is more focused on emotions and the entitled expectation is that something *should* happen to restore the status (Kealy & Rasmussen, 2011; Ronningstam, 2005).

Thus, the proposed differentiation is able to provide an answer to the question of why even though both grandiose and vulnerable narcissists have aggressive thoughts, the former tends to have an active mode of manifestation and act aggressively and the latter tends to have a passive mode of manifestation and ruminate on these thoughts (Zajenkowski et al., 2021). Agentic and neurotic antagonism differ not only in their form of expression, but also in how they are triggered. These differences underlie a key distinction in the structure of narcissistic personality (Krizan & Herlache, 2018) and the disentanglement of agentic and neurotic antagonism.

¹ In order to avoid confusion with grandiose and vulnerable narcissism, when referencing to the NSM vulnerability/grandiosity we use the nomenclature from the trifurcated model of narcissism of neurotic/agentic.

² By claiming that antagonism is the core of the structure of narcissism, we refer to the structural organization of the trait, not to the processes underlying each trait, as for example, in grandiose narcissism, the narcissistic default would be agentic in nature (Wetzel et al., 2016).

3. The Narcissistic Admiration and Rivalry Concept – A theoretical model of grandiose narcissism

The NARC provides a comprehensive theoretical model explaining the processual functioning in grandiose narcissism (Back et al., 2013), which covers half of the conceptual space of the NSM³, on the right of self-importance in Fig. 1 (Krizan & Herlache, 2018; Wright & Edershire, 2018). Within the NARC, the most basic goal of a grandiose narcissist is to maintain a grandiose self-view. This can be achieved through two distinct strategies: *Admiration* (i.e., agentic self-promotion), and *Rivalry* (i.e., antagonistic self-defense) (Back, 2018). These strategies are hypothesized to comprise distinct affective-motivational, cognitive, and behavioral components. Together, these components form the self-regulatory process of grandiose narcissism (Back, 2018). The introduction of NARC explained some of the inconsistencies found within the literature, for example, it resolved the question of why grandiose narcissists are liked at first sight (i.e., due to the effect of agentic Admiration) but are disliked in the long run (i.e., due to the effect of antagonistic Rivalry; Leckelt et al., 2015; Paulhus, 2001). The NARC model describes and explains grandiose narcissism beyond the structural organization of the NSM, treating narcissism not only as a stable trait, but also as an underlying process, providing a discreet peek into the functioning of grandiose narcissists (e.g., Grapsas et al., 2020). However, this model captures only half of the conceptual space delineated by the NSM, and does not address the other half, on the left of self-importance in Fig. 1. It is because Rivalry in the NARC model covers agentic antagonism, as Rivalry is manifested in devaluation, striving for supremacy and aggressiveness, which lead to social conflict (see Back et al., 2013). Hence, to address this gap, we propose a new theoretical model, which we label the Vulnerable Isolation and Enmity Concept (VIEC). Our model is analogous to the NARC, and together they fully describe the conceptual space of the NSM.

4. A model of vulnerable Narcissism: The Vulnerable Isolation and Enmity Concept (VIEC)

Within the social and personality literature, vulnerable narcissism is frequently described from two different perspectives – one focused on hypersensitivity, anxiety, and social withdrawal and the other focused on hostile attributions, egocentrism, and entitlement (Fossati et al., 2009; Miller et al., 2017b). Indeed, vulnerable narcissists avoid interpersonal relationships because of their hypersensitivity to rejection and criticism (Cain et al., 2008), which explains why, phenotypically, vulnerable narcissism is linked to shyness (Krizan & Herlache, 2018). Thus, vulnerable narcissists are fragile, they avoid social interactions, often report feeling blue as well as high levels of interpersonal distress (Rogoza et al., 2018; Zajenkowski et al., 2018). In fact, vulnerable narcissists are perceived by others to be egocentric, intolerant, but also defensive and anxious (Wink, 1991). This evidence illustrates vulnerable narcissism as passive and reactive, suggesting that its internal structure is complex.

These two perspectives are also distinguishable within everyday clinical practice. Vulnerable narcissists usually seek to withdraw from social situations when their own unfavorable evaluations of themselves with respect to others provoke intense feelings of shame, pain, or envy (Caligor et al., 2015). This in turn, leads to depression, anxiety, non-suicidal injuries, and even suicide attempts (Dawood et al., 2018; Pincus & Lukowitsky, 2010; Ronningstam & Maltzbreger, 2010). However, it should be noted that the depression in vulnerable narcissism is not one of grief and sadness, but of emptiness, uselessness, and suicidal ideation,

and the main depressive theme is self-criticism (Kealy et al., 2012; Pincus et al., 2014). Vulnerable narcissists try to defend themselves through Isolation and avoidance of social relations as they feel afraid of being let down and ashamed of needing others (Bernardi & Eidlin, 2018). In this manner, they shield their secret fragile core from their own conscious awareness and also prevent others from discovering it (Kealy & Rasmussen, 2011).

Vulnerable narcissism might largely resemble depressive and anxiety symptoms, however once the therapeutic process is applied (or in reaction to experience of doubt and insecurity), different ways of protecting themselves from fully experiencing their deeply embedded sense of shame and inadequacy might appear (Kealy & Ogrodniczuk, 2011; Ronningstam, 2010). For example, vulnerable narcissists tend to deal with dysregulation by engaging in grandiose fantasies of prevailing over others and winning Admiration (Kealy & Rasmussen, 2011; Pincus & Lukowitsky, 2010; Ronningstam, 2005). Also, envy might be enacted as a painful sense of being deprived of what others possess (Kealy & Ogrodniczuk, 2011). Such a sense of vulnerable entitlement can be viewed as a form of compensation and restitution for early deprivation and humiliation (Bishop & Lane, 2002).

On the basis of the aforementioned empirical evidence, we argue that it is possible to find two distinguishable dimensions of vulnerable narcissism, which would help to order the diversity of characteristics and explain some inconsistencies within the literature. Therefore, in the VIEC, we distinguish two distinct but positively related strategies/dimensions of neurotic *Isolation* and antagonistic *Enmity*. Both strategies serve a common goal of defending the fragile self from being harmed. The role of Isolation is to prevent the vulnerable core from being exposed (Caligor et al., 2015; Krizan & Herlache, 2018), whereas the role of Enmity is to diminish the experiences of shame and inadequacy (Kealy & Ogrodniczuk, 2011; Miller et al., 2017a). In this sense, Isolation is the default strategy, constantly hiding one's own unfavorable evaluations and trying to avoid feelings of shame, while Enmity is a subsequent, reactive strategy used to diminish the aforementioned feelings if the Isolation strategy failed to do so in the first place. It should be noted then that Enmity therefore covers neurotic antagonism.

Consistent with Brown et al. (2009), we expect that the core features of vulnerable narcissism occur not only in the interpersonal, but also in the intrapersonal domain. Moreover, consistent with Back et al. (2013), we hypothesize that these inter- (i.e., regarding the behavioral consequences that involves others) and intrapersonal (i.e., regarding cognitive and emotional consequences that involves only oneself) processes can occur in a different manner for different strategies. The interpersonal components of Isolation are related to social withdrawal and achieved by hiding the self (i.e., withdrawing from relations to avoid harm to the self) and inhibition (i.e., restraint due to the anticipated shame and fear of being criticized or ridiculed). In contrast, the intrapersonal components are underlined by heightened hypersensitivity and are associated with ruminative thoughts (i.e., excessive concentration on thoughts about others' perceptions of one's past behavior) and passive entitlement (i.e., entitled expectations from others without their articulation and suffering upon lack of their realization; see Fig. 2). Further, the intrapersonal component of Enmity is related to the perception of an unrealistic threat (i.e., perceiving an ego threat in objectively low-threatening situations), which is associated with envy (i.e., feelings of inferiority in response to others' successes) and paranoid thoughts (i.e., preoccupation with thoughts that others want to harm oneself). In contrast, the interpersonal component is related to narcissistic projection (i.e., projecting of hostility and aggressive feelings on other people) and spitefulness (i.e., passive aggression and hidden vindictiveness). The full structure of the Vulnerable Isolation and Enmity Concept is shown in Fig. 2.

³ Under certain circumstances, NARC also covers some aspects of vulnerable narcissism – for an extended model see Back (2018). However, these neurotic responses are likely to be related to the fluctuations in narcissism and not to their more general structural organization.

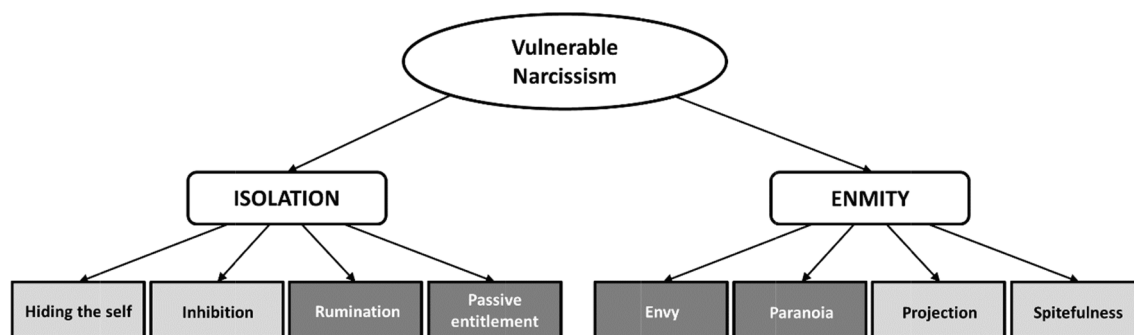


Fig. 2. The hypothesized structure of vulnerable narcissism in the Vulnerable Isolation and Enmity Concept. Interpersonal components are presented in light grey, intrapersonal components are presented in dark grey.

5. Differences between grandiose and vulnerable narcissism in personality underpinnings

There are many differences between grandiose and vulnerable narcissism in terms of their functioning and structure (Miller, Lynam, Hyatt et al., 2017). These differences might be explained by more general models describing personality structure such as the Five-Factor model (FFM; McCrae, & Costa, 1997), the Alternative Model of Personality Disorders (AMPD; American Psychiatric Association; APA, 2013), the Two Factor Model (TFM; Cieciuch & Strus, 2017; DeYoung et al., 2002) as well as the Circumplex of Personality Metatraits model (CPM; Strus et al., 2014; Strus & Cieciuch, 2021)⁴.

The FFM and the AMPD illustrate the similarities and dissimilarities of narcissistic personalities, providing three conclusions: First, the core of narcissism is associated with an antagonistic lifestyle orientation expressed by low FFM agreeableness and high AMPD antagonism, which is consistent with both empirical studies and expert ratings (Miller et al., 2014; Muris et al., 2017). Second, FFM neuroticism and AMPD negative affect are prototypical traits for vulnerable narcissism, which emphasize the role of psychological distress and fragility (Cain et al., 2008; Miller et al., 2017b). Third, FFM extraversion and AMPD detachment discriminate grandiose (high extraversion and low detachment) and vulnerable narcissism (low extraversion and high detachment; Jauk et al., 2017; Wright et al., 2013), and thus may be seen as a foundational trait, which denotes a given narcissistic phenotype.

The TFM provides a theoretical framework that helps to improve the classification of narcissistic personalities. It interprets grandiose and vulnerable narcissism as two qualitatively different forms of personality pathology corresponding to the AMPD metatraits (Wright et al., 2012): whereas the former is an expression of externalizing, the latter is an expression of internalizing pathology (Zawadzki, 2017). In respect to metatraits retained out of the FFM (see Cieciuch & Strus, 2017; DeYoung et al., 2002), low Alpha/Stability includes the core of narcissism (i.e., reflecting high social antagonism), and Beta/Plasticity is the discriminating dimension – high for grandiose vs. low for vulnerable narcissism (Rogoza et al., 2018).

Finally, the CPM enables the integration of several models and various results obtained in the research on narcissism: First, it embeds the NSM (Krizan & Herlache, 2018) within a universal personality space (as shown on Fig. 3 by solid lines). Second, it integrates the personality underpinnings (including the FFM, AMPD and TFM dimensions) of different forms of narcissism, that is, NARC and VIEC within one framework (as shown in Fig. 3 by dashed lines). Third, the CPM allows us to systematically describe the relationships between whole conceptual models of narcissism (see Rogoza et al., 2019). The fact that the CPM and NSM are both expressed in the same formal language of angles

(Krizan & Herlache, 2018; Strus & Cieciuch, 2017) further catalyzes these possibilities, as it allows us to test hypotheses not only about single variables but also about the whole models describing various dimensions of narcissistic personality.

Taken together, the NARC and the VIEC are hypothesized to cover the whole conceptual space of the NSM (Back et al., 2013; Krizan & Herlache, 2018). Since both of these models are embedded within the CPM (Rogoza et al., 2019) it is possible to draw clear expectations regarding their theoretical locations. Consistent with empirical evidence, we expect the core of grandiose narcissism to be located in Delta-Minus/Sensation-Seeking, related also to high (TFM) externalizing pathology, and vulnerable narcissism to be located in Gamma-Minus/Disharmony related also to high (TFM) internalizing pathology (Rogoza et al., 2019; Zawadzki, 2017). Further, we expect the location of Isolation to be between Gamma-Minus/Disharmony and Beta-Minus/Passiveness (i.e., low TFM Beta/Plasticity), and the location of Admiration to be between Delta-Minus/Sensation-Seeking and Beta-Plus/Plasticity. Finally, we expect both Enmity and Rivalry to be located near Alpha-Minus/Disinhibition (i.e., low TFM Alpha/Stability), however representing different forms of pathology. That is, Enmity as representative of neurotic antagonism should be located left of Alpha-Minus/Disinhibition, and Rivalry as representative of agentic antagonism should be located right of Alpha-Minus/Disinhibition. The hypothesized locations of the vulnerable and grandiose narcissism dimensions within the space of the CPM (including other personality underpinning of narcissism) are presented in Fig. 3.

6. Overview of the current studies

The overarching goal of the studies reported in the current paper was to empirically verify the theoretical proposition of the VIEC. We began with the development of the Vulnerable Isolation and Enmity Questionnaire (VIEQ), reporting on the measurement, structure, and reliability of the narcissistic Isolation and Enmity scales in Study 1. In Study 2, we validated the VIEC's relations with other narcissistic constructs using established single- and multi-dimensional measures as well as to self-esteem. In two subsequent studies, we investigated how the proposed dimensions are related to normal (Study 3) and pathological (Study 4) personality traits and metatraits. In Study 5, we evaluated how the dimensions of grandiose and vulnerable narcissism predict social relations of liking and being liked by others. Finally, we aimed to empirically test whether together the VIEC and NARC are able to cover the conceptual space of the NSM. We tested this by conducting a meta-analysis of the interrelations between the VIEQ and NARQ subscales found in Studies 1 to 5 and we plotted their scores on the circumplex space of the CPM model (Strus & Cieciuch, 2017), where NSM can be precisely located.

The data, syntaxes, codebooks, supplementary tables, methodology files and materials, measures, and procedures used in all studies are available at: <https://osf.io/52qbj>. The studies were not preregistered.

⁴ A detailed description of the CPM, including the definition of each metatrait, is presented as supplementary online material at the OSF project site.

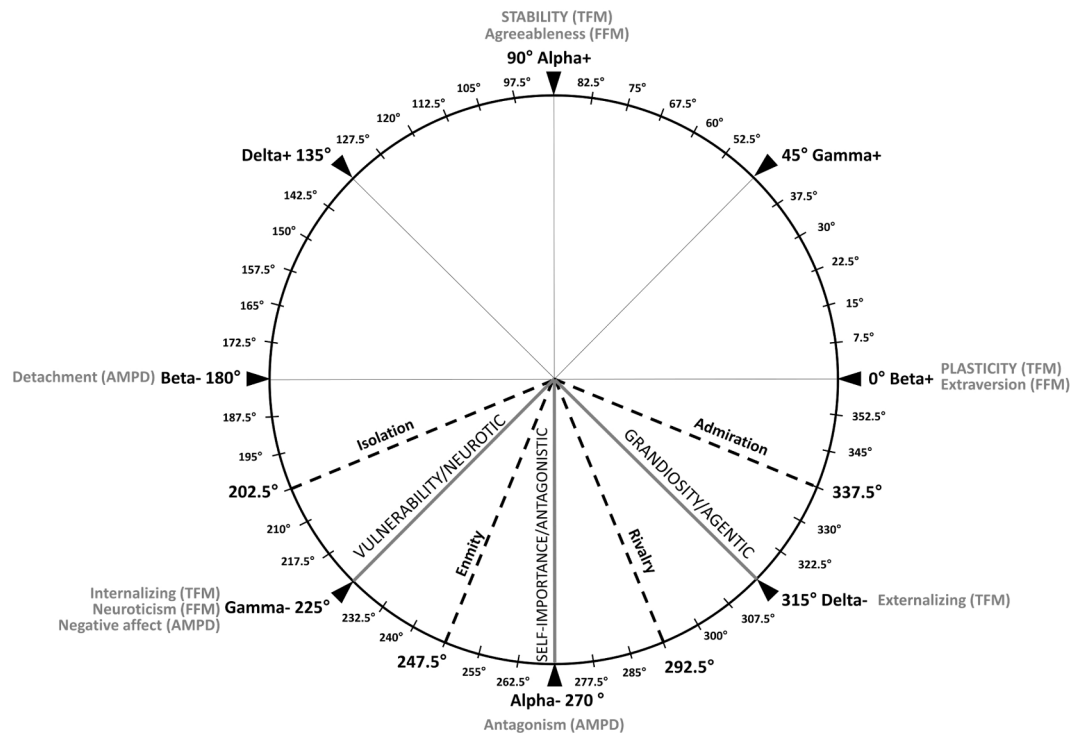


Fig. 3. The Circumplex of Personality Metatraits and the allocations of the Narcissism Spectrum Model/Trifurcated Model of Narcissism (solid lines) and strategies described within the Narcissistic Admiration and Rivalry Concept and the Vulnerable Isolation and Enmity Concept (dashed lines). The grey labels indicate the position of the Two Factor Model (TFM), Five Factor Model (FFM) as well as the Alternative Model of Personality Disorder (AMPD) underpinnings of Narcissism within the Circumplex of Personality Metatraits.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The studies were approved by the local ethics committee.

7. Hypotheses

Given the extensiveness of the hypotheses, they are jointly presented within Table 2. For our prerequisite hypothesis (Study 1), we expected that vulnerable narcissism would have a two-dimensional structure comprising Isolation and Enmity. We tested this hypothesis with a third-order confirmatory factor analysis of the VIEQ (see Fig. 2). After verification of the hypothesized structure of vulnerable narcissism, predicted by the VIEC model, further hypotheses were formulated. We formulated our expectations based on Wright and Edershire (2018), who located the most popular measures of narcissism within the space of the NSM. Expected relations to self-esteem were based on results of a meta-analysis by Mota et al. (2020).

For our second hypothesis (H2 – Study 3), we expect that Admiration will be related positively and Isolation related negatively to extraversion, and that both Rivalry and Enmity will be negatively related to agreeableness. Moreover, we expect that Isolation and Enmity will be positively related to neuroticism. With regards to the personality metatraits, we expect that both Isolation and Admiration will be related to Plasticity, the former negatively and the latter positively. In turn, Enmity and Rivalry are expected to be associated with low Stability (see Fig. 3).

For our third hypothesis (H3 – Study 4), we expect that Isolation and Enmity will be strongly positively related to negative affect. Enmity and Rivalry are hypothesized to be strongly positively related to antagonism. We expect Isolation to be positively and Admiration to be negatively related to detachment. Relations to disinhibition and psychoticism are

not expected. In regard to the broader constructs of pathological personality metatraits, we expect that Isolation will be positively related to internalizing and weakly negatively related to externalizing pathology, and vice versa for Admiration. With regards to Enmity and Rivalry, we hypothesize that both will be positively related to internalizing and externalizing pathology, however the strength of the relation with internalizing pathology should be stronger for Enmity and with externalizing pathology for Rivalry (see Fig. 3).

In our fourth hypothesis (H4 – Study 5) we expected that Rivalry and Enmity would be significant predictors of two sorts of social relations: liking others and being liked. Previous studies revealed that the effects of Admiration are also possible, however only in zero- or short-term acquaintances, while the effects of Rivalry appear in long-term relationships (Leckelt et al., 2015, 2019). Thus, given the fact that we analyzed social relations within well-acquainted individuals, we did not hypothesize strong effects for Admiration and Isolation as their effects are expected to occur during the ‘emerging zone’ of social relationships (Campbell & Campbell, 2009). However, we expected to observe different effects for Rivalry and Enmity during the ‘enduring zone’ of social relationships. That is, in regard to the self-reported liking others, we expect that Rivalry would negatively predict liking others as grandiose narcissists do not care about social relations (i.e., *other people are meaningless*), and given the entitled expectations of vulnerable narcissists (i.e., *I want other people to like me*), Enmity is expected to predict more outgoing liking-others relations. However, in regard to the peer-reported being liked, both Rivalry and Enmity are expected to be negative predictors of incoming being liked relations, given the fact they both represent antagonistic attitudes.

Our fifth hypothesis (H5 – meta-analysis of all studies) assumes that the VIEC and the NARC dimensions cover the whole conceptual space of the NSM (Krizan, 2018), and thus they should be organized in a meaningful structure. This structure is hypothesized to be represented by the following pattern of relations: Admiration and Isolation will be

Table 2
Expected Pattern of Relations Between Narcissistic Dimensions and External Measures

	Grandiose narcissism		Vulnerable narcissism	
	Admiration	Rivalry	Enmity	Isolation
Hypothesis 1: Relations with other narcissism measures and self-esteem (Study 2)				
Grandiosity (NPI)	++	++	0/+	0/-
Vulnerability (HSNS)	0/-	0/+	++	++
Grandiosity (NGS)	++	++	0/+	0/-
Vulnerability (NVS)	0/-	0/+	++	++
Agentic extraversion (FFNI)	++	++	0/+	0/-
Narcissistic neuroticism (FFNI)	0/-	0/+	++	++
Self-centered antagonism (FFNI)	0/+	++	++	0/+
Pathological grandiosity (PNI-G)	+	++	+	0/+
Pathological vulnerability (PNI-V)	0	0/+	++	++
Self-esteem (RSES)	+	0/-	-	-
Hypothesis 2: Relations to normal personality traits and metatraits (Study 3)				
Neuroticism	0	0/+	++	++
Extraversion	++	0/+	0/-	-
Openness to experience	0/+	0	0	0/-
Agreeableness	0/-	-	-	0/-
Conscientiousness	0	0	0	0
Plasticity	++	0/+	0/-	-
Stability	0/-	-	-	0/-
Hypothesis 3: Relations to pathological personality traits and metatraits (Study 4)				
Negative affect	0/-	0/+	++	++
Detachment	-	0/-	0/+	+
Antagonism	0/+	++	++	0/+
Disinhibition	0	0	0	0
Psychoticism	0	0	0	0
Internalizing	0/-	0/+	++	++
Externalizing	++	++	0/+	0/-
Hypothesis 4: Social relations (Study 5)				
Liking others	0	-	+	0
Being liked	0	-	-	0
Hypothesis 5: Interrelations between narcissistic dimensions (meta-analysis of all four Studies)				
Rivalry	+			
Enmity	0	+		
Isolation	-	0	+	
Hypothesis 6: Allocation within the Circumplex of Personality Metatraits (Study 4)				
Expected angular location	337.5	292.5	247.5	202.5

Note. NPI = Narcissistic Personality Inventory; HSNS = Hypersensitive Narcissism Inventory; FFNI = Five Factor Narcissism Inventory; PNI = Pathological Narcissism Inventory; NGS = Narcissistic Grandiosity Scale; NVS = Narcissistic Vulnerability Scale. RSES = Rosenberg Self-Esteem Scale; NLM = Name Liking Measure. 0 = null relation; 0/- = weak negative relation; 0/+ = weak positive relation; - = negative relation; + = positive relation' - = strong negative relation; ++ = strong positive relation.

negatively related; Rivalry and Enmity will be positively related; Admiration and Rivalry as well as Isolation and Enmity will be positively related; and Admiration and Enmity as well as Isolation and Rivalry will be unrelated (see Fig. 3). Furthermore, we evaluated the extent to which Enmity and Rivalry are distinct constructs. We did so in a twofold manner, that is, we conducted a factor analysis with forced two-factorial solution on all Enmity and Rivalry items (selected from two questionnaires – NARQ and VIEQ) to assess whether specific items are good indicators of the hypothesized construct. Second, we correlated each Enmity item to the Rivalry composite score to additionally assess the level of congruence between these. We expected that all of the Enmity and Rivalry items would be good indicators for the intended latent variable. Nevertheless, given the high similarity of these traits, some cross-loadings are also to be expected. For this analysis, we used the data from Study 2 and Study 4 given the fact we used full length measures of both traits in these studies.

Our sixth hypothesis (H6 – Study 4) expects that the NSM structure, as represented by the VIEQ and the NARC dimensions, could be

meaningfully located within the CPM as illustrated in Fig. 3. Following the general location of the NSM within the CPM (Rogoza et al., 2019), we expect that the dimensions will be located as follows: Isolation will be located between Beta-Minus/Passiveness and Gamma-Minus/Disharmony (angular location: 202.5°), Enmity will be between Gamma-Minus/Disharmony and Alpha-Minus/Disinhibition (angular location: 247.5°), Rivalry will be between Alpha-Minus/Disinhibition and Delta-Minus/Sensation-Seeking (angular location: 292.5°), and Admiration will be between Delta-Minus/Sensation-Seeking and Beta-Plus/Plasticity (angular location: 337.5°).

Finally, in order to assess the overlap between proposed constructs (i. e., Isolation and Enmity) as well as between Enmity and Rivalry, each pair of correlations to external variables was assessed through the means of the Steiger Z-test. This procedure allows us to assess the degree on which the compared relations to another variable are different one from another or not.

8. Measures

8.1. Vulnerable Isolation and Enmity Questionnaire

This measure was developed for the purposes of the current paper. The scale construction process is described in Study 1. Two versions of this measure are proposed: full, comprising 24-items (used in Study 2 and 4) and short, comprising 8 items (used in Study 3). Respondents rate all test items using a 6-point Likert type response scale ranging from 1 = *not agree at all* to 6 = *agree completely*. The reliability estimates (alpha and omega coefficients; Cronbach, 1951; McDonald, 1999) were as follows for each study, respectively: Isolation ($\alpha = 0.93$, $\omega = 0.96$; $\alpha = 0.92$, $\omega = 0.95$, $\alpha = 0.75$; $\omega = 0.80$ (short version), and $\alpha = 0.91$; $\omega = 0.94$), Enmity ($\alpha = 0.94$, $\omega = 0.95$; $\alpha = 0.86$; $\omega = 0.90$; , $\alpha = 0.67$, $\omega = 0.69$ (short version), and $\alpha = 0.87$; $\omega = 0.91$).

8.2. Narcissistic Admiration and Rivalry Questionnaire

The NARQ (Back et al., 2013; Polish adaptation: Rogoza et al., 2016), comprising 18-items with a 6-point Likert type response scale ranging from 1 = *not agree at all* to 6 = *agree completely* was used in Studies 2, 3, and 4. The reliability estimates for Studies 2, 3, and 4 respectively were as follows: Admiration ($\alpha = 0.85$, $\omega = 0.89$; $\alpha = 0.86$, $\omega = 0.89$; and $\alpha = 0.86$, $\omega = 0.89$) and Rivalry ($\alpha = 0.84$, $\omega = 0.89$; $\alpha = 0.83$, $\omega = 0.89$; $\alpha = 0.83$, $\omega = 0.91$).

8.3. Other measures of narcissistic personality

In Study 2, we used four well-established measures of narcissistic personality. We included: (1) the 13-item version of the NPI (Raskin & Hall, 1979; Gentile et al., 2013; $\alpha = 0.81$, $\omega = 0.85$; Polish adaptation: Żemojtel-Piotrowska et al., 2019 which comprises 13 pairs of forced choice format items, where respondents choose one of the presented options; (2) the HSNS (Hendin & Cheek, 1997; Polish adaptation: Czarna et al., 2014), a 10-item measure of vulnerable narcissism ($\alpha = 0.76$, $\omega = 0.83$) with a 5-point Likert type response scale ranging from 1 = *disagree strongly* to 5 = *agree strongly*; (3) two adjective measures of grandiose (13-item NGS; Crowe et al., 2016; Rosenthal et al., 2019; Polish adaptation: Sękowski et al., 2021; $\alpha = 0.92$, $\omega = 0.93$) and vulnerable narcissism (11-item NVS; Crowe et al., 2018; Polish adaptation: Sękowski et al., 2021; $\alpha = 0.84$, $\omega = 0.89$) with 7-point Likert type response scales ranging from 1 = *not at all* to 7 = *extremely*; (4) the short version of the FFNI (Glover et al., 2012; Sherman et al., 2015; Polish adaptation: Rogoza et al., 2021a) comprising 60-items with a 5-point Likert type response scale ranging from 1 = *disagree strongly* to 5 = *agree strongly*; and (5) the full 52-item version of the PNI (Pincus et al., 2009; Polish adaptation: Rutkowska et al., 2019) on which respondents answer using 6-point Likert type scale ranging from 0 = *not at all like me* to 5 = *very much like me*.

For the FFNI, we calculated three composite scores of agentic extraversion (FFNI-E; $\alpha = 0.89$, $\omega = 0.92$; composed of acclaim seeking, authoritativeness, grandiose fantasies, and exhibitionism), narcissistic neuroticism (FFNI-N; $\alpha = 0.91$, $\omega = 0.93$; composed of shame, indifference (reversely coded), and need for Admiration), and self-centered antagonism (FFNI-A; $\alpha = 0.91$, $\omega = 0.93$; composed of exploitativeness, lack of empathy, entitlement, arrogance, manipulativeness, reactive anger, distrust, and thrill seeking). For the PNI, we calculated two composite scores of pathological grandiosity (PNI-G; $\alpha = 0.60$, $\omega = 0.73$; comprised of exploitativeness, self-sacrificing self-enhancement, and grandiose fantasies) and pathological vulnerability (PNI-V; $\alpha = 0.84$, $\omega = 0.88$; comprised of contingent self-esteem, hiding the self, devaluing, and entitlement rage; Wright et al., 2010). The correlations between the VIEQ and NARQ dimensions with the facet scores of the NPI, FFNI, and PNI, as well as the intercorrelations between the FFNI and the PNI facets are provided in supplementary Table S1 to S5.

8.4. Measure of self-esteem

To measure self-esteem, we used the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; Polish adaptation: Dzwonkowska et al., 2007), which is a 10-item measure on which respondents rate their agreement using a 4-point Likert type scale ranging from 1 = *disagree strongly* to 4 = *agree strongly*.

8.5. Measures of personality traits and metatraits

In Study 3, to analyze the relations between the dimensions of vulnerable narcissism and normal personality traits and metatraits, we used the 60-item Big Five Inventory (BFI-2; Soto & John, 2017), on which respondents rate their agreement using a 5-point Likert type scale ranging from 1 = *disagree strongly* to 5 = *agree strongly*. We calculated five domain scores: negative emotionality (i.e., renamed neuroticism; $\alpha = 0.90$, $\omega = 0.92$), extraversion ($\alpha = 0.90$; $\omega = 0.92$), open-mindedness (i.e., renamed openness to experience; $\alpha = 0.79$, $\omega = 0.84$), agreeableness ($\alpha = 0.83$, $\omega = 0.87$) and conscientiousness ($\alpha = 0.88$, $\omega = 0.90$). Due to the fact that narcissism research is strongly embedded within the nomenclature of the Five Factor Model of personality (McCrae & Costa, 1997), we use the original labeling (i.e., neuroticism and openness to experience instead of negative emotionality and open-mindedness) of the basic traits. Personality metatraits were extracted from domain scores as the first unrotated factor in two independent factor analyses using the principal axis factoring method conducted on extraversion (factor loading: 0.56) and openness to experience (0.56) for Plasticity and neuroticism (factor loading: -0.60), agreeableness (0.41), and conscientiousness (0.62) for Stability. The intercorrelations between the domain scores and the correlations between the VIEQ and the NARQ dimensions with the facet scores are presented in supplementary Tables S6 and S7.

In Study 4, we used the full form of the Personality Inventory for the DSM-5 to evaluate pathological personality traits and metatraits (PID-5; Krueger et al., 2012; Polish adaptation: Rowiński et al., 2018). It is comprised of 220 items with a four-point Likert type response scale ranging from 0 = *very false of often false* to 3 = *very true or often true*. We used three facets to compute each domain score, as suggested in Krueger et al., 2012 (these facets are described on pg. 9 and in Supplementary Table S9). The reliability estimates of the domain scores for each scale were good: negative affect ($\alpha = 0.90$; $\omega = 0.92$), detachment ($\alpha = 0.90$; $\omega = 0.92$), antagonism ($\alpha = 0.92$; $\omega = 0.93$), disinhibition ($\alpha = 0.90$; $\omega = 0.92$), and psychoticism ($\alpha = 0.94$; $\omega = 0.95$). Similar to the normal metatraits, the pathological personality metatraits were extracted as the first unrotated factor in factor analysis with principal axis factoring on respective scales, that is, negative affect (factor loading: 0.79) and detachment (0.79) for internalizing and antagonism (factor loading: 0.85) and disinhibition (0.85) for externalizing pathology. Psychoticism was not included as an indicator of either metatrait (Wright et al., 2012).

The intercorrelations between the domain scores and the correlations between the VIEQ and the NARQ dimensions with the facet scores are presented in supplementary Tables S8 and S9.

In order to test whether the VIEQ and the NARQ dimensions reflect the hypothesized locations within the circumplex space of the CPM (data from Study 4), we used the Circumplex of Personality Metatraits Questionnaire – Short Form (CPM-Q-SF; Strus & Cieciuch, 2021). The CPM-Q-SF comprises 72-items with a 5-point Likert type response scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The reliability estimates were good for all scales: Delta-Plus ($\alpha = 0.76$; $\omega = 0.82$), Alpha-Plus ($\alpha = 0.70$; $\omega = 0.76$), Gamma-Plus ($\alpha = 0.80$; $\omega = 0.85$), Beta-Plus ($\alpha = 0.81$; $\omega = 0.84$), Delta-Minus ($\alpha = 0.82$; $\omega = 0.84$), Alpha-Minus ($\alpha = 0.82$; $\omega = 0.87$), Gamma-Minus ($\alpha = 0.87$; $\omega = 0.90$), and Beta-Minus ($\alpha = 0.75$; $\omega = 0.78$). The intercorrelations between personality metatraits and their correlations with the VIEQ and the NARQ dimensions are presented in supplementary Tables S10 and S11.

8.6. Measurement of liking

Each high school student was given a full list of class members and was asked whether they liked each of the other students within their class using a six-point Likert type scale. We did not impose a restriction on any number of potential nominations, that is, a student could nominate as many other students as they wished. These nominations were used to determine two indicators, that is: being liked (i.e., how many liking nominations a student received from others) and liking others (i.e., how many liking nominations a student sent to other people in class). The data were further recoded into binary matrices where the value of one reflected the presence of liking and zero indicated the absence of liking. Each matrix was prepared independently for each class.

9. Participants and procedure

Study 1. This study was completed by $N = 781$ adults from a Polish community online sample aged between 18 and 80 years ($M = 46.35$; $SD = 15.44$; 57.5% female) who were registered participants from the Ariadna research platform. The sample was representative of the Polish population with regards to age and gender. The majority of the sample lived in villages (35.3%) while the remaining lived in small (up to 20,000 residents; 12.8), medium (between 20,000 and 100,000 residents, 20%), large (between 100,000 and 500,000 residents, 19.8%), and very large cities (above 500,000 residents, 12%). Most respondents had completed secondary education (50.6%), and one third (38.5%) had completed higher education. All of the participants were Polish residents, and all measures were also administered in Polish. This study was part of a larger research project (see Study 1 codebook; the VIEQ was always presented as the first measure and the order of items was random for each participant; the remaining measures used in the study were presented in a random order). The data reported in Study 1 do not overlap with other studies from this project in any way.

Study 2. This study was completed by $N = 465$ adults from mixed student (18.1%) and community online samples from Poland (68.4% employed, 9.7% unemployed, 3.9% retired) aged between 18 and 70 ($M = 32.08$; $SD = 10.65$; 70.8% female, $n = 3$ participants (0.6%) identified their gender as other). The participants were mostly well educated (65.2% completed higher, 31.2% completed secondary, 3.7% completed elementary education) and lived in large cities (51.8%). Participants were recruited by three trained research assistants, who recruited participants among distant relatives, friends, and acquaintance. The survey was fully anonymous, without collecting any sort of personal data. Participation was voluntary; each participant had the right to terminate at any time, and only fully completed questionnaires approved by the participant at the end of the survey were submitted to the database. All of the measures were administered in Polish. There was no incentive for participants upon completion of the study. The data reported in the

current study were part of a larger project (see Study 2 codebook) and do not overlap with other studies from this project in any way.

Study 3. This study was completed by $N = 552$ adults from mixed student (54.9%) and community (38.6% employed, 6.3% unemployed, 0.2% retired) online samples aged between 18 and 46 years ($M = 23.37$; $SD = 4.00$; 73.9% female, $n = 1$ (0.2%) identified gender as other). The majority of participants completed either secondary (53.6%) or higher education (45.3%) and lived in cities with $>50,000$ residents (63.2%). Study recruitment was spread via social networking sites and each participant was rewarded with a small monetary (approximately \$0.70) compensation. All of the participants were Polish residents, and all measures were also administered in Polish. The data reported in the current study were part of a larger project (see Study 3 codebook). Apart from reporting reliability estimates from one of the measures (i.e., the Big Five Inventory-2), there is no overlap with other studies from this project.

Study 4. This study was completed by $N = 385$ adults aged 16 to 82 years ($M = 29.80$; $SD = 12.25$; 50.7% female). All subjects completed the CPM-Q-SF, the VIEQ and the NARQ, in that order, and a subsample of 357 subjects (50.1% female; $M = 29.74$, $SD = 12.29$) also completed the PID-5 during an additional session, approximately two weeks later. Trained psychology students assisted in conducting the study; each of them administered the measures to approximately 10 respondents, chosen from a pool of their distant relatives, friends, and acquaintances. All of the participants were Polish residents, mostly from central Poland, and all measures were administered in Polish using a self-report paper-and-pencil method as part of a larger, three-session research project, also containing other measures not relevant to this work. Participation in the research was voluntary and anonymous (respondents signed the questionnaires with nicknames).

Study 5. This study was completed by $N = 200$ young adults aged 18 to 19 ($M = 17.94$; $SD = 0.31$; 66.5% female) during their final (third) year of high school. All participants were well acquainted, having attended the same class at school for at least two years. Data were gathered from five schools as a part of larger data collection effort not reported in the current manuscript. Each of the ten classes taking part in the project was treated as an independent social network. Questions on liking were asked only within the network. For example, a student from class A could nominate other students from class A but not from classes B or C. In total, we gathered 3768 peer-reports on perceived liking. All of the participants were Polish residents, and all measures were administered in Polish.

10. Results

10.1. The development of the Vulnerable Isolation and Enmity Questionnaire and the internal structure of the VIEQ (Study 1)

10.1.1. Item creation and selection

For the purpose of questionnaire development, all authors of the paper developed a large, 44-item pool covering the theoretically-defined-through-its-facets dimensions of vulnerable Isolation (hiding the self, inhibition, rumination, and passive entitlement) and Enmity (paranoia, envy, narcissistic projection, and spitefulness; see Fig. 2). Each developed item was discussed in terms of a) construct coverage; b) redundancy; c) comprehensiveness, and were further optimized or removed. The remaining 32 items (16 Isolation and 16 Enmity, 4 per each facet) were included in two separate factor analyses (one for Isolation and one for Enmity), to assess the degree of scale homogeneity. The tested one-factor solutions appeared homogenous with eigenvalues of 9.79 and 9.03 for Isolation and Enmity (explained variance: 61.20% and 54.44%, respectively). The factor loadings are given as supplementary materials at the OSF. Finally, all of the items were rated by each author in terms of whether they sufficiently covered the dimensions and facets. Items selected as best covering the construct and with the highest factor loadings were retained for the final 24-item version of the VIEQ,

which is presented in Table 3 with the descriptive statistics and item-total correlations.

10.1.2. The internal structure of the VIEQ/VIEC

The structure of the VIEQ was tested with a third-order confirmatory factor analysis using robust maximum likelihood estimation in R v. 3.6.0 (R Development Core Team, 2019) using the lavaan package (Rosseel, 2012). Global vulnerable narcissism consisted of two higher-order factors of Isolation and Enmity, which were each measured by four corresponding facets, and each facet was measured by three items (see Fig. 2). No correlations between residuals were introduced into the model. The analyzed model turned out to be well fitted to the data ($\chi^2_{(242)} = 671.02$; $p < .001$; CFI = 0.949; RMSEA = 0.048[0.044, 0.051]; SRMR = 0.046; BIC = 45878.13), and the strength of the factor loadings (see Table 2) on the corresponding factors were adequate (i.e., > 0.70). The analyzed model represented a significantly better fit to the data than the one-factor model (BIC = 46101.48; $\Delta\chi^2_{(1)} = 150.29$; $p < .001$). Thus, the results support the hypothesized structure of vulnerable narcissism, confirming our prerequisite hypothesis⁵.

10.2. Hypothesis 1: Relations between the VIEQ and NARQ dimensions and other measures of narcissistic personality and self-esteem (Study 2)

Next we analyzed whether the VIEQ and the NARQ dimensions are meaningfully related to other narcissistic measures and self-esteem. The empirical verification of these hypotheses is presented in Table 4.

The obtained results mostly corroborated our expectations, except for Rivalry which missed some of these. Both dimensions of grandiose narcissism (NARQ) were positively related to grandiosity measured by the NPI and NGS (albeit Rivalry to a lesser than expected extent) and both dimensions of vulnerable narcissism (VIEQ) were positively related to vulnerability measured by the HSNS and NVS. In regard to the dimensions of the FFNI, our hypotheses were also supported – Admiration was strongly related to agentic extraversion (and slightly stronger than expected to self-centered antagonism), Isolation was strongly related to neuroticism, while Rivalry and Enmity were related to antagonism. The two dimensions of antagonism (i.e., Rivalry and Enmity) were also positively related to both grandiosity and vulnerability measures, however Rivalry was related more strongly than hypothesized to the vulnerability measures (i.e., NVS, HSNS, and PNI-V). As predicted, Admiration was more strongly related to pathological grandiosity and Isolation was more strongly related to pathological vulnerability. Admiration was most strongly and positively related and Isolation was most strongly but negatively related to self-esteem, while Rivalry and Enmity were both negatively related to it. Thus, our first hypothesis was supported, albeit with some deviations observed in Rivalry.

10.3. Hypothesis 2: Relations with normal personality traits and metatraits (Study 3)

Table 5 presents the empirical relations between the NARQ and VIEQ dimensions and normal personality traits and metatraits. Neuroticism was a positive predictor of both dimensions of vulnerable narcissism, albeit stronger for Isolation. Extraversion, as expected, was a strong predictor of Admiration (positive) and Isolation (negative). Finally, agreeableness uniquely predicted both expressions of self-importance (i.e., Rivalry and Enmity), being a stronger (negative) predictor of Rivalry. The role of openness and conscientiousness was negligible. Minor, yet acceptable, deviations from our hypotheses were found in Admiration,

⁵ We also evaluated the model fit to the data within each sample, finding general support for the model. We also analyzed measurement invariance of the VIEQ full version across studies, finding further support for the model. The detailed results of these analyses are presented as supplementary materials on the OSF project site.

Table 3
The VIEQ Items: Descriptive Statistics and Item-Total Correlations

No.	Item	Scale	Facet	M	SD	r_{it}	r_{it}^*	λ
7	It's easy to hurt me, so I usually prefer to be alone by myself	Isolation	Hiding the self	2.73	1.24	0.72	0.60	0.82
16	I avoid people because I'm afraid that they can hurt me	Isolation	Hiding the self	2.90	1.16	0.74	0.63	0.84
18 ^a	I hang back so that others can't hurt me	Isolation	Hiding the self	2.85	1.19	0.72	0.67	0.81
9	I often do not speak, because I'm afraid that others will criticize me	Isolation	Inhibition	2.78	1.17	0.69	0.53	0.87
13 ^a	Usually I'm quiet because I do not want to expose myself to ridicule	Isolation	Inhibition	2.76	1.18	0.70	0.54	0.85
22	In the group I usually do not take to the floor because I'm afraid of being disregarded	Isolation	Inhibition	2.21	1.05	0.65	0.56	0.84
1	I am constantly worrying if someone has misjudged or thought poorly of me	Isolation	Rumination	2.82	1.24	0.74	0.64	0.83
2	When I do something wrong in front of others, I agonize over this for a long time	Isolation	Rumination	3.31	1.25	0.62	0.58	0.72
19 ^a	I often get tired of thinking about how I am perceived	Isolation	Rumination	2.95	1.21	0.67	0.56	0.82
10	I find it really hard to talk about my desires, but I feel bad when others do not fulfil them	Isolation	Passive entitlement	2.34	1.10	0.66	0.55	0.80
11 ^a	I suffer because of the fact that others do not try to understand what I need	Isolation	Passive entitlement	2.80	1.24	0.76	0.69	0.84
15	I am sorry that others do not surmise what I need	Isolation	Passive entitlement	2.66	1.22	0.74	0.66	0.80
4	When people whisper, I feel that they are plotting against me	Enmity	Paranoia	2.47	1.16	0.76	0.70	0.76
5	I often feel that other people criticize me behind my back	Enmity	Paranoia	2.43	1.14	0.73	0.73	0.76
8 ^a	I have a feeling that people look at me with hostility	Enmity	Paranoia	2.86	1.25	0.70	0.54	0.88
14 ^a	I find it difficult to tolerate the success of someone else	Enmity	Envy	2.21	1.14	0.72	0.61	0.84
20	I only feel good when others turn out to be worse than me	Enmity	Envy	2.80	1.22	0.64	0.54	0.82
24	I feel envy when others turn out to be better than me	Enmity	Envy	2.37	1.11	0.74	0.62	0.82
6	Other people do not respect me and are full of spite	Enmity	Projection	2.84	1.23	0.69	0.60	0.79
12 ^a	When I'm in a group, other people purposely try to insult me	Enmity	Projection	2.42	1.13	0.81	0.69	0.81
21	People are aggressive towards me for no reason	Enmity	Projection	2.55	1.16	0.72	0.60	0.79
3 ^a	I like to watch when someone mistreats a person who has hurt me before	Enmity	Spitefulness	2.50	1.21	0.66	0.57	0.86
17	I would not mind if someone who treated me badly got hurt	Enmity	Spitefulness	2.82	1.20	0.69	0.54	0.81
23	When someone offends me, I am waiting for the opportunity to pay them back somehow	Enmity	Spitefulness	2.17	1.03	0.72	0.58	0.79

Note. N = 781. All items were administered on a 6-point Likert-type scale ranging from 1 = not agree at all to 6 = agree completely. VIEQ = Vulnerable Isolation and Enmity Questionnaire; r_{it} = item-total correlations for VIEQ overall score; r_{it}^* = item-total correlations for VIEQ facets; λ = standardized factor loading from third order Confirmatory Factor Analysis.

^aItems included in the brief version of the VIEQ used in Study 3. The items for the short versions were selected upon investigation of the item information curves as a function of corresponding factor using Item Response Theory and theoretical accuracy.

Table 4
Relations Between the NARQ and VIEQ Dimensions and Other Measures of Narcissistic Personality and Self-Esteem (N = 450)

	NARQ		VIEQ		Z-tests	
	Admiration	Rivalry	Enmity	Isolation	R. vs E.	I vs. E.
Grandiosity (NPI)	0.48**[0.41, 0.55]	0.44**[0.37, 0.51]	0.26**[0.17, 0.34]	-0.08[-0.17, 0.01]	5.14**	10.79**
Grandiosity (NGS)	0.67**[0.61, 0.71]	0.31**[0.23, 0.39]	0.15**[0.06, 0.24]	-0.12**[-0.21, -0.03]	4.33**	8.15**
Vulnerability (HSNS)	0.00[-0.09, 0.09]	0.53**[0.46, 0.59]	0.56**[0.48, 0.61]	0.60**[0.53, 0.65]	0.10	1.44
Vulnerability (NVS)	-0.21**[-0.29, -0.12]	0.45**[0.37, 0.52]	0.63**[0.57, 0.68]	0.71**[0.66, 0.75]	5.92**	3.28**
Agentic extraversion (FFNI-E)	0.70**[0.65, 0.74]	0.30**[0.22, 0.38]	0.16**[0.07, 0.24]	-0.15**[-0.23, -0.06]	3.77**	9.58**
Narcissistic neuroticism (FFNI-N)	-0.23**[-0.32, -0.15]	0.28**[0.19, 0.36]	0.43**[0.35, 0.50]	0.70**[0.65, 0.74]	4.26**	10.68**
Self-centered antagonism (FFNI-A)	0.40**[0.32, 0.47]	0.63**[0.58, 0.68]	0.49**[0.42, 0.56]	0.11*[0.02, 0.20]	4.63**	13.32**
Pathological grandiosity (PNI-G)	0.46**[0.38, 0.53]	0.43**[0.35, 0.50]	0.36**[0.27, 0.43]	0.20**[0.11, 0.28]	2.00*	4.85**
Pathological vulnerability (PNI-V)	0.04[-0.05, 0.13]	0.58**[0.51, 0.63]	0.58**[0.52, 0.64]	0.62**[0.56, 0.67]	0.00	1.48
Self-esteem (RSES)	0.44**[0.36, 0.51]	-0.25**[-0.33, -0.16]	-0.45**[-0.52, -0.37]	-0.61**[-0.66, -0.55]	5.75**	5.67**

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

Note. R = Rivalry; E = Enmity; I = Isolation.

which was significantly, yet weakly predicted by lower scores of neuroticism and agreeableness.

The results revealed that Admiration was predicted only by high Plasticity, Rivalry and Enmity were predicted only by low Stability while Isolation was predicted by both low Plasticity and low Stability (due to its neuroticism content). Isolation and Enmity did not differ in their relation to Stability while Isolation was more strongly related to Plasticity. Rivalry and Enmity demonstrated the same differences, that is, there were limited differences in their relation to Stability, but Enmity was more strongly related to Plasticity. Thus, the obtained results generally corroborate the claim that neuroticism, extraversion, and agreeableness are key features in explaining narcissistic personality, and moreover that the dimensions of the VIEQ and NARQ fit within the theoretically predicted pattern of relations with personality metatraits, confirming our second hypothesis.

10.4. Hypothesis 3: Relations with pathological personality traits and metatraits (Study 4)

Table 6 presents the relations between the NARQ and VIEQ dimensions and pathological personality traits and metatraits. As predicted, both dimensions of vulnerable narcissism were positively related to negative affect (Isolation being partially more strongly related), and both dimensions of grandiose narcissism were positively related to antagonism. We have also confirmed that different narcissistic strategies had significant relations to detachment – negative for Admiration and positive for Isolation. Both Rivalry and Enmity were positively related to antagonism, with Rivalry being related more strongly. Although there were some significant bivariate relations with disinhibition, these effects did not hold in the regression model. Only Admiration was positively associated to psychoticism, however the confidence interval of the standardized regression coefficient crossed zero, making this relation questionable. Thus, the expected pattern of relations was generally confirmed.

Admiration was negatively predicted by internalizing and positively

Table 5
Relations Between the NARQ and VIEQ Dimensions and Normal Personality Traits and Metatraits

	NARQ		VIEQ		Z-tests	
	Admiration	Rivalry	Enmity	Isolation	R. vs E.	I vs. E.
Neuroticism	-0.38**[-0.45, -0.31] -0.12**[-0.21, -0.03]	0.16**[0.08, 0.24] 0.09[-0.02, 0.19]	0.29**[0.21, 0.36] 0.12**[0.02, 0.23]	0.54**[0.47, 0.59] 0.32**[0.21, 0.44]	3.70** -0.82	6.76** 4.84**
Extraversion	0.64**[0.59, 0.69] 0.58**[0.49, 0.67]	0.00[-0.08, 0.09] 0.12**[0.01, 0.22]	-0.23**[-0.30, -0.15] -0.08[-0.19, 0.03]	-0.58**[-0.64, -0.52] -0.44**[-0.56, -0.32]	6.56** 5.60**	9.78** 9.30**
Openness	0.27**[0.19, 0.35] 0.11**[0.01, 0.22]	-0.10*[-0.18, -0.01] -0.01[-0.13, 0.11]	-0.15**[-0.23, -0.07] -0.03[-0.15, 0.09]	-0.10*[-0.18, -0.02] 0.07[-0.07, 0.20]	1.38 1.09	1.16 2.31*
Agreeableness	-0.06[-0.15, 0.02] -0.16**[-0.26, -0.06]	-0.51**[-0.57, -0.45] -0.49**[-0.60, -0.37]	-0.42**[-0.49, -0.35] -0.35**[-0.47, -0.24]	-0.06[-0.14, 0.02] 0.04[-0.09, 0.17]	2.86** 4.36**	9.23** 9.87**
Conscientiousness	0.18**[0.10, 0.26] -0.05[-0.14, 0.04]	-0.15**[-0.23, -0.07] -0.04[-0.15, 0.07]	-0.27**[-0.34, -0.19] -0.10*[-0.20, 0.01]	-0.26**[-0.34, -0.18] 0.01[-0.11, 0.13]	3.39** 1.64	0.24 2.55*
F _(5,351)	89.13**	40.49**	33.12**	78.43**		
R ²	0.45	0.27	0.23	0.42		
Plasticity	0.56**[0.50, 0.62] 0.54**[0.43, 0.65]	-0.06[-0.14, 0.03] 0.08[-0.04, 0.20]	-0.23**[-0.31, -0.15] -0.08[-0.19, 0.04]	-0.42**[-0.49, -0.35] -0.29**[-0.43, -0.15]	4.79** 4.44**	4.79** 5.05**
Stability	0.27**[0.20, 0.35] 0.05[-0.04, 0.15]	-0.31**[-0.38, -0.23] -0.34**[-0.45, -0.23]	-0.41**[-0.48, -0.34] -0.38**[-0.48, -0.28]	-0.43**[-0.50, -0.36] -0.31**[-0.44, -0.18]	2.98** 1.19	0.52 1.75
F _(2,549)	128.53**	30.13**	57.65**	95.18**		
R ²	0.32	0.10	0.17	0.26		

*p < .05; **p < .01.

Note. Correlation coefficients are presented in the upper row and regression coefficients are presented in the lower row. Narcissism scores were regressed on personality traits and metatraits. R = Rivalry; E = Enmity; I = Isolation.

Table 6
Relations Between the NARQ and VIEQ Dimensions and Pathological Personality Traits and Metatraits

	NARQ		VIEQ		Z-tests	
	Admiration	Rivalry	Enmity	Isolation	R. vs E.	I vs. E.
Negative affect	0.14**[0.03, 0.24] 0.00[-0.18, 0.18]	0.33**[0.24, 0.42] 0.14*[-0.04, 0.31]	0.43**[0.32, 0.51] 0.25**[0.10, 0.41]	0.48**[0.39, 0.55] 0.42**[0.23, 0.62]	2.75** 2.82**	1.31 4.24**
Detachment	-0.22**[-0.32, -0.12] -0.39**[-0.56, -0.22]	0.30**[0.20, 0.39] 0.15**[-0.02, 0.32]	0.42**[0.33, 0.50] 0.29**[0.14, 0.43]	0.48**[0.40, 0.56] 0.41**[0.23, 0.59]	3.28** 3.64**	1.57 2.98**
Antagonism	0.48**[0.39, 0.55] 0.52**[0.34, 0.69]	0.59**[0.52, 0.65] 0.53**[0.36, 0.70]	0.44**[0.35, 0.52] 0.27**[0.12, 0.42]	0.18**[0.07, 0.28] -0.04[-0.23, 0.14]	4.59** 7.68**	6.63** 7.62**
Disinhibition	0.12*[-0.01, 0.22] -0.10[-0.30, 0.11]	0.33**[0.24, 0.42] 0.02[-0.18, 0.22]	0.39**[0.29, 0.47] 0.05[-0.13, 0.23]	0.34**[0.25, 0.43] 0.06[-0.16, 0.28]	1.62 0.75	1.24 0.23
Psychoticism	0.26**[0.16, 0.36] 0.19**[-0.03, 0.40]	0.35**[0.26, 0.44] -0.07[-0.28, 0.14]	0.39**[0.30, 0.48] -0.03[-0.21, 0.16]	0.29**[0.19, 0.38] -0.11[-0.34, 0.12]	1.08 1.00	2.47* 1.83
F _(5,351)	41.08**	43.94**	39.25**	43.27**		
R ²	0.37	0.38	0.36	0.38		
Externalizing	0.35**[0.26, 0.44] 0.55**[0.43, 0.68]	0.54**[0.47, 0.61] 0.47**[0.35, 0.58]	0.49**[0.40, 0.56] 0.27**[0.17, 0.37]	0.31**[0.21, 0.40] -0.05[-0.17, 0.07]	1.49 5.63**	4.67** 7.90**
Internalizing	-0.05[-0.16, 0.05] -0.36**[-0.52, -0.21]	0.40**[0.31, 0.48] 0.14*[-0.01, 0.28]	0.54**[0.46, 0.61] 0.39**[0.27, 0.51]	0.61**[0.54, 0.67] 0.64**[0.49, 0.79]	4.11** 6.86**	2.05* 7.33**
F _(2,354)	48.08**	79.35**	92.53**	105.20**		
R ²	0.21	0.31	0.34	0.37		

*p < .05; **p < .01.

Note. Correlation coefficients are presented in the upper row and regression coefficients are presented in the lower row. Narcissism scores were regressed on pathological personality traits and metatraits. R = Rivalry; E = Enmity; I = Isolation.

predicted by externalizing pathology, while Rivalry was positively predicted by both internalizing (although this should be treated with caution as the confidence interval of regression coefficient crossed zero) and externalizing pathology. Isolation was positively predicted by internalizing pathology, while Enmity demonstrated a pattern similar to Rivalry: that is, it was positively predicted by internalizing and externalizing personality pathology. Rivalry was significantly more strongly related to externalizing and Enmity to internalizing personality pathology. Expectedly, Isolation was more strongly related to internalizing, and Enmity to externalizing personality pathology. In summary, the third hypothesis was mostly confirmed.

10.5. Hypothesis 4: Social relations

10.5.1. Social network analyses

To assess how narcissism predicted social relations of liking others

and being liked, we analyzed the Temporal Exponential Random Graph Model (TERGM; [Hanneke et al., 2010](#); [Krivitsky & Handcock, 2014](#)). Another approach to assess such round-robin data is the Social Relations Model ([Back & Kenny, 2010](#)). While these two approaches are largely similar in terms of the obtained results ([Nestler et al., 2015](#)), TERGM offers additional insight into network dependencies such as controlling for reckless responding. TERGM is used to simulate a pattern of dependencies between a set of exo- and endogenous covariates and a participant's relation within a social network in a multigroup setting ([Hanneke et al., 2010](#); [Lusher et al., 2013](#); [Robins et al., 2007](#)). In regard to external covariates, the TERGM allows us to test whether a specific trait (e.g., Isolation) predicts incoming (i.e., being liked) and outgoing (i.e., liking others) nominations. Prior to the interpretation of the covariates, it is necessary to assess whether the relations within the network were not formed at random. The negative and significant estimate of the edge term provides this information. In respect to endogenous (i.e.,

within-network) covariates, we included those which are important for network development as ignoring these trends might lead to over-estimation (Scott, 2000; Steglich et al., 2010). In this case, this includes mutuality of relations (i.e., are the liking relations reciprocated?), creating triads (i.e., is the friend of my friend also my friend?). We also controlled for reckless responding (i.e., the tendency to like almost everyone). The TERGM was estimated using the Markov chain Monte Carlo maximum likelihood estimation (MCMC-MLE) feature that is implemented in the *xergm* package for the R statistical environment (Leifeld et al., 2018; R Core Team, 2015).

10.5.2. Results

The estimates of the TERGM are presented in Table 7. The edge term was negative ($-3.06; p < .001$) suggesting that the liking relations within the networks were not formed at random, and thus, are interpretable. All of the analyzed endogenous effects were significant. The liking relations turned out to be generally reciprocated ($1.82; p < .001$) and there was a tendency to create triads ($1.05; p < .001$) within the networks. In turn, there was no tendency among the participants to like almost everyone. In fact, students tended to select fewer people as their friends ($-1.58; p < .001$). Consistent with expectations for the exogenous covariates, we found that neither Admiration nor Isolation were significant predictors of the liking and being liked social relations. We also confirmed our different predictions for Rivalry and Enmity for liking others. Specifically, Rivalry predicted selecting fewer classmates as friends, and Enmity predicted selecting more classmates as friends. Finally, we found an unexpected contradictory effect for Enmity and Rivalry: While Enmity predicted being liked less (as expected), Rivalry predicted being liked more. Thus, our hypotheses, with one exception, were confirmed. This exception, however unexpected, further strengthens the differentiation between the two forms of self-importance.

10.6. Hypothesis 5: Relations between the NARQ and VIEQ dimensions – A meta-analysis of the current findings

Table 8 presents the meta-analysis of the observed effect sizes estimated on the basis of the correlations between the NARQ and VIEQ dimensions across studies 2–4. We used the Hedges and Olkin (1985) method for calculating the weighted summary correlation coefficient under the fixed effects model. We found strong positive associations between adjacent dimensions of Isolation and Enmity, and between Rivalry and Enmity. Although a positive association between Admiration and Rivalry was found as well, its strength was lower than expected. Consistent with our expectation, the relation between Admiration and Enmity was low, however, the correlation between Isolation and Rivalry was higher than expected. Finally, the relation between Admiration and Isolation was low and negative as expected. Thus, the hypothesized pattern of relations between the NARQ and VIEQ dimensions was generally confirmed, providing support for their organization within the structure of narcissistic personality. The one discrepancy is related to Rivalry, which has an unexpectedly weak relation with Admiration and an unexpectedly strong relation with Enmity and Isolation. We come back to this issue in the Discussion.

The factor loadings for the Enmity and Rivalry items within a forced two-factorial solution as well as item-total correlations between item of

Table 7

Different Facets of Narcissism Predicting Social Relations of Liking Others and Being Liked

	Liking others(SE)	Being liked(SE)
Admiration	0.07(0.04)	-0.07(0.05)
Rivalry	-0.17(0.05)***	0.18(0.05)***
Enmity	0.26(0.06)***	-0.17(0.06)**
Isolation	-0.08(0.05)	0.06(0.05)

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

Table 8

Meta-Analysis of the Relations Between the NARQ and VIEQ Dimensions Across Studies 2–5

	Admiration	Rivalry	Enmity
Rivalry	0.36**[0.32, 0.41]		
Enmity	0.13**[0.08, 0.18]	0.68**[0.65, 0.70]	
Isolation	-0.14**[-0.19, -0.10]	0.33**[0.29, 0.38]	0.59**[0.55, 0.62]

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

Note. When the results from Study 1 were included in the meta-analysis, the effect size between Isolation and Enmity was slightly higher, $d = 0.67^{**}[0.65, 0.69]$.

Enmity/Rivalry to the composite score of Rivalry/Enmity respectively, are reported in Table 9. The Enmity items of paranoia and projection in Enmity and the items of devaluation and supremacy in Rivalry appeared to be good indicators of the hypothesized constructs. Envy in Enmity, and partially aggressiveness and Rivalry appeared to be mediocre indicators, given the fact they all cross-loaded on the second factor. Finally, the items of spitefulness from Enmity, contrary to our expectations, turned out to be a better indicator of Rivalry (as measured by the NARQ) than Enmity. Thus, while we found support for the distinctiveness of Enmity and Rivalry on the item level, the current differentiation falls short of the ideal.

10.7. Hypothesis 6: Locating different facets of narcissism within the Circumplex of Personality Metatraits (Study 4)

10.7.1. Circumplex analyses

In order to verify our last hypothesis that the NARQ and VIEQ dimensions will sufficiently cover the conceptual space of the NSM, and they can all be meaningfully located within the CPM, the analyses were carried out in three steps (Rogoza et al., 2021b). First, as a prerequisite, we empirically verified the underlying circumplex structure of the CPM using structural equation modeling in the CircE R package (Grassi et al., 2010). We tested a fully constrained model in which spacing and communalities are constrained to be equal across all scales (i.e., the scales are forced to have equal radii and spaced 45° apart; Gurtman & Pincus, 2003). We relied on conventional recommendations (i.e., CFI > 0.90 ; GFI > 0.90 ; AGFI > 0.85 ; RMSEA < 0.13 ; SRMR < 0.10) to test if the circumplex model fit the data well (Rogoza et al., 2021b). We supplemented this analysis with another confirmatory approach designed to evaluate circumplex models: the randomized test of hypothesized order relations (Hubert & Arabie, 1987; Tracey, 2000) using the R adaptation of RANDALL (Tracey, 1997). In this test, all possible pairs of correlations (i.e., in an 8×8 matrix there are 288 possible comparisons) are tested after circumplex order. All correlations between adjacent variables are assumed to be greater than correlations between variables two steps apart on the circle, which are assumed to be greater than correlations three steps apart, etc. (Tracey, 2000). The randomization test yields a significance level of the number of predictions met by the data versus the null conjecture of random relabelling and a correspondence index, which is the proportion of predictions met minus the proportion of predictions violated. The values of the corresponding index + 1 indicate perfect fit (Tracey, 1997).

Second, to evaluate how the different dimensions of narcissism can be projected onto the conceptual space of the CPM, we employed the Structural Summary Method (Gurtman, 1992) using the circumplex package in R (SSM; Zimmerman & Wright, 2017). The SSM assesses the degree to which the correlations between the analyzed and circumplex variables assume the sinusoidal pattern of relations by fitting a cosine curve to the data. This produces an estimate of model fit (R^2), of which values of $R^2 > 0.70$ represent adequate and $R^2 > 0.80$ good model fit (Wright et al., 2009). Then, the SSM estimates the empirical angular location (i.e., the angular displacement representing the peak shift of the cosine curve and reflecting the domineering circumplex location;

Table 9
Factor Loadings and Item-Total Correlations Between Enmity and Rivalry Items

	Rivalry		Enmity		Correlation to Composite Score	
	Study 2	Study 4	Study 2	Study 4	Study 2	Study 4
Paranoia						
VIEQ4	0.08	0.08	0.57	0.69	0.33**[0.25, 0.41]	0.42**[0.33, 0.49]
VIEQ5	-0.06	0.00	0.66	0.71	0.25**[0.17, 0.34]	0.36**[0.27, 0.44]
VIEQ8	0.06	0.00	0.71	0.78	0.35**[0.27, 0.43]	0.37**[0.28, 0.46]
Envy						
VIEQ14	0.33	0.37	0.32	0.23	0.44**[0.37, 0.51]	0.41**[0.33, 0.49]
VIEQ20	0.52	0.54	0.34	0.24	0.60**[0.54, 0.66]	0.59**[0.52, 0.65]
VIEQ24	0.54	0.59	0.29	0.13	0.64**[0.58, 0.69]	0.58**[0.51, 0.64]
Projection						
VIEQ6	-0.11	-0.05	0.73	0.73	0.32**[0.24, 0.40]	0.31**[0.22, 0.40]
VIEQ12	-0.01	0.11	0.69	0.45	0.30**[0.21, 0.38]	0.27**[0.18, 0.36]
VIEQ21	0.11	0.16	0.51	0.39	0.23**[0.14, 0.31]	0.31**[0.22, 0.40]
Spitefulness						
VIEQ3	0.71	0.63	0.02	0.02	0.63**[0.57, 0.68]	0.55**[0.48, 0.62]
VIEQ17	0.75	0.68	-0.07	0.08	0.61**[0.55, 0.66]	0.62**[0.55, 0.67]
VIEQ23	0.70	0.50	0.01	0.22	0.63**[0.57, 0.68]	0.53**[0.45, 0.59]
Devaluation						
NARQ13	0.57	0.57	-0.13	-0.12	0.29**[0.20, 0.37]	0.32**[0.22, 0.40]
NARQ14	0.49	0.42	0.14	0.22	0.48**[0.41, 0.55]	0.51**[0.43, 0.58]
NARQ17	0.56	0.55	-0.07	0.05	0.34**[0.26, 0.42]	0.46**[0.38, 0.53]
Supremacy						
NARQ6	0.83	0.81	-0.02	-0.05	0.62**[0.56, 0.67]	0.60**[0.53, 0.66]
NARQ9	0.84	0.81	-0.12	-0.14	0.54**[0.47, 0.60]	0.49**[0.41, 0.56]
NARQ10	0.73	0.80	0.06	-0.03	0.59**[0.53, 0.65]	0.58**[0.51, 0.64]
Aggressiveness						
NARQ4	0.44	0.60	0.23	0.02	0.47**[0.40, 0.54]	0.45**[0.36, 0.52]
NARQ11	0.21	0.42	0.30	0.15	0.41**[0.33, 0.48]	0.46**[0.38, 0.54]
NARQ12	0.42	0.62	0.29	0.06	0.52**[0.45, 0.58]	0.50**[0.42, 0.57]

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

Note. We also correlated Enmity items to Admiration, finding mostly non-significant relations with total strength ≤ 0.22 .

Gurtman, 1992), vector length (i.e., amplitude, reflecting the differentiation of the profile, that is, how distinctly the external dimension is associated with specific metatraits and not others); elevation (i.e., mean correlation of all circumplex variables – referred to as the influence of the general factor), and the estimates of the x- (corresponding to Alpha/Stability) and y-axis (corresponding to Beta/Plasticity; Gurtman & PinCUS, 2003; Zimmerman & Wright, 2017). Values of amplitude and elevation ≥ 0.15 are notable (Zimmerman & Wright, 2017).

Whereas the SSM provides important empirical and visual insight into the circumplex structure, it lacks a formal test to confirm or reject the a priori hypothesized locations of the projected scales. Thus, to verify our hypothesis regarding the coverage of the NSM by the VIEQ and NARQ dimensions, we conducted a Procrustes analysis (Schöne-mann, 1966) calculated in Orthosim 2.1 (Barrett, 2013), which allows us to test the extent to which the VIEQ and NARQ cover the NSM dimensions as assessed by an overall congruence coefficient (i.e., the empirical model), and whether the VIEQ and NARQ dimensions are located as expected as assessed by a congruence coefficient for each dimension (i.e., the elements). In other words, a Procrustes analysis allows us to examine whether an empirical model and its elements fit the theoretical expectations. The Procrustes rotation without row normalization assesses the level of congruence between the estimated matrix and the target matrix of the hypothesized locations within the circumplex. The estimated matrix represents the sine (y-axis) and cosine (x-axis) of the degree radian of each scale converted from the conventionally-estimated-in-SSM empirical angular location (Zimmerman & Wright, 2017). In comparisons we used three estimated matrices, representing exact values and the upper and lower 95% confidence intervals. The target matrix represents the sine (y-axis) and cosine (x-axis) values of the hypothesized degree radian, which were as follows (see Fig. 3): Admiration (337.5°; sine: -0.38 and cosine: 0.92), Rivalry

(292.5°; sine: -0.92 and cosine: 0.38), Enmity (247.5°; sine: -0.92 and cosine: -0.38), and Isolation (202.5°; sine: -0.38 and cosine: -0.92). Congruence coefficient values lower than 0.90 indicate that the empirical estimates are not in line with the hypothesized locations (Barrett, 1986; McCrae, Zonderman, Costa, Bond, & Paunonen, 1996).

10.7.2. Results

First, we verified the underlying circumplex structure of the metatraits measured by the CPM-Q. The results of the constrained (equal radii and spacing) model resulted in good overall fit: $\chi^2_{(26)} = 165.51$; $p < .001$; CFI = 0.909; GFI = 0.917; AGFI = 0.885; SRMR = 0.091; RMSEA = 0.118. All of the model fit indices apart from the RMSEA suggested that the circumplex structure of metatraits was well-reproduced by the CPM-Q. The results of the randomized test of order of relations revealed that all of the 288 predictions were met for the exact correlations as well as for their confidence intervals (all p 's < 0.001 and all correspondence indexes = 1). Thus, given that the RMSEA may be an inappropriate fit index for circumplex models (e.g., Browne et al., 2002; Saris et al., 2009), it is plausible to assume the circumplex structure of the CPM and that the narcissistic dimensions can be projected onto its conceptual space. Table 10 provides the results of the SSM with 95% confidence intervals.

All of the analyzed narcissistic dimensions were well-fitted ($R^2 > 0.80$), thus the interpretation of the remaining parameters is empirically plausible. The angular locations of each scale, with the exception of a small deviation of the position of Rivalry, were approximate to the hypothesized locations. The length of the vector for each variable was notable in size (vector length > 0.15), whereas the effect of general factor was modest (elevation < 0.15). Fig. 4 provides a graphical representation of the results.

In order to compare the estimated results with the exact

Table 10
Structural Summary Statistics with 95% Confidence Intervals for the Different Narcissism Scales

	R ²	Theoretical location	Empirical location	Vector length	Elevation	Alpha	Beta
Admiration	0.982	337.50	350.58[339.34, 0.75]	0.46[0.39, 0.53]	0.09[0.06, 0.11]	-0.08[-0.16, 0.01]	0.45[0.38, 0.52]
Rivalry	0.991	292.5	261.63[250.71, 273.95]	0.43[0.36, 0.50]	0.06[0.03, 0.09]	-0.43[-0.49, -0.35]	-0.06[-0.15, 0.03]
Enmity	0.991	247.5	245.63[237.45, 254.42]	0.50[0.43, 0.56]	0.09[0.06, 0.12]	-0.45 [-0.51, -0.38]	-0.21 [-0.28, -0.13]
Isolation	0.974	202.5	219.08[210.33, 227.59]	0.48[0.41, 0.54]	0.07[0.04, 0.10]	-0.30[-0.37, -0.23]	-0.37[-0.44, -0.30]

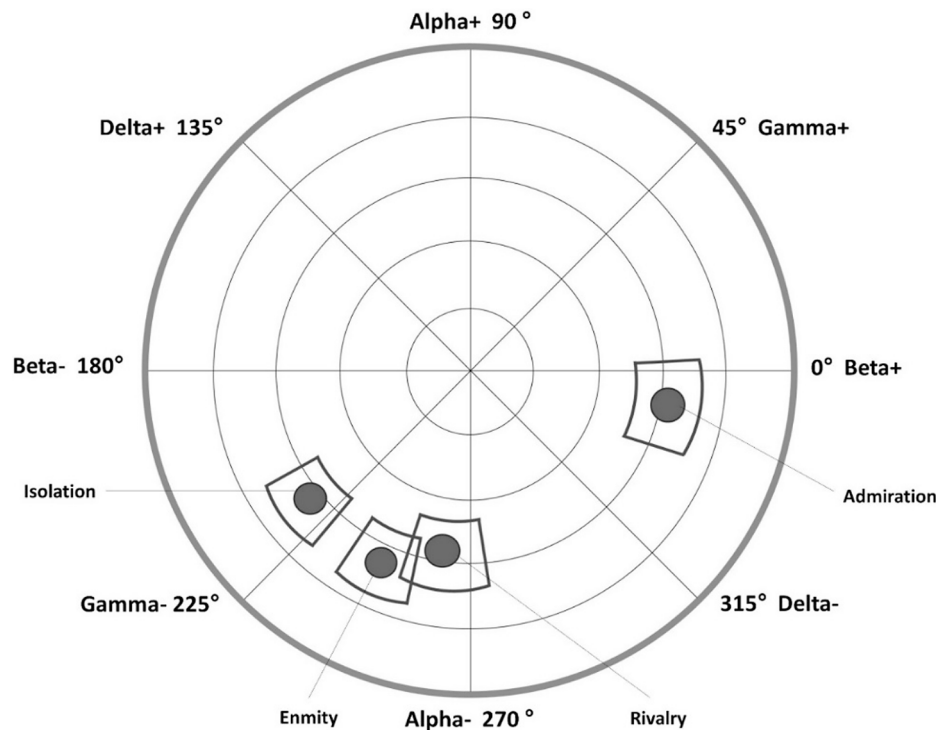


Fig. 4. Projections of the different dimensions of narcissism onto the conceptual space of the Circumplex of Personality Metatraits.

hypothesized locations, Procrustes rotation was applied. The coefficient of the overall solution congruence reached 0.95, confirming that the VIEQ and NARQ successfully cover the conceptual space of the NSM assessed on the basis of the CPM space. With respect to the specific dimensions, the congruence coefficients for Admiration = 0.97[0.98, 0.97]; Enmity = 1.00[1.00, 1.00] and Isolation = 0.96[0.95, 0.96]; reached high values, confirming the hypotheses regarding their locations. However, the hypothesis regarding the location of Rivalry was rejected (Rivalry = 0.86[0.85, 0.88]), despite the fact that the results were near the boundary of the acceptable threshold. Thus, our hypotheses regarding the location of the different narcissistic dimensions representing the NSM within the CPM were confirmed partially with the exception of the unexpected location of Rivalry too far from Admiration and too close to the dimensions of vulnerable narcissism.

11. General Discussion

The current study introduces a theory-based model of vulnerable narcissism, the VIEQ, which disentangles its blue and dark faces. The proposed model elaborates the vulnerable half of the conceptual space of the NSM (Krizan & Herlache, 2018) as the NARC occupies the grandiose half. Further, our proposition aligns with the claim that the three-factor model of narcissism (i.e., vulnerability/neuroticism, self-importance/antagonism, and grandiosity/agentic extraversion) is the most parsimonious (Ackerman, Donnellan, & Wright, 2019; Back, 2018; Crowe, Lynam, Campbell, & Miller, 2019; Krizan, 2018; Wright & Edershire, 2018) and also aligns with the dualistic nature (i.e., internalizing/neurotic vs externalizing/agentic) of antagonism (Weiss, Campbell,

Lynam, & Miller, 2019). It is worth noting that our proposition does not negate that the three-factor is best to represent the structure of narcissism. While we do believe that antagonism is a central feature of narcissism, we demonstrated that agentic and neurotic antagonism reflect the different shades of the same higher order dimension of antagonism. Moreover, our proposition is congruent with the basic structure of personality pathology (Wright et al., 2012), follows the logic of the NARC model (Back et al., 2013) and covers the hypothetical position within the broader models of personality (Rogoza et al., 2019; Zawadzki, 2017). Thus, our theoretical proposition not only explains vulnerable narcissism, but it also helps integrate many of the different theoretical approaches to studying narcissism.

11.1. Reconstructing the theoretical foundations of vulnerable narcissism

Within the literature, narcissism is generally identified by grandiose narcissism, possibly because of the disproportion of grandiose themes within the DSM and its position within the Dark Triad of personality (Paulhus & Williams, 2002; Weiss & Miller, 2018). Despite the fact that the NSM (Krizan & Herlache, 2018) and the works of prominent researchers (e.g., Ackerman et al., 2019; Miller, Lynam, Hyatt, & Campbell, 2017a) constantly draw attention to vulnerable narcissism, there is still a significant disproportion in the amount of research and knowledge conducted on this form of narcissism. The introduction of the NARC model (Back et al., 2013), which disentangled bright and dark face of grandiose narcissism was a milestone as it solved many existing ambiguities, such as the interplay of narcissism and self-esteem, the dynamics of interpersonal relations, and the location within the structure of

personality (Back, 2018; Back et al., 2013; Geukes et al., 2017; Leckelt et al., 2015; Rogoza et al., 2019). While this promising model successfully covered the grandiose half of the NSM's conceptual space (Krizan & Herlache, 2018; Rogoza et al., 2019; Wright & Edershire, 2018), the other conceptual half of the NSM was still in need of a comprehensive model. Therefore, in the current paper we aimed to fill this gap with the proposition of the VIEC – a two-dimensional model of vulnerable narcissism. In a series of studies, we demonstrated that this model is theoretically justified, empirically confirmed, and in combination with the NARC it describes the full NSM.

In this sense, the introduction of the VIEC improves upon the triarchic trait model of narcissism (agentic extraversion, self-centred antagonism and narcissistic neuroticism; Miller et al., 2016). The triarchic model does not differentiate between agentic and neurotic expressions of antagonism. Current research has demonstrated that Enmity and Rivalry are distinct constructs. In the series of studies in this paper, we have provided evidence that while both concepts refer to reactivity to threat, they do so in a qualitatively different manner and have different social consequences. Thus, while the three factors describe the general structure well, the differentiation of the two facets of antagonism is vital for a better differentiation (and as result – understanding) of grandiose and vulnerable narcissism. The VIEC also builds upon the two-factor model of narcissistic grandiosity (self-enhancement) and vulnerability (dysregulation; Pincus et al., 2009). More precisely, within the vulnerability factor we expanded upon past knowledge to provide a more comprehensive and theoretically balanced model, while integrating clinical practice and personality science. That is, we proposed that while Isolation is about hiding and devaluing oneself as a means to protect the fragile self from being exposed, Enmity, in turn, most closely aligns with entitlement rage, reflecting feelings of shame and anger aimed at diminishing painful feelings. The contingency of self-esteem is reflected to the same extent in both dimensions, as it is one of the key components of vulnerable narcissism (Back & Morf, 2018; Miller et al., 2017; Pincus et al., 2009). Finally, our results also differentiate vulnerable narcissism from a personality disorder dimension of malignant self-regard (Huprich, 2014), which were argued to be likely identical constructs, with the same personality profiles (Huprich et al., 2018). It appears, however, that whereas Isolation indeed reflects the same core features as malignant self-regard (e.g., depressiveness, self-defeating patterns, hypersensitivity to criticism), Enmity, through its hostile orientation towards others, is substantially different from malignant self-regard which has been found to be unrelated to agreeableness (Huprich et al., 2018). Thus, the two-dimensional operationalization of vulnerable narcissism creates an opportunity to move both personality and clinical understanding of this phenomenon.

11.2. The structure and correlates of Isolation and Enmity

The confirmatory factor analysis of the newly developed VIEQ successfully verified the two-dimensional structure of vulnerable narcissism as hypothesized in the VIEC. Across the studies, Isolation and Enmity had good reliability. Moreover, the short form also had mostly good reliability, albeit stronger for Isolation. The poorer reliability of Enmity in the short form of the VIEQ is consistent with problems with Rivalry in the short form of the NARQ, in both the current and in previous studies (Back et al., 2013; Leckelt et al., 2018). Nevertheless, despite this limitation, the dimensions of both the VIEQ and the NARQ were associated with different single and multifaceted measures of narcissism and self-esteem, demonstrating their content validity.

11.2.1. Personality correlates

Isolation and Enmity were systematically and positively correlated across all of the studies, however they showed different nomological networks, as predicted by the VIEC model. With respect to the basic personality traits, both Isolation and Enmity were related to higher levels of neuroticism but only Isolation was consistently and strongly

related to low extraversion (and high detachment), while only Enmity was consistently and strongly related to low agreeableness (and high antagonism). These results are in line with those seen in the NARC model, obviously with the difference of a positive rather than a negative correlation between Admiration and extraversion (Rogoza et al., 2016). Our results also corroborate the claims that vulnerable narcissism is associated with heightened levels of distress (Miller et al., 2017a), as both dimensions were positively related to negative affect and detachment. This is in line with the relations to self-esteem: while Admiration was positively related, Rivalry, Enmity, and Isolation were negatively related to it. One might suppose that the source of this covariation may lie in the heightened levels of neuroticism in vulnerable narcissism, supporting the validity of the proposed model (Judge et al., 2002; Miller et al., 2017b). To summarize, throughout all studies, our results were consistent with those in the literature while also verifying that it is possible to conceptualize vulnerable narcissism as a two-dimensional construct, by demonstrating construct validity.

11.2.2. Social relations

In well-acquainted individuals, the effects of Isolation as well as of Admiration were negligible. In contrast, Enmity and Rivalry both had a significant effect on outgoing and incoming social relations. According to the tit-for-tat hypothesis, people generally tend to reciprocate liking relations (consistent with the findings of the current study). Nevertheless, this effect does not hold for narcissistic personality. Enmity predicted more outgoing liking nominations, which means that people higher on this particular trait selected more individuals as their friends as compared to those scoring lower. The number of these nominations was however reversely reciprocated, that is – those with higher scores on Enmity were nominated less frequently as friends by their peers. The results for Rivalry were opposite to those reported for Enmity. Rivalry, in accordance with the content of one of its items (i.e., *other people are worth nothing*) predicted nominating fewer people as their friends. However, they were still selected by others more frequently as such. The difference in how narcissists perceive themselves and how they are seen by others emphasizes some of the difficulties in assessing narcissism using self-reports.

Vulnerable narcissists deal with dysregulation by engaging in grandiose fantasies of winning Admiration (Kealy & Rasmussen, 2011; Pincus & Lukowitsky, 2010; Ronningstam, 2005). Our research revealed that they are liked less than those scoring lower on Enmity. Simultaneously, they liked more students in their class. Perhaps, this result could be interpreted as a grandiose fantasy: In order to diminish feelings of shame resulting from not being liked by others, vulnerable narcissists fantasize that others reciprocate their liking. There are discrepancies in how grandiose narcissism is related to popularity. For example, they are reported to be liked more (Czarna et al., 2016), but there are also results suggesting that Rivalry is associated with less popularity (Leckelt et al., 2015) or that it is unrelated to being liked by others (Leckelt et al., 2019). However, these studies were all conducted on adult populations, while the current study focused on adolescents during their final year in high school. This different context might have influenced how different narcissistic features are valued by their peers. Furthermore, it has to be noted that we did not analyze change in narcissism but only a momentary assessment of popularity, while narcissism has been identified to predict such change differently (Czarna et al., 2016). Nevertheless, these results highlight that Enmity and Rivalry, despite being conceptually similar constructs, predict social relations in a systematically different manner.

11.3. How the VIEC and NARC dimensions cover the conceptual space of the NSM

To evaluate whether the VIEC and NARC dimensions sufficiently cover the conceptual space of the NSM (Krizan & Herlache, 2018) we projected their localizations onto the CPM model (Strus et al., 2014),

which has been shown to hold the NSM itself (Rogoza et al., 2019). The added value of the CPM is its possibility to serve as a theoretical matrix that organizes different constructs (such as temperament, values, affect and well-being) and models of personality (FFM, AMPD, TFM) within a single integrative framework (Strus & Cieciuch, 2017). Therefore, the CPM allows us to look for the personality underpinnings of narcissism in order to better understand how and why it is organized in the way outlined in the NSM.

11.3.1. Isolation and Enmity

These two dimensions of narcissistic personality were assumed to cover the vulnerable half of the NSM (Krizan & Herlache, 2018). Congruent to our expectations, we provided empirical evidence for the locations of Isolation (between Gamma-Minus/Disharmony and Beta-Minus/Passiveness) and Enmity (between Gamma-Minus/Disharmony and Alpha-Minus/Disinhibition). According to Rogoza et al. (2019), existing scales of vulnerable narcissism (i.e., the PNI and the HSNS) were located between Gamma-Minus/Disharmony and Alpha-Minus/Disinhibition, thus leaving much of the specific content (i.e., with an angle $\geq 45^\circ$ from the core; see Fig. 3) of vulnerable narcissism virtually unexplored (Krizan & Herlache, 2018). Therefore, the introduction of Isolation provided new perspectives for the study of vulnerable narcissism. Although Enmity was highly congruent with the existing measures of vulnerable narcissism (Rogoza et al., 2019), the VIEC precisely captures both the intrapersonal and interpersonal content of Enmity, which had not been conceptualized previously. The hypothesized locations were therefore confirmed.

11.3.2. Admiration and Rivalry

Admiration was located furthest from the core (i.e., Alpha-Minus/Disinhibition) of narcissistic personality, suggesting it comprises the least antagonism of all the analyzed dimensions. Whilst, in the current study, this location was still in the expected range, some studies reported that Admiration slightly exceeded the line of the Beta metatrait (Rogoza et al., 2018). Moreover, there are studies (Fatfouta et al., 2017; Kwiatkowska et al., 2019) that report higher correlations between Admiration and communal narcissism (Gebauer et al., 2012), which is located above the Beta metatrait in the CPM (Rogoza et al., 2019). Rivalry remained in closest proximity to Alpha-Minus/Disinhibition, confirming its malevolent character, however, it was partially located on the vulnerable half of the NSM (Krizan, 2018; Rogoza et al., 2019). Previous works have indeed pointed out that Rivalry captures elements of vulnerability (Miller et al., 2014; Wright & Edershire, 2018) and although the NARC model assumes that under certain circumstances grandiose narcissism can present vulnerable expressions (Back, 2018), basically, this is contrary to theoretical expectations presenting Rivalry as a dimension of grandiose narcissism (Back et al., 2013). Summarizing, we partially confirmed the assumed location of Admiration, but failed to do so for Rivalry.

11.4. Differentiating Enmity and Rivalry

The current results do not support the ideal level of differentiation between Enmity and Rivalry, despite the fact that we found numerous differences in the strength of their relations to other narcissism measures and personality traits. Out of the Enmity facets, envy appeared as an indicator of both, and spitefulness appeared to be a better indicator of Rivalry than Enmity. In light of Rivalry being overly loaded by vulnerability (Miller et al., 2014; see also Fig. 4), it remains unclear whether the facets of Enmity were misspecified or Rivalry itself. The results concerning the facet of envy are reasonable as feelings of envy arise in response to the painful sense of being deprived of what others possess on the one hand, and are the fuel of narcissistic rage on the other (Kealy & Ogrodniczuk, 2011; Lange et al., 2016). However, the results concerning spitefulness are more ambiguous since all spitefulness items regard reactivity to threat. While this reactivity to threat is present in both

Enmity and Rivalry, theoretically there should have been a distinction in which Rivalry (as a grandiose narcissism strategy) actively reacts to the threat (e.g., actively act to hurt the person), instead of waiting until they would be hurt, which is typical for Enmity. In other words, vulnerable narcissists' reactivity to threat would be more internal (i.e., spitefulness), while grandiose narcissists' reactivity to threat would be external (i.e., aggressiveness). Perhaps the results would be different when Rivalry concerns more grandiose features such as more direct acts of aggression (i.e., instead of secretly taking pleasure) or even actual Rivalry (e.g., competing with others with no remorse).

12. Limitations and future research

The goal of the present research was to develop a theoretical model of vulnerable narcissism, because the conceptual space of the NSM (Krizan & Herlache, 2018) was only half covered by the NARC and grandiose narcissism (Back et al., 2013). Although the personality, social, and clinical psychology literature agree that both of these constructs – vulnerable and grandiose narcissism – co-exist (Miller, Lynam, Hyatt et al., 2017; Pincus et al., 2009; Wright & Edershire, 2018) and that they both represent equally important dimensions of narcissistic personality (Krizan & Herlache, 2018), vulnerable narcissism has attracted less theoretical and empirical attention. For this purpose, we have developed a new model, operationalized it by a new measure, investigated its structure, reliability, validity, and its relations with a well-designed measure of grandiose narcissism (i.e., the NARQ), as well as with other narcissism measures and self-esteem, normal and pathological traits and metatraits. One limiting aspect of the study is that the samples were all convenient ones, thus, future research should also consider studying samples representative for a given population. However, the reported studies were non mono-methodological as in addition to the self-reported data we also included peer-ratings of social relations, overcoming one of the major drawbacks of the personality research (Hopwood, 2018).

Out of all of the analyzed narcissism facets, the hypotheses regarding Rivalry were the most frequently rejected. First, Rivalry correlates to vulnerable narcissism measures more strongly than expected. It also comprises elements of neuroticism and negative affectivity, which are more prototypical of vulnerable narcissism. When projected on the CPM, Rivalry was the only facet for which its location hypothesis was rejected. This suggests that although the idea of narcissistic Rivalry may be accurate, its measurement could benefit from refinement. More precisely, Rivalry items are concentrated around internalizing expressions (e.g., *I secretly take pleasure in the failure of my rivals*), and emotions (e.g., *I react annoyed if another person steals the show from me*) rather than more active Rivalry, related to expansiveness and manipulation as well as the drive to be superior and defeat others. Although these NARQ statements were intentionally developed to avoid floor effects (Back et al., 2013), they seem to add an undesirable loading of vulnerability onto the measurement of grandiose narcissism. Therefore, future studies might consider refining the narcissistic Rivalry measure in order to reduce its neurotic content, which is captured well by Enmity. While Enmity seems to capture what was intended, and on the conceptual level is qualitatively distinct from Rivalry, future research should put more emphasis on the further refinement of both of these measurements. In addition, future research should also provide evidence that both Enmity and Rivalry are distinct from antagonism per se.

Although we posit that the operationalization of Admiration mostly falls within the expected theoretical boundaries, future studies might also consider a slight re-evaluation of its measurement in order to reduce the observed communal and social self-efficacy aspects and replace positive affectivity with self-exaggeration and social dominance. For example, some Admiration items (e.g., *I enjoy my successes very much* or *Mostly, I am very adept at dealing with other people*) may not be narcissistic enough. Slight modifications (e.g., *Success is necessary to sustain my well-being* and *I am extraordinarily adept at dealing with other people*) might

increase measurement validity.

Future research should analyze the hypothesized processes of Isolation and Enmity and their dynamics in vulnerable narcissism, ideally using mixed methodologies. For example, similar to the processual model in the NARC (see Back, 2018; Rogoza, 2018; Wetzel et al., 2016), Isolation is the default strategy, and Enmity is the reactive (“bad time”) strategy. In order to protect the fragile self, vulnerable narcissists tend to withdraw from social situations to prevent others from discovering their secret fragile core (Caligor et al., 2015; Kealy & Rasmussen, 2011). However, in reaction to an exposure (real or imaginary) or direct contact with others, vulnerable narcissists evoke entitled attitudes in order to protect from fully experiencing painful feelings (Keally & Ogrodniczuk, 2011; Ronningstam, 2010). This exploratory-mechanistic aspect of the VIEC model still requires empirical confirmation.

Another interesting issue appropriate for future research are the fluctuations between grandiose and vulnerable narcissism (Kernberg, 1975; Kohut, 1972). There is a body of literature suggesting that narcissistic patients at some point tend to present vulnerable expressions (Pincus et al., 2014; Ronningstam, 2009). Back (2018) postulates that under certain within-person conditions (i.e., perceived ignorance/disrespect, impossible restoration of narcissistic esteem and impossible perceived chance to retaliate), grandiose narcissists might exhibit more vulnerable responses. Interestingly, there is evidence that this fluctuation is one-sided, that is, grandiose narcissists might evoke vulnerable narcissistic traits, however vulnerable narcissists do not exhibit purely grandiose narcissistic traits (Gore & Widiger, 2016). In this vein, it is relevant to disentangle grandiose and vulnerable narcissism facets, as they might represent functionally distinct within-person dynamics. Although within the literature there have been previous attempts to capture these fluctuations (Oltmanns & Widiger, 2018), the differentiation between Isolation and Enmity as well as between Rivalry and Enmity might further catalyze the theoretical background of such changes. For instance, fluctuation from grandiose to vulnerable narcissism might be in fact a four-step conditional process reflecting the specific facets starting from Admiration, through Rivalry and Enmity, ending in Isolation. Building upon the model of Back (2018) and existing literature (e.g., Rogoza, 2018; Wetzel et al., 2016) IF grandiose narcissists perceive themselves as admired, THEN they continue with self-promotion (Grapsas et al., 2020). IF, however, they perceive themselves as ignored or disrespected, THEN they actively pursue restoration of esteem through retaliation (Back et al., 2013). If they fail to restore narcissistic esteem, THEN they negate reality and become passively-aggressive (e.g., through derogating the evaluator; Kernis & Sun, 1994; Morf & Rhodewalt, 1993). While this is in contrast to their phenotypical presentation, IF he or she lost hope that the failure can be overcome and the self restored, THEN they might engage in passive failure avoidance in the form of mental and physical withdrawal (Morf & Rhodewalt, 2001). Future research might therefore investigate the fluctuations in respect not only to grandiose vs. vulnerable narcissism, but to their more specific facets. Studying the within-person dynamics in future research (e.g., through the experimental or experience sampling methodology) might be therefore of special importance to capture within-person processes as well as between-person differences.

13. Conclusions

The goal of the current study was to cover the other half of the conceptual space of the NSM (Krizan & Herlache, 2018) through the introduction of the VIEC model. Taken together, the VIEC and the NARC (Back et al., 2013) seem to be able to describe the functioning of narcissistic personalities. However, our research highlighted that while both models are theoretically plausible, their measurement needs to be calibrated better. This lack of calibration was especially visible for Rivalry, out of the 31 formulated hypotheses regarding Rivalry (see Table 1), only 23 were confirmed. This is in contrast to the other facets which ranged between 29 (Admiration), 30 (Isolation), to 31 (Enmity)

confirmed predictions. Back et al. (2013) hoped that the disentanglement of Admiration and Rivalry in the NARC model would catalyze research on grandiose narcissism. These hopes were realized as subsequent research provided empirical evidence (e.g., Geukes et al., 2017; Leckelt et al., 2015; Wetzel et al., 2016). With the introduction of a new theoretical model of vulnerable narcissism, we share the hopes of Back and colleagues (2013) and we believe that the disentanglement of Isolation and Enmity is an important step in our understanding of vulnerable narcissism and that the VIEC together with NARC in one consistent framework will further accelerate research on narcissistic personality.

CRedit authorship contribution statement

Radosław Rogoza: Conceptualization, Writing - original draft, Writing - review & editing, Methodology, Formal analysis. **Jan Cieciuch:** Conceptualization, Methodology, Writing - review & editing. **Włodzimierz Strus:** Conceptualization, Writing - review & editing, Formal analysis.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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