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Fluctuations in grandiose and vulnerable narcissistic states: A momentary perspective

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Abstract

Theories of narcissism emphasize the dynamic processes within and between grandiosity and vulnerability. Research seeking to address this has either not studied grandiosity and vulnerability together or has used dispositional measures to assess what are considered to be momentary states. Emerging models of narcissism suggest grandiosity and vulnerability can further be differentiated into a three-factor structure – Exhibitionistic Grandiosity, Entitlement, and Vulnerability. Research in other areas of maladaptive personality (e.g., borderline personality disorder) has made headway in engaging data collection and analytic methods that are specifically meant to examine such questions. The present study took an exploratory approach to studying fluctuations within and between grandiose and vulnerable states. Fluctuations – operationalized as *gross variability*, *instability*, and *lagged effects* – were examined across three samples (two undergraduate and a community sample oversampled for narcissistic features; Total person $N= 862$; Total observation $N= 36,631$). Results suggest variability in narcissistic states from moment to moment is moderately associated with dispositional assessments of narcissism. Specifically, individuals who are dispositionally grandiose express both grandiosity and vulnerability, and vary in their overall levels of grandiosity and vulnerability over time. On the other hand, dispositionally vulnerable individuals tend to have high levels of vulnerability and low levels of grandiosity. Entitlement plays a key role in the processes that underlie narcissism and narcissistic processes appear unique to the construct and not reflective of broader psychological processes (e.g., self-esteem). Future research should consider using similar methods and statistical techniques on different timescales to study dynamics within narcissism.

Keywords

Narcissism; Grandiosity; Vulnerability; Variability; Ecological Momentary Assessment

Over the past decade, the study of narcissism has become increasingly popular with an average of 357 peer-reviewed articles published per year since 2010 (Miller et al., 2017). Indeed, narcissism has enjoyed broad interest across the fields of clinical psychology, psychiatry, and social/personality psychology resulting in a large empirical literature that spans diverse areas of inquiry (Cain et al., 2008; Pincus & Lukowitsky, 2010). Clinical psychology and psychiatry tend to emphasize the more maladaptive aspects of narcissism,

which have been linked to significant personal and social costs, including depression, suicidality, and violence (e.g., Ansell et al., 2015; Dashineau et al., 2019; Ellison et al., 2013; Pincus et al., 2009). Social and personality psychology tends to also focus on more adaptive features of narcissism (e.g., Sedikides et al., 2004). In the present study we treat narcissism as a multidimensional ensemble of personality traits that manifest in relatively more or less adaptive or maladaptive behavior.

It is generally agreed that narcissism is dimensional (e.g., Aslinger et al., 2018; Foster & Campbell, 2007), and that its manifestations can be divided into two major themes—narcissistic grandiosity and narcissistic vulnerability (Cain et al., 2008; Miller et al., 2017). Narcissistic grandiosity is defined by a grandiose sense of self, lack of empathy, and entitlement (e.g., Cain et al., 2008). Individuals high in narcissistic grandiosity are likely to be overtly immodest, self-promoting, and self-enhancing (Miller et al., 2017). Those same individuals are likely to endorse high levels of the basic personality traits of antagonism and extraversion (e.g., Paulhus & Williams, 2002). Narcissistic vulnerability is associated with acute sensitivity to and avoidance of embarrassment and shame which manifests as self-doubt, defensive social withdrawal, and contingent self-esteem. (e.g., Morf, 2006; Cain et al., 2008). Individuals high in narcissistic vulnerability are often distrustful of others and outwardly distressed and fragile (e.g., Miller et al., 2017). Narcissistic vulnerability is distinct from narcissistic grandiosity in that it is associated with pervasive negative emotionality and is broadly associated with other forms of personality pathology (Edershile et al., 2019). Though researchers tend to consider narcissistic grandiosity and narcissistic vulnerability distinct forms of narcissism, it has been suggested that what these two features of narcissism share is a core of entitlement and an antagonistic interpersonal stance (Krizan & Herlache, 2017; Miller et al., 2016).

Whereas it was originally suggested that grandiosity and vulnerability represent two different subtypes of the disorder (e.g., Miller et al., 2014), the shared core of entitlement of these manifestations have led researchers to reconsider the structure of narcissism (Brown et al., 2009). Some argue that the antagonistic core is so central to narcissism that it is “necessary and near sufficient” for a diagnosis of narcissistic personality disorder (pg. 13: Lynam & Miller, 2019; See also Lynam & Miller, 2015; Miller, Lynam, Hyatt, & Campell, 2017). This has resulted in several models that revise the originally proposed two-factor structure of narcissism. These models argue that dispositional narcissism may best be organized with a three-factor structure that separates out core antagonism from grandiosity and vulnerability, and keeps each of them as unique factors (Krizan & Herlache, 2017; Miller et al., 2016; Wright & Edershile, 2018). In this model, the core of narcissism is anchored on antagonism and the “peripheral” traits become the features that are unique to grandiosity and vulnerability.

Whereas researchers agree that a three-factor structure well-captures narcissism, they have debated what the best labels are of this three-factor structure (e.g., Wright & Edershile, 2018). Some have referred to this three-factor structure as “antagonism, extraversion, and neuroticism” (e.g., Miller et al., 2016). Though entitlement, grandiosity, and vulnerability inevitably share features of these traits, we do not consider them to be entirely overlapping. Others have labeled this three-factor structure “grandiosity, vulnerability, and self-

importance” (Krizan & Herlache, 2017). We posit that the labels of this three-factor structure must capture the unique properties that these features have to narcissism, as opposed to more general and broader personality traits. Thus, throughout the rest of this manuscript, we will refer to the three-factor structure as “exhibitionistic grandiosity, entitlement, and vulnerability.” Regardless of the names chosen for this three-factor structure, evidence of these factors requires researchers to revisit early theories of narcissism and to consider the centrality of antagonism’s role and the narrower conceptualization of grandiose and vulnerable features net of this antagonistic core.

Unlike psychiatric disorders that are episodic, like major depressive episodes, personality pathology, including narcissism, is defined by its relative long-term stability and pervasiveness (e.g., Clark, 2007). These aspects may explain why narcissism is so often studied using broad dispositional and questionnaire-based research designs. Indeed, in the last couple of decades, measures designed to assess grandiosity, vulnerability, or both have proliferated (e.g., Hyler, 1994; Back et al., 2013; Glover et al., 2012; Pincus et al., 2009). Dispositional measures of grandiosity and vulnerability are designed to capture how individuals present *in general* across time and situations. Yet, despite the fact that contemporary measures of grandiosity and vulnerability correlate, looking across the wide-range of available measures, each has a distinct pattern of antecedents, concurrent associations, and predictive validity (Miller, Dir, et al., 2010; Miller et al., 2014, 2016; Miller et al., 2017; Thomas et al., 2012). These results have been difficult to integrate and align with contemporary theoretical models.

In particular, despite the relative stability of narcissism observed within individuals, prominent theories of narcissism would suggest that narcissistic individuals are not always *consistent* in their presentation of narcissistic features. Several clinical accounts suggest that patients do not always present with the same manifestation of narcissism week-to-week. For example, Wright (2014) describes a patient who first presents with symptoms in line with vulnerability and over time exhibits more grandiose features. Pincus and colleagues (2014) describe a similar pattern, suggesting that presentation of narcissistic vulnerability followed by narcissistic grandiosity is common in patients who seek treatment for their personality disturbance. Beyond these clinical accounts, theorists have long-argued that that grandiosity and vulnerability are two sides of the same coin, they co-occur within the same individual, and it is the processes underlying fluctuations between grandiose and vulnerable states that drive the observed dysfunction. (Kernberg, 1975; Ronningstam, 2009, 2011; Pincus et al., 2014; Wright, 2014).

Some theories have suggested that it is the ebb and flow of self-esteem across time that drives fluctuational patterns of the narcissistic individual (e.g., Rhodewalt et al., 1998; Rhodewalt & Morf, 1998). Others have argued that, though self-esteem may be a factor, it appears to be grandiosity and vulnerability, specifically, that are responsible for such fluctuational shifts. Ronningstam (2009) suggests that grandiose individuals may experience threats to their self-esteem that evoke “defensive grandiose behaviors.” The individual may engage in self-regulatory behaviors to affirm “the grandiose but vulnerable self.” Though Ronningstam (2009) suggests that observed fluctuations are likely a consequence of grandiosity and vulnerability, she argues that other processes (e.g., self-esteem and empathy)

may be impacted over the course of fluctuations in grandiosity and vulnerability. In particular, fluctuations in grandiosity and vulnerability have a functional component for the individual and are representative of (perhaps failed) regulatory patterns (Kernberg, 1975, 2009). By engaging in such regulatory patterns (or fighting dysregulation), the narcissistic individual strives to return to a state of control (Kohut, 1971, 1977; Gabbard, 1998).

Some theorists have aimed to describe such observed fluctuations in grandiosity and vulnerability as “cycles of rage” (e.g., Horowitz, 2009). Though clearly related to regulatory patterns, the description of “rage” serves as a vehicle for understanding the different states through the process of regulation. Theorists argue that different forms of rage are differentially indicative of grandiosity or vulnerability. Grandiose rage serves as a defense against a damaged (or vulnerable) interior (Horowitz, 2009; Morf & Rhodewalt, 2001). In an alternative state, an individual may feel bitter and withdrawn, believing that they are treated unfairly by others (the vulnerable self). Further still, narcissistic individuals have been described as exhibiting a “mixed state” where the individual may experience both shame and anger. Through these different rage experiences, the narcissistic individual is prone to experience varying emotions and engage in a range of psychological defenses. For example, Grubbs and Exline (2016) have argued that when entitled individuals realize the mismatch between their expectations and reality, they will further try to bolster their self-esteem. It is in a state of vulnerable entitlement, in which the individual is working to return to a state of grandiosity, that they are prone to experience interpersonal conflict. Broadly, it appears that fluctuations between grandiosity and vulnerability are a key feature for narcissistic expression. Clinical theories argue that fluctuations in grandiosity and vulnerability represent efforts of self-regulation that can be observed through changes in self-esteem and expressions of anger.

Importantly, though accounts of narcissistic fluctuations are common to all extant theoretical models, the exact form of these fluctuations remains ill-defined and poorly understood. Clinical descriptions of patients who exhibit such fluctuations suggest that movement between states of grandiosity and vulnerability may occur between treatment sessions (e.g., week-to-week or within-week). These theories additionally suggest that states of vulnerability precede states of grandiosity. Theories regarding narcissistic rage suggest that individuals may move between states of grandiosity and vulnerability but may not do so in any systematic pattern (e.g., moving from states of grandiose rage, to a mixed state, and back to a grandiose state). Thus, theories on narcissistic fluctuation range in the degree to which they emphasize systematic shifts versus general variability in state expression. A further consideration is that clinical descriptions of fluctuations in narcissism have largely only referenced one’s general dispositional level of grandiosity and vulnerability, and have not yet directly considered individual differences in a three-factor structure of narcissism. Thus, though one’s level of entitlement has not been explicitly mentioned in any of the above theories, it may play a crucial role in helping clinicians and researchers understand the nature of observed fluctuations between grandiosity and vulnerability.

Theories regarding state-level fluctuations suggest that the pathology is derived, in part, from the *nature* of the fluctuations (e.g., emotional instability for borderline vs. grandiosity/vulnerability for narcissism). The form of regulatory processes and by extension the

observable fluctuations are what differentiates personality pathologies from each other and from other disorders (Hopwood, 2018; Wright, 2011; Wright & Kaurin, 2020). Like borderline personality disorder, fluctuations in narcissism may reflect processes that serve to maintain the pathology. Thus, studying state-level, or momentary, fluctuations rather than dispositional levels may elucidate new and more effective intervention targets. Here, the vast dispositional assessments available for narcissism fall short and even using a comprehensive battery of trait measures, as Miller and colleagues (2017) suggest, does not help us to directly understand the putative dynamic processes that link narcissistic grandiosity and vulnerability.

Recent empirical evidence only indirectly supports theories regarding fluctuations between grandiosity and vulnerability (Gore & Widiger 2016; Hyatt et al., 2017). Gore and Widiger (2016) asked clinicians and clinical psychology professors to identify someone who fit either a “grandiose narcissist” or a “vulnerable narcissist.” Participants rated the individual they had in mind across traits within the matched domain (e.g., if considering a grandiose narcissist, rating them on grandiose characteristics). Participants were then asked to rate the individual in the other domain (e.g., rating a grandiose narcissist across vulnerable characteristics). Results indicated that individuals selected for exhibiting dispositional narcissistic grandiosity were particularly likely to also show vulnerable tendencies at some point. The opposite pattern, however, was not found to be true. Hyatt and colleagues (2017) replicated these findings and extended them to suggest that, someone considered to be a grandiose narcissist responds to threats to their ego with anger whereas a vulnerable narcissist responds with a broader range of emotions, including anger. Broadly, these studies suggest that variability may be a feature of narcissism, yet there may be some key differences between someone considered a “grandiose narcissist” and someone considered a “vulnerable narcissist.” However, given that these studies used cross-sectional dispositional assessments, conclusions regarding explicit momentary fluctuations are impossible.

Some researchers have investigated dynamic fluctuations within narcissism more directly, most often at the daily level. These studies have examined dynamic associations between narcissism, self-esteem, life satisfaction, and/or affect (Giacomin & Jordan, 2016; Akhtar & Thomson, 1982; Rhodewalt & Morf, 1995; Bosson et al., 2008; Geukes et al., 2016). For instance, Geukes and colleagues (2016) examined two subtypes of narcissistic grandiosity, admiration and rivalry, and how these domains track with overall self-esteem level and variability in daily life. Results reveal that dispositional admiration, the agentic/exhibitionistic aspect of narcissism, is associated with higher self-esteem level and lower self-esteem variability. Dispositional rivalry, the antagonistic dimension of narcissism, is associated with lower levels of self-esteem and higher levels of variability. Broadly, these results suggest there are specific patterns of variability in state self-esteem with regard to trait narcissism, and in fact these may account for prior inconsistent results in the association between narcissism and fluctuations in self-esteem (Bosson et al., 2008). Though these studies are an important contribution to the literature on dynamic processes in narcissism, they do not directly assess the core features of grandiosity and vulnerability as states. In particular, these studies tend to highlight the role of self-esteem or affective shifts rather than emphasizing actual shifts in grandiosity and vulnerability, which are what dynamic theories of narcissism posit. Given that these two dimensions are thought to be the features that help

to maintain the pathology, this is the necessary next step for underlying the processes of narcissism.

The Current Study

The specific timescale and patterning of manifestations of grandiosity and vulnerability have not been systematically examined or even proposed in with much specificity. Accordingly, the present study is a naturalistic exploratory study designed to examine patterns of fluctuation within and across grandiosity and vulnerability in daily life using ambulatory assessment (i.e., ecological momentary assessment) of state narcissism. In particular, to test the nearly ubiquitous theoretical assertion that individuals fluctuate in grandiosity and vulnerability across time, and whether one's narcissistic state at one time-point portends a shift to another state at the following time-point, an empirical modeling of variability and how this is associated with levels of narcissism is needed. Additionally, given the proposed three-factor structure (e.g., entitlement, exhibitionistic grandiosity, and vulnerability) has gained traction in the narcissism literature (and has been suggested as a better model of trait narcissism than grandiosity and vulnerability alone), an understanding of one's level of antagonism's role in such fluctuations is important. Although this trifurcated model has not been articulated at the momentary level or used to describe dynamic processes, we will examine associations between dispositional narcissism and momentary fluctuations using this novel three-dimensional structure. This will allow us to compare the associations that emerge from this new structure and the extant dispositional measures of grandiosity and vulnerability with momentary indices of variability. Thus, broadly our goal is twofold. The first is to understand variability patterns in state narcissism with respect to one's dispositional level of grandiosity and vulnerability. The second is to understand how these patterns of variability compare when operationalizing dispositional narcissism using a three-factor structure.

In the present study, fluctuation in state narcissism is articulated in three different quantitative indices of variability that followed a similar analytic approach to Houben and colleagues (2015; see also Wang et al., 2012). The first index allows for the examination of how much total variability in narcissistic expression occurs over time. We will refer to this index as *Gross variability* and it is operationalized as the total amount of variance in momentary narcissism the individual displays over the course of the study. The second index allows us to examine how much change in narcissistic expression occurs, on average, from one moment the next. We will refer to this index as *instability* and it is operationalized as the mean of the squared successive differences in momentary narcissism scores the individual displays over the course of the study. The final index allows for an examination of how much previous narcissistic states predict the next state. This includes questions of how persistent narcissistic states are, or how likely individuals are to get "stuck" in a narcissistic state, as well as "cross-state" or "switching" effects, whereby one type of narcissistic state (e.g., vulnerability) predicts the other state (e.g., grandiosity) at the subsequent time-point. These latter effects are direct articulations testing whether grandiosity consistently serves as a compensatory mechanism for vulnerability, and whether high grandiosity places someone at risk for subsequent vulnerability. We will refer to these as *inertia* and *cross-lagged* effects, respectively. Inertia is operationalized as the autoregression of the momentary scores within

a given domain (e.g., grandiosity_{t-1} → grandiosity_t), whereas cross-lags are operationalized as the lagged effect of one domain on the other (e.g., grandiosity_{t-1} → vulnerability_t). Of interest is how patterns of variability differ between those higher in narcissism versus lower. Thus, dispositional measures of narcissism (grandiosity and vulnerability as well as a three-factor structure) will be used as predictors of these different articulations of fluctuations in narcissistic states to determine whether those higher in dispositional narcissism vary more or less across time compared to those lower in dispositional narcissism.

Using this three-pronged statistical approach allows for the examination of key theoretical questions with regard to variability within narcissism: 1) *Gross Variability*: Broadly, how much do individuals vary in their levels of grandiosity and vulnerability across time? 1a) Does an individual's level of dispositional grandiosity and vulnerability associate with their momentary level and variability in state grandiosity and vulnerability. 1b) Does a three-factor structure of narcissism (i.e., entitlement, exhibitionistic grandiosity, vulnerability) associate with momentary level and variability in state grandiosity and vulnerability? 2) *Instability*: how much do individuals change in their levels of grandiosity and vulnerability from one time point to the next? 2a) Does an individual's level of dispositional grandiosity and vulnerability predict their occasion to occasion difference scores in state grandiosity and vulnerability? 2b) Does an individual's level of entitlement, exhibitionistic grandiosity, or vulnerability predict their occasion to occasion difference scores in state grandiosity and vulnerability? 3) *Inertia and Cross-lagged effects*: how stable are grandiose and vulnerable states? 3a) Does one's current level of grandiosity and vulnerability predict future levels of states in the same domain (e.g., grandiosity_{t-1} → grandiosity_t) and/or the other domain (e.g., grandiosity_{t-1} → vulnerability_t)? 3b) Does dispositional grandiosity and vulnerability predict getting "stuck in states" (e.g., grandiosity_{t-1} → grandiosity_t) or switching states (e.g., grandiosity_{t-1} → vulnerability_t) and 3c) Does a dispositional three-factor structure of narcissism associate with *Inertia and Cross-lagged effects* of state level grandiosity and vulnerability?

Finally, given that it is possible that the processes of fluctuation and instability articulated above in questions 1-3 are not unique to narcissism or are not explained through fluctuations in grandiosity and vulnerability alone, we examine the extent to which associations between dispositional narcissism scales and fluctuations in state grandiosity and vulnerability are similar to, or can be accounted for by, associations between dispositional narcissism and fluctuations in state self-esteem. We also examine how fluctuations in state grandiosity and vulnerability change when using dispositional Big-5 personality features as predictors. To accomplish these different questions, we change the state variable (from grandiosity and vulnerability to self-esteem) in one model and change the dispositional variable (from grandiosity and vulnerability to the Big-5) in a different model as sensitivity analyses for our findings between dispositional narcissism and state narcissism. Thus, our final research questions are 4) How much do individuals vary in their self-esteem over time as a function of narcissism? 4a) Does an individual's level of dispositional grandiosity and vulnerability predict their state self-esteem level and variability? 4b) Does a dispositional three-factor structure of narcissism (i.e., exhibitionistic grandiosity, entitlement, and vulnerability) predict state self-esteem level and variability? 4c) How do processes observed in question 1a change when controlling for state self-esteem level and variability? 4d) How do processes

observed in question 1b change when controlling for state self-esteem level and variability? 5) How much do individuals with higher scores across the Big-5 personality traits vary in their levels of narcissism across time? 5a) Does an individual's score in dispositional normal-range personality associate with their momentary mean and variability across grandiosity and vulnerability? 5b) How do processes observed in 1a change when controlling for dispositional Big-5 personality characteristics? 5c) How do processes observed in 1b change when controlling for dispositional Big-5 personality characteristics?

Given that it has been demonstrated that individuals high in grandiosity tend to be those that fluctuate between states of grandiosity and vulnerability, though not pre-registered, we hypothesize that in models examining how dispositional grandiosity and vulnerability associate with fluctuations in state-level grandiosity and vulnerability (research question 1a), only those high in dispositional grandiosity will experience variability in both grandiosity and vulnerability. Those high in dispositional vulnerability will experience variability in vulnerability only. No prior work examines the variable nature of a dispositional three-factor structure of narcissism with regard to state level grandiosity and vulnerability (research question 1b), nor does prior work suggest the specific timescale for which narcissistic fluctuations occur (research questions 2-3), or how such processes may compare with other psychological processes/variables (research questions 4 & 5). As such, we treat all other paths as exploratory and do not offer any hypotheses. To ensure results are robust, all analyses are replicated across three independent samples: two undergraduate samples and one community sample enriched for relevant personality traits (i.e., low modesty).

Methods

All study procedures were approved by the University of Pittsburgh Institutional Review Board under protocol numbers PRO17120303 (Community Personality in Daily Life) and PRO17090511 (Personality and Daily Life).

Subjects

Sample 1¹—Undergraduates ($N=231$) from the University of Pittsburgh made up Sample 1 (S1) and were recruited in the Spring of 2018 from the Psychology Department Subject Pool in exchange for two course credits. Participants had to be 18 years of age and had to own an up-to-date smartphone (i.e., purchased within in the last 3 years and with up-to-date software). Participants were excluded from analyses if they had fewer than 10 total observations on the ambulatory assessment portion to ensure a minimum number of observations to estimate variability. Thus 228 individuals were used from S1. Of these, the majority was male (63%) and ages ranged from 18 to 26 ($M=18.85$, $SD=1.12$). The majority of participants identified as White (77.7%; 16.4% Asian; 5.4% Black; 8% multiracial).

Sample 2—Sample 2 (S2) consisted of 330 undergraduate students, recruited from introductory psychology courses at the University of Pittsburgh during the Fall 2018

¹A subset of data from Study 1 was used in Edershile and colleagues (2019). However, the data were used to address a fundamentally different question. In the previous study, the data were used to validate scales for momentary use (and included a much broader number of associations with momentary and dispositional measures). In the current study, the data were used to examine patterns of variability, and are augmented by two additional samples that have not previously been published.

semester. Participants were excluded from analyses if they had fewer than 10 total observations on the ambulatory assessment portion. Thus, 314 individuals were used from S2. Of these, the majority was female (61.7%) and ages ranged from 18 to 25 ($M = 18.62$, $SD = .96$). The majority of participants in S2 identified as White (85.9%; 11% identified as Asian; 5.1% as Black).

Sample 3—Sample 3 (S3) was comprised of community members ($N=342$) recruited during 2018 and 2019, both online through the University of Pittsburgh’s Clinical Translational Science Institute’s online participant registry (<https://pittplusme.org>) and through posted flyers for a study of personality and daily life. Several inclusionary criteria were implemented. To recruit a distinct community sample, only individuals who were not currently enrolled in a full-time undergraduate program were eligible. To ensure adequate representation of relevant personality features individuals were pre-screened using items from the NEO Personality Inventory – Revised (NEO-PI-R; Costa & McCrae, 1992) in a manner so as to maintain a 2-1-1 representation of low, moderate, and high levels of trait modesty (using published norm tertiles; <18, mid 18 – 21, and high 21) within each gender and the overall sample. Participants had to be at least 18 and less than 41 years of age. As before, participants with fewer than 10 total observations were excluded from analyses. Thus, 320 individuals were used for present analyses. Of these, the number of participants were roughly even between male and female (52% female) and the age range was 18 to 40 ($M = 27.87$, $SD = 5.00$). The majority of participants in S3 identified as White (87.5%; 8.8% identified as Asian; 4.1% as Black).

Procedure

In S1 participants came to an on-campus computer lab for training and assessment in groups of 20-30 participants. Participants were briefed on procedures and given a battery of self-report measures via the computer. After completing the in-person assessments, participants were trained to use software that was then installed on their smartphone. In S2 and S3, participants were trained using a self-administered online PowerPoint tutorial. Participants were required to complete several comprehension questions before continuing on with study procedures. Participants who did not show adequate comprehension were not eligible for further participation.

Participants then completed the ambulatory assessment portion of the study, which differed in length across the three samples. Participants completed up to 42 assessments in S1 ($M = 32.38$; $SD = 7.99$) over the course of the week (maximum of six surveys per day) between 10:00 and 22:00 each day. In S2, participants could complete up to 50 assessments ($M = 36.77$; $SD = 7.45$) with a maximum of five per day over ten days between 9:00 and 21:00 each day. In S3, participants could complete up to 70 assessments ($M = 55.08$; $SD = 12.96$) with a maximum of seven per day over ten days between 9:00 and 21:00 each day. Surveys were designed to appear at random times throughout the day with the stipulation that they had to be 90 minutes apart, and participants were prompted via push notification on their smartphones when a new survey was available. Once prompted to complete a survey, participants had 30 minutes to fill out the survey on the smartphone. Each assessment took 3-5 minutes to complete. For the ambulatory assessment portion of the study, compliance

was high (78% compliance in Sample 1 [7,459 out of 9,576 total possible]; 74% compliance in Sample 2 [11,545 out of 15,700 total possible]; 79% compliance in Sample 3 [17,627 out of 22,400 total possible]).

In S1 participants completed both baseline questionnaires and the 7-day ambulatory assessment protocol for course credit. Full credit was given if participants completed 50% of the random surveys. Participation beyond this minimum amount was incentivized with random drawings for additional rewards (Apple watch, Nintendo Switch, Play Station 4), with chances of winning proportional to amount of the participation. In S2, participants completed both the baseline questionnaires and the 10-day ambulatory assessment protocol for course credit. Full credit was awarded to individuals who completed 60% or more of the 60 surveys during the study period. No partial credit was given. In S3, participants who completed baseline questionnaires received entry into prize drawings for \$75 Amazon gift cards. After these questionnaires and a brief training presentation, participants were given the additional opportunity to participate in an ambulatory assessment study. Individuals who completed 90% or greater of the 80 surveys during the study period were given \$100 Amazon gift cards. Gift cards of prorated value (e.g., \$65 for 65% participation) were given to those who completed less than 90% of the surveys.

Measures

The Five-Factor Narcissism Inventory—Short Form (FFNI-SF; Sherman et al., 2015).—The FFNI-SF is a 60-item version of the original Five-Factor Narcissism Inventory (FFNI; Glover et al., 2012) that assesses narcissism across 15 different traits. These traits have been shown to tap the broad dimensions of grandiosity and vulnerability, as well as a three-factor structure of Extraversion, Antagonism, and Neuroticism. Participants rate the degree to which each statement captures them on a 5-point Likert scale (0 – Very Untrue of Me, 1 – Moderately Untrue of Me, 2 – Neither True nor Untrue of Me, 3 – Moderately True of Me, 4 – Very True of Me). Internal consistency for the FFNI was good (S1: Grandiosity McDonald's $\omega = .92$; Vulnerability $\omega = .82$; Extraversion $\omega = .86$; Antagonism $\omega = .90$; Neuroticism $\omega = .89$; S2: Grandiosity $\omega = .92$; Vulnerability $\omega = .84$; Extraversion $\omega = .86$; Antagonism $\omega = .91$; Neuroticism $\omega = .88$; S3: Grandiosity $\omega = .89$; Vulnerability $\omega = .87$; Extraversion $\omega = .88$; Antagonism $\omega = .90$; Neuroticism $\omega = .90$).

The Big Five Inventory – 2 (BFI-2; Soto & John, 2017).—The BFI-2 is a revised and updated version of the original Big Five Inventory (BFI; John & Srivastava, 1999) which measures the Big Five domains of personality—Extraversion, Agreeableness, Conscientiousness, Negative Emotionality, and Open-Mindedness (as well as 15 lower order facets). The BFI-2 contains 60 self-report items rated on a 5-point Likert scale (0 – Disagree Strongly; 1 – Disagree A Little; 2 – Neutral/No Opinion; 3 – Agree a Little; 4 – Agree Strongly). The BFI-2 was used in S1 and S3 of the current study. Internal consistency for the BFI-2 was good (S1: Extraversion $\omega = .86$; Agreeableness $\omega = .80$; Conscientiousness $\omega = .86$; Negative Emotionality $\omega = .92$; Open-Mindedness $\omega = .83$; S3: Extraversion $\omega = .81$; Agreeableness $\omega = .71$; Conscientiousness $\omega = .79$; Negative Emotionality $\omega = .86$; Open-Mindedness $\omega = .75$).

Narcissistic Grandiosity Scale (NGS; Crowe et al, 2016; Rosenthal et al, 2007; Rosenthal et al, 2020).—State level narcissistic grandiosity was assessed using a subset of adjectives from the NGS. The four adjectives with the highest factor loadings on a grandiosity factor in previous work (Edershile et al., 2019) were selected for the present study. These four adjectives were Glorious, Prestigious, Brilliant, and Powerful. Previous work has demonstrated that these four adjectives perform well as a measure of state narcissistic grandiosity (Edershile et al., 2019). These items were administered as part of the EMA survey with a 100-point sliding scale in which *Not at all* and *Extremely* were anchors. Reliability of the NGS was adequate (S1: $\omega_{\text{within}} = .80$; $\omega_{\text{between}} = .97$; S2: $\omega_{\text{within}} = .74$; $\omega_{\text{between}} = .97$; S3: $\omega_{\text{within}} = .76$; $\omega_{\text{between}} = .96$).

Narcissistic Vulnerability Scale (NVS; Crowe et al., 2018).—This measure consists of a set of 12 adjectives designed to assess narcissistic vulnerability and is meant as a complementary measure to the NGS. Similar to above, previous work has demonstrated that the NVS performs well as a state measure of narcissistic vulnerability (Edershile et al., 2019) and four adjectives with strongest loadings on vulnerability were selected: Underappreciated, Misunderstood, Ignored, and Resentful. These four adjectives were used in the current study. As above, these four items were administered as part of the EMA survey with a 100-point sliding scale in which *Not at all* and *Extremely* were anchors. Reliability of the NVS was adequate (S1: $\omega_{\text{within}} = .78$; $\omega_{\text{between}} = .96$; S2: $\omega_{\text{within}} = .79$; $\omega_{\text{between}} = .98$; S3: $\omega_{\text{within}} = .80$; $\omega_{\text{between}} = .96$).

Rosenberg's Self-Esteem Scale (Rosenberg, 1965).—State level self-esteem was assessed using a subset of items from the 10-item Rosenberg self-esteem scale (Rosenberg, 1965). Three items, all keyed in the positive direction (e.g., “I feel that I have a number of good qualities”) were selected and adapted for momentary assessment (e.g., “Right now, I feel that I have a number of good qualities”). Participants rated each of these three items on a 4-point Likert scale (0—Strongly Disagree; 3—Strongly Agree). Reliability of this three-item measure was adequate (S1: $\omega_{\text{within}} = .80$; $\omega_{\text{between}} = .95$; S2: $\omega_{\text{within}} = .84$; $\omega_{\text{between}} = .98$; S3: $\omega_{\text{within}} = .85$; $\omega_{\text{between}} = .98$).

Results

Due to the similarity of the procedure used for data collection across Sample 1, Sample 2, and Sample 3, and per the suggestion of reviewers, the datasets were combined into one data file. This approach is sometimes referred to as a “mega-analysis” (e.g., Fleeson & Gallagher, 2009) and can be used instead of a mega-analysis when all raw data are available for analysis. For results within each individual sample, please refer to the Supplementary Materials. In addition to results at the sample level, also, in Supplementary Material are the same analyses presented here but with the Pathological Narcissism Inventory instead. A summary of results will be presented in text. For complete results, please refer to the tables, figures, and Supplementary Material. Datasets, syntax, and codebooks can be found on <https://osf.io/c9uea/>

For basic descriptive statistics of the measures used, please refer to Supplementary Table 1.

Our data are hierarchically structured, such that momentary observations (Level 1) are nested within individuals (Level 2). As such, questions related to individual differences require analyses at the between-person level, which will involve many fewer observations than those at the within-person level. Because several of our questions involved individual differences, we powered the study (N=200 or more) to be able to detect a small population effect in a regression model ($f^2=.04$) with alpha = .05 and beta = .80. This corresponds, roughly, to the average effect size from a recent review of personality and social psychology research (Gignac & Szodorai, 2016). These power analyses are informative for all questions related to *gross variability* and *instability* associations with dispositional narcissism scales, because these are fundamentally between-person associations (i.e., associations between standard trait narcissism scales with individual differences in the means and variances of EMA responses). It is common to calculate individual parameters for each of these within-person means and variances and treat them as individual difference variables, although here our use of multilevel models affords various benefits (e.g., adjusting for time in study and differential numbers of observations per person). Our stopping rule for Sample 1 and 2 were to collect as many participants as we could collect in one semester assuming it was higher than N=200. In addition, we sought to overshoot this goal by as much as possible given that participants with very low participation rates would not be able to meaningfully contribute to models of individual differences in variability. In the third sample, we sought higher power at the between-person level (N=300). However, given that we have shifted to presenting mega-analyses, with a substantially larger sample size (person N = 862), we have substantially more power to detect average or much smaller effects.

Associations between dispositional narcissism scales and *inertia/cross-lagged* analyses are effectively cross-level interactions, which are notoriously challenging to estimate a priori power for, because many assumptions must be made about within- and between-person effects. To evaluate power, we used Mathieu et al.'s (2012) simulation code as implemented in their shiny web-based application (https://aguinis.shinyapps.io/ml_power/). We used the results of the zero-order correlations and unconditional baseline inertia/cross-lagged models to estimate power to detect cross-level interactions. As with above, we assumed a cross-level effect size of approximately $f^2=.04$ with alpha = .05. We used the smallest observed sample size (S1) of N=228 and an average within-person sample size of 32 observations (i.e., 75% compliance), .35 as the association between dispositional narcissism and average momentary narcissism, and .65 as the ICC, and standardized variables. For the inertia effect, we assumed an autoregressive stability of .20 and a cross-lagged effect of .01, and this resulted in a power of .81 for both. Again, with the mega-analysis we have substantially higher power to detect these or smaller effects when samples are pooled.

As a demonstration of the within-person variability and how it varies across participants, momentary reported scores of grandiosity and vulnerability for a subset of participants are shown in Figure 1 and Figure 2, respectively. The intraclass correlation (ICC) for momentary grandiosity is .72 mega-analytically (.72, .67 in S2, and .73 in S3). The ICC for momentary vulnerability is .59 mega-analytically (.64 in S1, .58 in S2, and .49 in S3). Thus, in all but S3 Vulnerability, the majority of the variance is at the between-person level. Nonetheless, there remains significant and substantial within-person variability in each scale in each sample.

The main results are organized by research question below, and details of the analysis for each question is presented alongside the first instance of the question. All models were estimated in Mplus Version 8.2 (Muthén & Muthén, 1998-2018). All analyses were run with the Bayesian Estimator function in Mplus. Therefore, resulting coefficient point estimates are the median of the posterior distribution, and we present the 95% credibility intervals as a measure of precision and to facilitate inferential tests (e.g., whether an effect was significantly different from 0).

1) Gross Variability: Broadly, how much do individuals vary in their levels of grandiosity and vulnerability across time?

Gross variability is a summary statistic of the dispersion of an individual's states across time. *Gross variability* can be estimated by calculating each individual's within-person standard deviation (*iSD*) or variance (*iVAR*) of grandiosity and vulnerability across time. Here, a multilevel modeling approach was adopted to evaluate *gross variability*, as it allows for each participant's contribution to be weighted by how many responses they contributed. For instance, someone who only completed 11 entries would not have as reliable of a *gross variability* score as someone who had a complete set of 42 responses. Following Geukes and colleagues (2016), who used a similar approach in the study of self-esteem variability, multilevel models that relax the assumption of homogeneous level 1 (i.e., time-varying or within-person) residuals and allow for predictors of individual differences in momentary variation were used. That is, each individual is allowed to have a separate estimate of level 1 residuals (i.e., variability after accounting for the effect of any predictors), and these individual differences can be predicted by other individual difference variables. The higher-order dimensions of the FFNI – FFNI grandiosity and FFNI vulnerability for question (1a) and FFNI extraversion, FFNI antagonism, and FFNI neuroticism for question 1b – were used as predictors of individual differences in momentary variability. Additionally, these were estimated as multilevel structural equation models, which although conceptually similar to standard multilevel regressions used in this area, are more flexible and allow for the estimation of more complex path models (see e.g., Sadikaj et al., 2020 for a primer). The effect of time was included as a within-person predictor to adjust for potential linear trends in models estimated.

We present a simplified version of the model, using only momentary grandiosity as the outcome and the higher-order FFNI grandiosity and FFNI vulnerability scales as the trait predictors, to illustrate its specification. The full model also included momentary vulnerability as a parallel outcome, and was repeated with the FFNI three-factor higher-order solution and the PNI factors as predictors. The model was specified as follows,

$$\begin{aligned} \text{Level 1: } & \text{Grandiosity}_{ti} = \beta_{0i} + \epsilon_{ti} \\ \text{Level 2: } & \beta_{0i} = \gamma_{00} + \gamma_{01}(\text{FFNI grandiosity}_i) + \gamma_{02}(\text{FFNI vulnerability}_i) + u_{0i} \\ & \sigma^2_{\epsilon_{ti}} = \exp(\gamma_{10} + \gamma_{11}(\text{FFNI grandiosity}_i) + \gamma_{12}(\text{FFNI vulnerability}_i) + \gamma_{13}(\overline{\text{Grandiosity}_i}) + \\ & \gamma_{14}(\overline{\text{Vulnerability}_i}) + u_{1i}) \end{aligned}$$

where Grandiosity_{ti} represents the momentary assessments of grandiosity that vary across time (subscript t) and individuals (subscript i), β_{0i} represents the random intercept that varies

across individuals, ϵ_{ij} reflects the momentary departures in grandiosity from each individual's intercept across time and participants, γ_{00} reflects the grand intercept or expected value when FFNI grandiosity and FFNI vulnerability are at 0, γ_{01} is the effect of FFNI grandiosity on individual differences in momentary grandiosity, γ_{02} is the effect of FFNI vulnerability on individual differences in momentary grandiosity, and u_{0i} reflects the randomly varying residuals in intercepts. Multilevel models typically assume that the variance of within-person residuals (i.e., $\sigma^2_{\epsilon_{ij}}$) is constant across individuals. However, here that assumption was relaxed and $\sigma^2_{\epsilon_{ij}}$ was allowed to vary across individuals and as a function of FFNI scores. Values of variances need to be positive, which is achieved by using an exponential function when modeling the variance. Here γ_{10} represents the average variability score when FFNI grandiosity and FFNI vulnerability are 0, γ_{11} is the effect of FFNI grandiosity on individual differences in variability, γ_{12} is the effect of FFNI vulnerability on individual differences in variability, γ_{13} is the effect of the mean of grandiosity on individual differences in variability, γ_{14} is the effect of the mean of vulnerability on individual differences in variability, and u_{1i} reflects residual individual differences in variability.

Currently there is a debate in the literature about how associations between individual differences in variability of momentary scores and within-person means of those same scores should be interpreted. Many argue that positive associations between within-person means and variability merely reflect that people with higher means have more room to vary, and thus this relationship is artifactual (e.g., Baird et al., 2006; Kalokerinos et al., 2020). In particular, it is argued that individual means and standard deviations are associated due to floor or ceiling effects that artificially constrain the variance for individuals close to the boundary. Baird and colleagues (2006) demonstrated that even when means and standard deviations are independent, when distributions are skewed (as is often the case with narcissism variables), associations between the means and standard deviations become an artifact of the analyses. As a result, it is possible that associations between variability in narcissistic states and predictors designed to assess average levels of narcissism (e.g., FFNI scores) may emerge due to non-substantive reasons. Given this, person-mean levels of grandiosity and vulnerability were included as covariates, and the relationship between dispositional narcissism scores and variability in narcissistic states adjusting for each individual's mean level of momentary reports was examined. However, we first examined zero-order correlations among all variables to fully understand the associations among the variables.

1a. Does an individual's level of dispositional grandiosity and vulnerability associate with their momentary level and variability in state grandiosity and vulnerability.—Table 1 shows the correlations among FFNI grandiosity and vulnerability, momentary means in grandiosity and vulnerability, and *gross variability*. Please note, this table also contains all correlations performed for the present study. As such, we will refer to it in later results as well. Figure 3 illustrates the path analysis model designed to examine associations among FFNI two-factor scores and gross variability accounting for the mean of momentary grandiosity and vulnerability.

Starting with the associations between the dispositional FFNI scales and individual differences in momentary means, FFNI scale scores were moderately significantly correlated with same domain momentary means (e.g., FFNI grandiosity with momentary mean of grandiosity), and effect sizes were similar once accounting for shared variance in dispositional scores in the path-analytic model. FFNI grandiosity was moderately significantly correlated with the momentary mean of vulnerability, and effects were similar in the path-analytic model. Dispositional vulnerability was modestly negatively correlated with the momentary mean of grandiosity, and the effect was similar in the path analytic model.

Moving to the primary question of the association between dispositionally assessed narcissism and fluctuation in states, dispositional grandiosity scores were modestly positively significantly correlated with gross variability in grandiosity, though the significance of this effect did not hold when adjusting for dispositional vulnerability and momentary means in the path analysis. Dispositional vulnerability scores were moderately significantly correlated with variability in vulnerability and remained a modest significant predictor once adjusting for dispositional grandiosity and momentary means. Moving to cross-domain associations, dispositional grandiosity was modestly positively significantly correlated with variability in vulnerability but virtually unassociated in the path analysis. Dispositional vulnerability was not significantly associated with gross variability in grandiosity either in correlations or path analysis.

In both correlations and the path analysis model, momentary mean levels were moderately to strongly positively associated with gross variability in the matched dimension (e.g., momentary mean of grandiosity and variability in grandiosity). For both domains, somewhat smaller correlations were observed across domains between momentary means and variability. These associations were further reduced in the path analysis.

1b. Does a three-factor structure of narcissism (i.e., entitlement, exhibitionistic grandiosity, vulnerability) associate with momentary level and variability in state grandiosity and vulnerability?—Table 1 shows the correlations among FFNI three-factor structure, momentary means in grandiosity and vulnerability, and *gross variability*. Figure 4 illustrates the path analysis model estimating the associations among FFNI three-factor scores and gross variability accounting for the mean of momentary grandiosity and vulnerability.

Examining associations between the dispositional three-factor FFNI scales and individual differences in momentary means, FFNI extraversion and FFNI antagonism were moderately significantly positively associated with the momentary mean of grandiosity, and these effects were similar in the path-analysis. On the other hand, FFNI neuroticism was moderately significantly negatively correlated with the momentary mean of grandiosity and this effect was also similar in the path analysis. All FFNI subscales were significantly positively correlated with the momentary mean of vulnerability, with the strongest association between FFNI antagonism and the momentary mean of vulnerability. However, in the path analytic model only FFNI antagonism and FFNI neuroticism significantly predicted the momentary

mean of vulnerability, but the association between FFNI extraversion and the momentary mean of vulnerability was not significant.

Moving to the primary question of the association between dispositionally assessed narcissism using a three-factor structure and fluctuation in states, FFNI extraversion and FFNI antagonism were both moderately positively and modestly positively associated with variability in grandiosity, respectively, in the zero-order correlations. In the path analytic model, only FFNI extraversion yielded a modest positive significant association with variability in grandiosity. All other paths between FFNI scores and variability in grandiosity were non-significant. FFNI neuroticism and antagonism were moderately positively correlated with variability in vulnerability in the zero-order associations, but only the association between FFNI neuroticism and variability in vulnerability maintained in the path-analytic model.

Associations between momentary means and variability followed a very similar patterns to those in the model using a two-factor structure of narcissism.

2) Instability: how much do individuals change in their levels of grandiosity and vulnerability form one time point to the next?

Whereas *gross variability* summarizes the dispersion in scores without considering temporal ordering, *instability* is a metric that summarizes the average magnitude of change from one moment to the next. *Instability* is often calculated as each individual's mean squared successive differences (iMSSD) between consecutive narcissism scores. However, a multi-level modeling framework was adopted to examine *instability*, by taking the squared differences between consecutive scores in grandiosity and vulnerability at successive time points and using these difference scores as outcomes (Jahng et al., 2008). Missing values were inserted between the last observation of one day and the first observation of the next so that difference scores reflected changes in narcissistic states within a day. The FFNI scales (2a) two-factor and 2b) three-factor structure) were used as predictors of individual differences (i.e., the random intercepts) in squared successive differences (SSD) in grandiosity and vulnerability.

A simplified example of the model specification is given with SSD grandiosity and the two-factor FFNI scales, but SSD vulnerability was included as an additional outcome in all models, and these were repeated as with the three-factor FFNI and PNI. The model was specified as follows,

$$\begin{aligned} \text{Level 1: } SSD \text{ grandiosity}_{ti} &= \beta_{0i} + \varepsilon_{ti} \\ \text{Level 2: } \beta_{0i} &= \gamma_{00} + \gamma_{01}(\text{FFNI grandiosity}_i) + \gamma_{02}(\text{FFNI vulnerability}_i) + u_{0i} \end{aligned}$$

where $SSD \text{ grandiosity}_{ti}$ represents the SSDs for grandiosity that vary across time (subscript t) and individuals (subscript i), β_{0i} represents the random intercept of SSD grandiosity that varies across individuals, ε_{ti} reflects the momentary departures in SSD grandiosity from each individuals intercept across time and participants, γ_{00} reflects the grand intercept or expected value of SSD grandiosity when FFNI grandiosity and FFNI vulnerability are 0, γ_{01} is the effect of FFNI grandiosity on individual differences in SSD grandiosity, γ_{02} is the

effect of FFNI vulnerability on individual differences in SSD grandiosity, and u_{0i} reflects the randomly varying residuals in intercepts.

2a. Does an individual's level of dispositional grandiosity and vulnerability predict their occasion to occasion difference scores in state grandiosity and vulnerability?—Results of the instability analyses at the between-person level for the two-factor FFNI can be found in Table 2. FFNI grandiosity was moderately positively associated with grandiosity SSD. These positive associations maintained once adjusting for the shared variance in FFNI vulnerability. Dispositional vulnerability was moderately positively associated with vulnerability SSD and remained moderately positively associated once accounting for dispositional grandiosity. Dispositional vulnerability was modestly positively associated with grandiosity SSD in the correlation model but this association became non-significant in the adjusted model. Dispositional grandiosity was modestly positively associated with vulnerability SSD in both the correlation and adjusted model.

2b. Does an individual's level of entitlement, exhibitionistic grandiosity, or vulnerability predict their occasion to occasion difference scores in state grandiosity and vulnerability?—Results of the instability analyses at the between-person level for the three-factor FFNI can be found in Table 3. FFNI extraversion and antagonism were modestly positively associated with grandiosity SSD in both the correlation and adjusted models. Dispositional neuroticism was not significantly associated with grandiosity SSD in either the correlation or adjusted model. Dispositional neuroticism and antagonism were modestly positively associated with vulnerability SSD. Dispositional extraversion was associated with vulnerability in the correlation model but this association was near zero in the adjusted model.

3) Inertia and Cross-lagged effects: how stable are grandiose and vulnerable states?

Inertia is a metric that quantifies the degree to which a previous state level predicts the current state level (i.e., autoregression). Accordingly, it indicates how long a person tends to stay in a state or how quickly a person returns to baseline after being perturbed. Conceptually, *inertia* can be understood as how well a person is able to regulate themselves. In most psychological data, the value ranges between 0 and 1 (although they can be negative), and the closer it is to 1, the longer it takes a person to return to his/her baseline. An individual with high grandiosity *inertia* has grandiose states that are more self-predictive across time, and which tend to ramp up and diminish more slowly over time. Conversely, an individual who is prone to unpredictable oscillations will have a lower *inertia* than someone who either stays constant from one point to the next or someone who predictably fluctuates between states.

In addition, we were interested in whether one's level of narcissistic grandiosity (or vulnerability) at one point in time predicted one's level of vulnerability (or grandiosity) at the next. These "cross-state" effects best reflect certain theoretical propositions related to shifting between narcissistic states. For instance, that grandiosity reflects a defensive reaction to vulnerable states (e.g., Ronningstam, 2009), and alternatively whether fragile grandiosity predicts tumbling down into a vulnerable state (e.g., Horowitz, 2009). To

evaluate the effect of one narcissistic state on the other between time points, we estimated cross-lagged effects from one time-point to the next, adjusting for the prior time-points state (e.g., predicting grandiosity at time t from vulnerability and grandiosity at time $t-1$). This can be understood as the effect of one's standing on one narcissistic dimension predicting change in the other over time.

Figure 5 illustrates the basic model. Within-person coefficients (e.g., β_{GG} , β_{GV}) estimates how strongly previous states of grandiosity and vulnerability ($t-1$) predict current states of grandiosity and vulnerability (t). The between-person random effects reflect individual differences in the strength of the autoregressive effects. Both the autoregressive inertia (e.g., β_{GG}) and cross-lagged state shifting effects (e.g., β_{GV}) were estimated simultaneously using Dynamic Structural Equation Modeling (DSEM; e.g., Asparouhov et al., 2017, 2018), which combines multilevel modeling, structural equation modeling, and time series analysis. As with above, models were calculated using the Bayesian estimator. Then the FFNI scales—both the (3a) two-factor and (3b) three-factor structure—were included as predictors of individual differences of the autoregressions and cross-lagged effects. The effect of time was included as a within-person predictor to adjust for potential linear trends in models estimated.

As above, though models included both grandiosity and vulnerability, for simplicity of illustrating the basic model features, only grandiosity is shown below. The models were also run with both the three-factor FFNI scales and the PNI scales as predictors.

$$\begin{aligned} \text{Level 1: } Grandiosity_{ti} &= \beta_{0i} + \beta_{1i}(G_{t-1i}) + \varepsilon_{ti} \\ \text{Level 2: } \beta_{0i} &= \gamma_{00} + \gamma_{01}(\text{FFNI grandiosity}_i) + \gamma_{02}(\text{FFNI vulnerability}_i) + u_{0i} \\ \beta_{1i} &= \gamma_{10} + \gamma_{11}(\text{FFNI grandiosity}_i) + \gamma_{12}(\text{FFNI vulnerability}_i) + u_{1i} \end{aligned}$$

where $Grandiosity_{ti}$ represents the momentary assessments of grandiosity that vary across time (subscript t) and individuals (subscript i), β_{0i} represents the random intercept that varies across individuals, $\beta_{1i}(G_{t-1i})$ represents the effect of grandiosity at the previous time point ($t-1$) that varies across individuals (i.e., a random slope), ε_{ti} reflects the momentary departures in grandiosity from each individual's intercept across time and participants, γ_{00} reflects the grand intercept or expected value of grandiosity when FFNI grandiosity and FFNI vulnerability are 0 and an individual's mean grandiosity at $t-1$, γ_{01} is the effect of FFNI grandiosity on individual differences in momentary grandiosity, γ_{02} is the effect of FFNI vulnerability on individual differences in momentary grandiosity, and u_{0i} reflects the randomly varying residuals in intercepts, γ_{10} reflects the average effect of grandiosity at $t-1$ when FFNI grandiosity and FFNI vulnerability are 0, γ_{11} is the effect of FFNI grandiosity on individual differences in inertia, γ_{12} is the effect of FFNI vulnerability on inertia, and u_{1i} reflects the randomly varying residuals in slopes.

3a. Does one's current level of grandiosity and vulnerability predict future levels of states in the same domain (e.g., grandiosity_{t-1} → grandiosity_t) and/or the other domain (e.g., grandiosity_{t-1} → vulnerability_t)?—Within-person results of auto-regressive and cross-lagged effects of a baseline unconditional model (i.e., without level 2 predictors) can be found in Figure 6. We observed a significant positive fixed effect

(i.e., average within-person effect) of inertia for both grandiosity and vulnerability. These effects were modest, although we also found a significant random effect such that individuals differed significantly in their level of inertia. Cross-lagged fixed effects yielded very small associations, though, due to the number of observations, the effect between momentary vulnerability at t-1 predicting change in grandiosity from t-1 to t was significant despite its very modest value. However, as with the auto regressive effects, significant random effects indicated that individuals differed in the strength of these paths.

3b. Does dispositional grandiosity and vulnerability predict getting “stuck in states” (e.g., grandiosity_{t-1} → grandiosity_t) or switching states (e.g., grandiosity_{t-1} → vulnerability_t)?—Between-person results of the associations between the FFNI scale scores and the autoregressive and cross-lagged effects can be found in Table 4. With the exception of the effect of FFNI vulnerability on vulnerability inertia, no associations between dispositional scales and individual differences in these lagged momentary associations were observed.

3c. Does a dispositional three-factor structure of narcissism associate with Inertia and Cross-lagged effects of state level grandiosity and vulnerability?—Between-person results of the autoregressive effects using the three-factor structure of the FFNI can be found in Table 5. With the exception of the effect of dispositional neuroticism predicting the lagged effect of prior vulnerable states predicting current vulnerability states, no associations between dispositional scales and individual differences in these lagged momentary associations emerged.

4) How much do individuals vary in their self-esteem over time as a function of narcissism?

In questions 1-3, we examined different patterns of variability between dispositional narcissism (both with a two-factor structure and three-factor structure) and fluctuations in state-level grandiosity and vulnerability. Though such models were designed to examine theorized fluctuations in grandiosity and vulnerability, it is possible that observed fluctuations in narcissism are a consequence of a different psychological process. Thus, in the following models, we examine associations between dispositional narcissism and fluctuations in state-level self-esteem.

4a. Does an individual’s level of dispositional grandiosity and vulnerability predict their state self-esteem level and variability?—*Gross Variability* associations between dispositional narcissism two-factor structure and momentary self-esteem and self-esteem variability can be found in Table 1 (zero-order associations) and Figure 7 (adjusted path-analytic model). FFNI grandiosity and FFNI vulnerability were modestly positively and strongly negatively correlated with the momentary mean of self-esteem, respectively. These associations were similar in the adjusted model after correcting for the shared variance in grandiosity and vulnerability.

Moving to associations between fluctuation in self-esteem and dispositional grandiosity and vulnerability, only dispositional vulnerability emerged as a significant positive predictor of

fluctuation in self-esteem. Associations were in the same direction but attenuated in the adjusted model.

4b) Does a dispositional three-factor structure of narcissism (i.e., exhibitionistic grandiosity, entitlement, and vulnerability) predict state self-esteem level and variability?—*Gross Variability* associations between dispositional narcissism three-factor structure and momentary self-esteem and self-esteem variability can be found in Table 1 (zero-order associations) and Figure 8 (adjusted path-analytic model). FFNI extraversion was moderately positively associated with the momentary mean of self-esteem. FFNI antagonism and FFNI neuroticism were moderately and strongly negatively associated with the momentary mean of self-esteem, respectively.

Moving to associations between fluctuation in self-esteem and dispositional narcissism-three factor structure, both FFNI extraversion and FFNI neuroticism emerged as modest positive predictors of variability in self-esteem.

4c. How do processes observed in question 1a change when controlling for state self-esteem level and variability.—A path-analytic model for a two-factor structure of narcissistic variability, adjusting for self-esteem level and variability, can be found in Figure 9, Panel 1. For a comparison without controlling for self-esteem, please refer to Figure 3. Of note, though values of associations changed slightly, strength and significance of associations remain identical to those in Figure 3.

4d. How do processes observed in question 1b change when controlling for state self-esteem level and variability.—A path-analytic model for a three-factor structure of narcissistic vulnerability, controlling for self-esteem level and variability can be found in Figure 10. For a comparison without controlling for self-esteem, please refer to Figure 4. As with the two-factor structure above, though values of associations changed slightly, strength and significance of associations remain identical to those in Figure 4.

5) How much do individuals with higher scores across the Big-5 personality traits vary in their levels of narcissism across time?

Question 4 examined dispositional narcissism's association with another psychological process, self-esteem. On the other hand, other dispositional variables have been shown to be associated with narcissism, such as several of the Big-5 domains. Thus, below we examine how the Big-5 associated with variability in state-level narcissism. We also examine associations between dispositional narcissism and variability in narcissism, controlling for the Big-5.

5a. Does an individual's score in dispositional normal-range personality associate with their momentary mean and variability across grandiosity and vulnerability?—Zero-order associations between the Big-5 and state-level variables in narcissism can be found in Table 1. The adjusted path-analytic model can be found in Figure 11. In examination of the associations between the Big-5 traits and state-level momentary means of grandiosity and vulnerability, only dispositional extraversion evidenced moderate positive associations with the momentary mean of grandiosity. Neuroticism was modestly

negatively associated with the momentary mean of grandiosity. Once accounting for the shared variance with other dispositional personality variables, conscientiousness evidenced modest negative associations with the momentary mean of grandiosity. Agreeableness and openness were modestly and non-significantly associated with the state-level mean of grandiosity. Agreeableness, conscientiousness, and openness were modestly significantly negatively associated with the momentary mean of vulnerability, after accounting for shared variance in the predictors. Neuroticism was moderately positively associated with the state-level mean of vulnerability.

Moving to associations between dispositional scores and variability in grandiosity and vulnerability, extraversion was modestly positively associated with variability in grandiosity and neuroticism was moderately positively associated with variability in vulnerability. Conscientiousness and agreeableness were modestly negatively associated with variability in vulnerability but these associations dropped out once accounting for the shared variance in the Big-5 traits and the state-level means of grandiosity and vulnerability.

5b. How do processes observed in 1a change when controlling for dispositional Big-5 personality characteristics?—Associations between state-level processes, the Big-5, and dispositional grandiosity and vulnerability can be found in Figure 12. For a comparison without controlling for the Big-5, please see Figure 3. Associations between dispositional narcissism and state-level means and variability remain similar, albeit attenuated. Importantly, associations between variability in state-level vulnerability and FFNI vulnerability remain modestly significant after controlling for shared variance with other personality features.

Associations between the Big-5 and state-level means and variability in narcissism also share some similarities to those in Figure 11, though with some important differences. Extraversion maintains a modest positive association with the momentary mean of grandiosity. After accounting for the shared variance in the predictors, agreeableness is modestly positively associated with the momentary mean of grandiosity. Openness is modestly negatively associated with the momentary mean of vulnerability whereas neuroticism is modestly positively associated. After controlling for shared variance with other personality features, dispositional extraversion maintains a modest positive association with variability in grandiosity and neuroticism maintains a modest positive association with variability in vulnerability.

5c. How do processes observed in 1b change when controlling for dispositional Big-5 personality characteristics?—Associations between state-level processes, the Big-5, and dispositional three-factor structure of narcissism can be found in Figure 13. For a comparison without controlling for the Big-5, please see Figure 4. Associations between the dispositional narcissism variables and momentary narcissism means and variability are much attenuated after controlling for the Big-5. In particular, only significant associations maintain between the dispositional narcissism scores and momentary means. All associations between dispositional narcissism and variability in state-level narcissism become non-significant.

Associations between the Big-5 and momentary narcissism means and variability share some similarities, though much attenuated, to results presented in Figure 11. Extraversion and agreeableness are significant modest positive predictors of the momentary mean of grandiosity. Neuroticism is a modest positive predictor of the momentary mean of vulnerability. Neuroticism is positively associated with variability in vulnerability and extraversion is positively associated with variability in grandiosity.

Discussion

Theorists have long observed that narcissistic individuals fluctuate in their expressions of grandiosity and vulnerability (e.g., Kernberg, 1975; Wright, 2014; Pincus et al., 2014; Ronningstam, 2009, 2011). Consistent with theoretical propositions, emerging empirical evidence is suggestive of dynamic processes within and between grandiose and vulnerable manifestations of narcissism (e.g., Gore & Widiger, 2016; Giacomin & Jordan, 2016). However, no study has directly examined these two components using methodology specifically designed to capture the theorized dynamic processes. More specifically, studies have either not examined this question with regard to grandiosity and vulnerability (e.g., using self-esteem; Geukes et al., 2016) or have continued to use cross-sectional assessments to understand this process (e.g., Gore & Widiger, 2016). Thus, an important next step in understanding narcissistic processes is to systematically study how grandiosity and vulnerability vary from moment to moment and across time both within and between persons. Further, given that emerging literature in the field of narcissism suggests that narcissism may best be captured with a three-factor structure instead of a two-factor structure, an equally important step is to compare the variability patterns associated with dispositional grandiosity and vulnerability to the associations across a three-factor structure (exhibitionistic grandiosity, entitlement, and vulnerability).

Clinical descriptions of variability within and between grandiose and vulnerable narcissistic states have not detailed the precise nature or duration of these patterns. Coupled with a dearth of research systematically examining these processes, little information is available about the timescale and nature of these fluctuations. Accordingly, the present study adopted a naturalistic descriptive and exploratory approach towards investigating fluctuations in grandiosity and vulnerability. To guard against spurious conclusions in our exploratory approach, three samples were leveraged to examine the patterning of fluctuations within the two core domains of narcissism, grandiosity and vulnerability. Further, both a two-factor structure and three-factor structure of dispositional narcissism were used to predict momentary fluctuations in and across each domain. Importantly, associations between traditional dispositional self-report scales and between-person aggregates of momentary scales are generally attenuated substantially because they are cross-method associations, consistent with other similar research in personality (Fleeson & Gallagher, 2009). Our findings for cross-method effects are consistent with the broader literature and with other well-established scales in these same samples (e.g., Neuroticism and momentary negative affect).

Fluctuation within narcissistic states was operationalized in three ways, *gross variability*, *instability*, and *inertia*, and fluctuation between states was operationalized as *cross-lagged*

effects. Close examination of the *gross variability* findings suggests that individuals with higher mean levels of momentarily-assessed grandiosity or vulnerability tend to fluctuate more in the respective domain. These effects were particularly strong for vulnerability. Both grandiosity and vulnerability were somewhat positively skewed, and by extension individuals with higher levels of grandiosity or vulnerability generally had more room to vary within either domain. By comparison, the opposite pattern was observed with momentary self-esteem, which was negatively skewed and showed a negative association between level and gross variability. These findings are consistent with previous research that has found associations between mean levels and overall fluctuations (e.g., Baird et al., 2006). As noted above, some have interpreted this pattern as an artifact of higher mean levels; people who have higher values of grandiosity or vulnerability by definition vary more just because they can (Mestdagh et al., 2018). Alternatively, substantive reasons could account for the association between mean and variance observed here. For instance, it may be that individuals who are characteristically higher in a given domain become more volatile and it becomes difficult to maintain high levels of grandiosity or vulnerability. Indeed, evidence this may be the case comes from results of *instability*. Individuals with higher levels of dispositional grandiosity or vulnerability had greater successive differences in their state-levels of the matched momentary category from both a correlational and regression association. This suggests that individuals higher in dispositional narcissism may be more volatile over time. Another possibility is that the skewed distribution reflects “flareups” of elevated scores, leading to higher means for those who experience more of these events—that is, mean level is driven by variability. These flareups may be reflective of self-dysregulation, such that individuals fail to appropriately regulate their sense of self contingent on perceived inputs from the environment (Pincus et al., 2009). In these examples, the link between mean level and variability would not be considered an artefactual association but rather reflective of a specific process unfolding. Several of the panels in Figures 1 and 2 are reflective of this possibility (see also figures in Wright and Simms [2016] for a depiction of this patterning). Disambiguating artefactual from substantive interpretations of mean and variance covariation goes well beyond this study’s scope and remains a topic of debate in the psychological methods literature (e.g., Kalokerinos et al., 2020; Mestdagh et al., 2018). In fact, the phenomenon extends far beyond the behavioral sciences and has been referred to as Taylor’s law (Taylor, 1961) in ecology and fluctuation scaling (Eisler & Kertesz, 2006) in physics.

Though not a goal of the present study to clarify differences between substantive and artefactual associations with momentary means and variability, an understanding of how momentarily-assessed means impact the results is important. Specifically, the present study also demonstrated interesting findings regarding associations between dispositional narcissism and momentarily-assessed means. Broadly, results from both the correlational and regression models suggest that dispositionally grandiose individuals tend to have higher levels of both grandiosity and vulnerability over time. On the other hand, individuals with higher dispositional vulnerability scores exhibited higher momentary vulnerability averages but lower momentary grandiosity averages. A variant of this notion is again reflected in results for *instability*, suggesting that individuals high in grandiosity experience greater shifts in their states of vulnerability in addition to shifts in states of grandiosity. Indeed, to

experience greater shifts in vulnerability suggests that individuals high in grandiosity are, at times reaching higher levels of vulnerability (in addition to low levels of vulnerability). Taken together, these results are similar to those from the cross-sectional studies conducted by Gore and Widiger (2016) and Hyatt and colleagues (2017), such that individuals who are dispositionally grandiose experience bouts of vulnerability whereas dispositionally vulnerable individuals do not tend to experience grandiosity for significant periods of time. Given that associations with overall mean levels appear to play a key role in the analyses of the present study, following other authors (e.g., Eid & Diener, 1999), where relevant, associations between dispositional scores and overall variability, both with and without adjusting for overall mean levels of the outcome were examined.

Moving to associations between dispositionally assessed narcissism with variability in each domain, in analyses of *gross variability*, dispositional vulnerability was associated with variability in vulnerability from both a correlation perspective and in the regression models through both a direct and indirect effect. It seems likely that individuals with higher dispositional vulnerability scores are subject to greater variability in vulnerability over time. This conclusion was further supported in that dispositionally vulnerable individuals experienced more *instability* in their vulnerability scores across time. Research has suggested that vulnerability tends to be a measure of distress and is associated with a wide range of pathologies (e.g., Miller et al., 2014, 2016; Edershile et al., 2019; Pincus & Lukowitsky, 2010). Consistent with these findings, previous literature has found associations between various other forms of distress (e.g., depression and negative affect) and overall variability (Houben et al., 2015). More specific to personality pathology, we have previously argued that vulnerability may represent core deficits in general personality functioning (Edershile et al., 2019; Wright & Edershile, 2018). The current results add to our understanding that vulnerability is reflective of dysregulation, or maladaptive regulatory patterns, which is central to personality pathology. A broader literature argues that borderline personality pathology is the core of personality pathology on both theoretical and empirical grounds (e.g., Kernberg, 1984; Sharp et al., 2015; Williams et al., 2018; Wright et al., 2016). Further highlighting the similarities between narcissistic vulnerability and borderline pathology, especially as they might reflect core personality impairments, is the fact that borderline pathology has repeatedly been shown to be predictive of affective and interpersonal instability which is replicated in the results here (e.g., Ringwald et al., 2020; Russell et al., 2007; Trull et al., 2008).

Individuals dispositionally high in grandiosity experienced more momentary variability in grandiosity when considering the zero-order correlations. In the path-analytic model this disappears, yet there is an indirect effect between dispositional grandiosity and variability in grandiosity through the momentary mean level. Though this leaves some ambiguity regarding the substantive versus artifactual nature of these findings, we cautiously suggest that individuals high in dispositional grandiosity vary more in their levels of grandiosity. To the extent the mean-variability association is not artifactual it would only make sense that controlling for the same construct (i.e., mean level of grandiosity) using the same method accounts for the association with the construct across methods. Dispositional grandiosity was also associated with variability in vulnerability in the correlational model and indirectly through the momentary mean of vulnerability. Though this again leaves ambiguity

surrounding the substantive nature of these findings, individuals high in dispositional grandiosity appear to experience bouts of vulnerability. Taken together, high levels of dispositional grandiosity appear to be most strongly associated with variability in grandiosity, such that individuals with high levels of grandiosity fluctuate and are unstable in their levels of grandiosity. These same individuals may also fluctuate in their levels of vulnerability in a meaningful way. It is further possible that these ambiguous patterns across grandiosity and vulnerability for dispositionally grandiose individuals are representative of the individual working to navigate between their moments of grandiosity and moments of vulnerability. From this perspective, dispositionally grandiosity individuals may be attempting to engage in regulatory patterns to help escape periods of vulnerability (e.g., Ronningstam 2009; Horowitz, 2009). Theoretical perspectives may disagree on whether this is adaptive or not. On the one hand, grandiosity is associated with more adaptive functioning, at least in the short term, and therefore this could be considered an adaptive mechanism. On the other hand, resorting to grandiosity to ward off feelings of vulnerability may be a problematic strategy in the long term, and to the extent that this is defensive may keep the individual from resolving core vulnerabilities that leave them susceptible to future vulnerable states.

Clinical theory regarding fluctuations *between* grandiosity and vulnerability suggests just that—individuals actually experience states of grandiosity and vulnerability that follow one another (e.g., Kernberg, 1975; Pincus et al., 2014). However, examination of the results from the cross-lagged associations here suggest that this is not the case, at least over the time-periods sampled here. In particular, if individuals were experiencing grandiosity followed by vulnerability, or vice versa, it would be anticipated that a significant association would have emerged between previous grandiose or vulnerability states and the current ones in the opposing domain (Figure 6). Though significant, there was only a very small association between previous states of vulnerability and current states of grandiosity in the moment. More prominent were associations between previous within-domain associations and the current state in the moment. Moreover, there was almost no evidence that people with higher dispositional grandiosity or vulnerability scores were more likely to experiencing switching in this way. Importantly, though the results of the present study do suggest that individuals high in narcissism fluctuate in grandiosity and vulnerability, they do not appear to fluctuate in such a systematic pattern as clinical theory would suggest, at least over an average lag of 90+ minutes.

Examination of variability patterns within narcissism are further elucidated, however, by examining variability patterns using a three-factor structure of narcissism (exhibitionistic grandiosity, entitlement, vulnerability). Whereas only vulnerability was associated with a direct effect of *gross variability* in vulnerability, when accounting for shared features between exhibitionistic grandiosity, entitlement, and vulnerability, vulnerability and exhibitionistic grandiosity exhibited a direct effect on variability in their matched domains (i.e., vulnerability and grandiosity, respectively). Further, entitlement yielded an indirect association with variability in both grandiosity and vulnerability in the regression models. This suggests that whereas dispositionally grandiose and vulnerable individuals tend to fluctuate *within* their respective domains, to the extent that there are *cross-domain* associations between level and fluctuations, especially for dispositionally grandiose

individuals, this is largely driven by the shared entitlement. Further support for this comes from results for *instability* within the three-factor structure. In particular, highly entitled individuals experienced greater *instability* in their levels of grandiosity and vulnerability across time, in both the correlation and path-analytic models. On the other hand, exhibitionistic grandiose and vulnerable individuals only maintained positive associations of instability within their matched domains in the path-analytic model (i.e., grandiosity and vulnerability, respectively). Broadly, it appears that including entitlement in the models strengthens within-domain associations for grandiosity and vulnerability and only entitlement seems to be a key feature in variability patterns for *both* grandiosity and vulnerability. It is important to note that whereas entitlement appears to be a key feature for both exhibitionistic grandiosity and vulnerability, it does not appear to be the main source of *variability* for either grandiosity or vulnerability. In other words, clinically observed fluctuations in narcissism are likely caused by variability in grandiosity and vulnerability. The shared feature of narcissism (prominent in both grandiosity and vulnerability) is entitlement. Despite these more nuanced findings, like results for the two-factor structure, explicit evidence for actual *switching between* states is limited. In particular, neither entitlement, exhibitionistic grandiosity, or vulnerability were significantly associated with cross-domain switching.

Though including a three-factor structure of narcissism provides additional insight into the variability patterns of narcissism, it is further possible that fluctuations within narcissistic individuals are better explained through some other psychological process that has been shown to be closely tied to narcissism. Previous research has suggested that grandiosity is associated with higher and more stable self-esteem (e.g., Carlson et al., 2011). Yet, individuals with high levels of grandiosity may experience bouts of high self-esteem but also come in and out of these periods, suggesting that grandiosity may not best be conceptualized as continuous high self-esteem. Indeed, research by Crowe and colleagues (2017) suggests that there are large differences between high levels of narcissism and self-esteem. Geukes and colleagues (2016) suggest that two aspects of grandiosity, admiration and rivalry, are differentially associated with self-esteem level and variability, such that rivalry (most consistent with entitled antagonism) is positively associated with variability and negatively associated with level. Admiration (most consistent with exhibitionistic grandiosity) was positively associated with self-esteem level and negatively associated with variability in self-esteem. In other words, it is possible that fluctuations in grandiosity and vulnerability (as well as the three-factor structure we employ here) are actually better captured but fluctuations in self-esteem. Indeed, Sedikides and colleagues (2004) suggest that self-esteem is a crucial psychological variable in examining different outcomes for individuals high in narcissism. Thus, to be sure that our effects were unique processes in narcissism and not better explained by some other psychological process, we explored the role of self-esteem level and variability in additional models of *gross variability*.

Before delving into narcissism's association with self-esteem, as we allude to above, unlike the narcissism variables in the present study, self-esteem was negatively skewed such that most individuals tended to endorse high average levels of self-esteem, with departures downward contributing to variability. Thus, in contrast to the narcissism variables, this might artefactually force a negative association between the momentary mean of self-esteem and

variability in self-esteem. In examination of the models including narcissism and momentary self-esteem and self-esteem variability, we see that individuals higher in grandiosity tend to report higher state-levels of self-esteem. On the other hand, individuals higher in vulnerability tend to report lower state-levels of self-esteem. Only vulnerability emerged as a positive predictor of self-esteem variability. These models were similar from both the correlational and path-analytic perspective. Further, these results are partially consistent with those found by Geukes and colleagues (2016), suggesting that grandiose aspects of narcissism are associated with higher levels of self-esteem whereas more vulnerable aspects are associated with self-esteem fragility, or variability.

In examination of associations between self-esteem and three-factor structure of narcissism, a different pattern of results emerged. Importantly, exhibitionistic grandiose individuals tended to report high state-levels of self-esteem. Entitled and vulnerable individuals tended to report lower levels of self-esteem. After accounting for the mean of self-esteem, both dispositional exhibitionistic grandiosity and dispositional vulnerability were associated with variability in self-esteem. In other words, after controlling for entitlement, individuals higher in exhibitionistic grandiosity or vulnerability appear to fluctuate more in their levels of self-esteem. This is fully consistent with Geukes and colleagues (2016). At first blush, these results suggest that self-esteem may be crucial to the understanding of the nature and form of fluctuation within narcissistic individuals. However, without additionally including the momentary self-esteem and narcissistic processes in the same model, it is impossible to disentangle whether observed fluctuations in narcissism are best understood as unique processes, processes involved in self-esteem maintenance, or both.

Thus, additional models examined associations between narcissistic variability and self-esteem variability. It seems that these two processes are, indeed, substantially correlated. Experiencing variability in grandiosity and vulnerability are correlated with experiencing variability in self-esteem. However, after controlling for self-esteem processes (both mean level and variability in self-esteem), associations between dispositional narcissism and variability in grandiosity and vulnerability are very similar to those found without controlling for self-esteem processes. This is true for models that included either the two-factor structure of narcissism or the three-factor structure of narcissism. This suggests that though individuals who experience fluctuation in their levels of narcissism may also experience fluctuation in their self-esteem, the processes involved in fluctuations in narcissistic states and momentary self-esteem are two separate processes.

The final possibility we explored is whether variability in grandiosity and vulnerability is more broadly associated with basic personality traits, or whether associations with variability are unique to individuals higher in dispositional narcissism. Though, in general, the two-factor and three-factor structure of narcissism was associated with state-level variability in grandiosity and vulnerability once accounting for the Big-5 personality traits, results were significantly attenuated. Indeed, some have argued that personality pathology, such as narcissism, is best captured as extreme poles of “normal-range” personality (Lynam & Widiger, 2001). Regardless of whether examining the two-factor or three-factor models of narcissism and the Big-5’s association with variability in state-level narcissism, the normal range personality characteristics of agreeableness, neuroticism, and extraversion consistently

emerged as predictors of variability in grandiosity and vulnerability. Further, this emerged as a direct association between extraversion and variability in grandiosity and neuroticism and variability in vulnerability regardless of whether accounting for the shared variance in the two-factor model or the three-factor model. Such findings provide further evidence for the three-factor structure of narcissism, which some researchers (e.g., Miller et al., 2016) have even labeled as a variant of the Five Factor Model. These results suggest that individuals who fluctuate in their levels of grandiosity and vulnerability across time may have a specific amalgam of “normal range” personality characteristics coupled with unique features of narcissism. It is this set of normal range and maladaptive personality features that may contribute to fluctuations (and by extension regulatory patterns) in individuals with narcissistic features.

Taken together, these results have important implications for processes involved in narcissistic expression. It appears that entitlement plays a crucial role in observed variability patterns within narcissism. However, entitlement does not appear to be the main source of variability in narcissism, per se. Compared to some of the narcissism variables examined in the present study, entitlement seems to be associated with relative stability. Instead, controlling for entitlement allows for stronger associations to emerge in matched domains (e.g., exhibitionistic grandiosity and variability in grandiosity). This extends previous models suggesting a three-factor structure of narcissism (Miller et al., 2016; Krizan & Herlache, 2018). It has been argued that entitlement is the “anchor” of narcissism. Other research has providing supporting evidence that entitlement is necessary for narcissism (Miller & Lynam, 2019; Miller et al., 2017). Results here support this suggestion. However, entitlement on its own does not sufficiently capture narcissism. Rather, though perhaps anchored on entitlement, individuals may come *in and out* of periods of grandiosity and vulnerability. In addition to the importance of entitlement, it appears that narcissistic states are best understood as reflecting unique process, and not better explained or accounted for by self-esteem. Though processes, such as self-esteem, are clearly associated with narcissism, they are not interchangeable with processes involved in grandiosity and vulnerability expression. Finally, normal range personality characteristics, too, appear to be associated with variability patterns within grandiosity and vulnerability. Thus, consideration of the narcissistic individual’s normal range and pathological personality traits appears to be important in understanding fluctuational patterns in grandiosity and vulnerability.

Previous research (Gore & Widiger, 2016; Hyatt et al., 2017) has suggested that grandiose individuals experience bouts of vulnerability whereas vulnerable individuals do not experience periods of grandiosity in the same way. At the same time these prior findings are limited by their reliance on retrospective reports and cross-sectional methodology. Studies that have examined variability patterns within narcissism have largely done so through the examination of related processes (e.g., self-esteem; Geukes et al., 2016; Giacomini & Jordan, 2016). Our findings provide more granular texture to these patterns of variability. The literature to this point has largely seemed disjointed in the examination of variability within narcissism. However, the disjointed literature highlights the complexities involved within narcissism that have been further elaborated on here. It appears that normal-range personality, fluctuations in grandiosity and vulnerability, a three-factor approach to dispositional narcissism, and self-esteem processes all play a crucial role in observed

fluctuations for individuals high in narcissism. Our findings suggest future research should involve attention to timescale and examining different timescales, the importance of controlling for mean level, and the overall nature of switching dynamics within narcissism. Though not elucidating specific switching patterns, per se, this study sheds light on important dynamic associations that lays a critical foundation as researchers work to further align empirical evidence with clinical theory of fluctuations between the two core domains of narcissism.

Results of the current study also have several clinical implications. First, all clinical measures of narcissism are based on cross-sectional, one-time assessments administered at the start of treatment. This is true for both self-report and interview measures. However, these results definitely show that narcissistic states ebb and flow over time and across situations, which implies that a better understanding of narcissism dynamics in clinical settings would involve repeated momentary assessments. We are unaware of any treatment guidelines for narcissism that recommend this be conducted in any explicit way. Rather, it is common practice to discuss these shifts in states in session, but in a retrospective and non-systematic way. In contrast, there is a rich tradition of having patients track and report affective (e.g., negative emotions) and behavioral states (e.g., self-harm, binge episodes) in vivo or close to it with daily diaries. We believe the current results argue in favor for this type of systematic dynamic assessment to assist in direct clinical care. In addition, this may generate new theoretical insights. Theoretical models of narcissism have largely emerged from clinical observation, and these are the same theories that suggest that narcissistic individuals may fluctuate between periods of grandiosity and vulnerability, not just within states, although as we lamented above, the exact nature of the temporal processes in these theories remains unspecified. It is possible that by including systematic reports along with standard clinical assessments, it may lead to a sharpening of the dynamic aspects of theory, possibly highlighting not only the form but the function of narcissistic grandiosity and vulnerability over time. Thus, informing clinical assessment by these research results may ultimately lead to refinement in theory, which would help clarify the types of research designs needed to pin down the specific nature, form, and triggers for this fluctuation.

Limitations and future directions

This study had many strengths, including three large samples, one of which was a community sample that recruited based on features associated with narcissism giving us a combined person N of 862, and observation N of 36,631. However, this study also has limitations. Given that the present study provided evidence of unique patterns of variability within narcissism that include a complex set of psychological variables and processes, future directions include elaborating on the nature of this variability—particularly patterns of switching between states of grandiosity and vulnerability. As it stands, more work needs to be done to understand the timescale that is appropriate for studying such dynamics.

The present study served as a starting point for understanding variability in narcissism. Future work should strive to better capture the timescale and causal mechanisms of such variability. It may be that additional information is needed before switching criteria are determined. In particular, now that it is known that systematic variability within narcissism

exists, situational contexts that may drive an individual up and down within these domains should be examined. Preliminary research suggests that responses to different interpersonal contexts look vastly different for individuals considered dispositionally grandiose compared to dispositionally vulnerable individuals (Edershile & Wright, 2019). Indeed, it appears that perceptions of other's warmth and dominance has important implications for one's own behavior and is closely tied to experiences of grandiosity and vulnerability. It would be useful for future studies to sample across a range of situations and different timescales.

A further consideration is that all three samples had slightly different ambulatory assessment protocols. In particular, across all three samples, participants received a different number of maximum surveys per day. It is possible that this influenced the results. However, the consistent nature of results across samples and across questionnaires (i.e., FFNI and PNI) makes this less of a concern. Further, because primary results were performed using a mega-analysis, it is unlikely that any one study overly contributed to the strength of results.

The present study compared findings unique to narcissism with those found in processes associated with self-esteem (Research question 4) as well as those associated with the Big Five (Research question 5). Future research may wish to consider processes with other psychological variables that have been shown to be associated with narcissism. For example, this may include examination of affective processes. Edershile and colleagues (2019b) found that positive and negative affect were, indeed, highly correlated with grandiosity and vulnerability, respectively, in the moment.² As researchers work to examine the unique properties of narcissistic fluctuation, inclusion of these other processes is important.

Finally, as the results highlight, entitlement plays a key role in the nature and form of narcissism. The state-level narcissism scales used in the present study were designed to capture a two-factor structure of narcissism (grandiosity and vulnerability). Results from the present study suggest that a three-factor dispositional structure meaningfully increments the two-factor structure in predicting momentary means and variability. However, the state-level scales in the present study include primarily exhibitionistic grandiose and vulnerable aspects of narcissism and, only to a limited extent, entitlement. Thus, examination of state-level processes using a three-factor structure was impossible in the present study. It would be important for future studies to examine the nature of variability within entitlement, specifically.

Conclusion

Research in the field of narcissism has suggested a dynamic process between two components of narcissism: grandiosity and vulnerability. Additional research suggests that entitlement may be at the core of narcissism and is important to consider in the examination of these processes. Pinning down these processes is quickly becoming the most pressing

²Additional analyses were conducted in Sample 1 prior to this manuscript that suggest that though grandiosity and vulnerability and positive and negative affect are highly correlated, their association is different. At the within-person level, grandiosity and vulnerability are modestly correlated (.04 [.03, .07]) whereas positive and negative affect are strongly negatively correlated (-.41 [-.43, -.39]). At the between-person level, grandiosity and vulnerability are moderately positively correlated (.36 [.22, .47]) whereas positive and negative affect are virtually uncorrelated (-.02 [-.15, .10]). Though this does not definitively suggest different processes, these variables do not appear to be interchangeable.

question in the field. The present study was the first to explicitly examine this dynamic process between grandiosity and vulnerability from a momentary perspective. A variety of different statistical approaches that have been used to study other personality pathologies were engaged to examine these theorized processes. This study demonstrated key distinctions with regard to momentary processes involved in narcissism, including distinctions between a two- and three-factor structure, that will be important to consider as the field moves to further examine the complex dynamics of narcissism. As such, this study serves as an important steppingstone as researchers work to better understand the dynamic processes occurring within narcissism.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

- Akhtar S, & Thomson JA (1982). Overview: Narcissistic personality disorder. *American Journal of Psychiatry*, 139, 12–20.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington D.C.: Author.
- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington D.C.: Author.
- Ansell EB, Wright AGC, Markowitz JC, Sanislow CA, Hopwood CJ, Zanarini MC, & Grilo CM (2015). Personality disorder risk factors for suicide attempts over 10 years of follow-up. *Personality Disorders: Theory, Research, and Treatment*, 6(2), 161.
- Aslinger EN, Manuck SB, Pilkonis PA, Simms LJ, & Wright AGC (2018). Narcissist or narcissistic? Evaluation of latent structure of narcissistic personality disorder. *Journal of Abnormal Psychology*, 127(5), 496–502. [PubMed: 30010367]
- Asparouhov T, Hamaker EL, & Muthén B (2017). Dynamic latent class analysis. *Structural Equation Modeling*, 24, 257–269.
- Asparouhov T, Hamaker EL, & Muthén B (2018). Dynamic structural equation models. *Structural Equation Modeling*, 25, 359–388.
- Back MD, Kufner ACP, Dufner M, Gerlach TM, Rauthmann JF, & Denissen JJA (2013). Narcissistic admiration and rivalry: Disentangling the bright and dark sides of narcissism. *Journal of Personality and Social Psychology*, 105, 1013–1037. [PubMed: 24128186]
- Baird BM, Le K, & Lucas RE (2006). On the nature of intraindividual personality variability: reliability, validity, and associations with well-being. *Journal of Personality and Social Psychology*, 90 (3), 512–527. [PubMed: 16594835]
- Besser A, Zeigler-Hill V (2010). The influence of pathological narcissism on emotional and motivational responses to negative events: The roles of visibility and concern about humiliation. *Journal of Research in Personality*, 44, 520–524.

- Bosson JK, Lakey CE, Campbell WK, Zeigler-Hill V, Jordan CH, & Kernis MH (2008). Untangling the links between narcissism and self-esteem: A theoretical and empirical review. *Social and Personality Psychology Compass*, 2, 1415–1439.
- Brown RP, Budzek K, & Tamborski M (2009). On the meaning and measure of narcissism. *Personality and Social Psychology Bulletin*, 35(1), 951–964. [PubMed: 19487486]
- Brown RP, & Zeigler-Hill V (2004). Narcissism and the non-equivalence of self-esteem measures: A matter of dominance? *Journal of Research in Personality*, 38, 585–592.
- Buss DM, & Chiodo LM (1991). Narcissistic acts in everyday life. *Journal of Personality*, 59, 179–215. [PubMed: 1880699]
- Cain NM, Pincus AL, & Ansell EB (2008). Narcissism at the crossroads: Phenotypic description of pathological narcissism across clinical theory, social/personality psychology, and psychiatric diagnosis. *Clinical Psychology Review*, 28, 638–656. [PubMed: 18029072]
- Carlson EN, Vazire S, & Oltmanns TF (2011). You probably think this paper's about you: Narcissists' perceptions of their personality and reputation. *Journal of Personality and Social Psychology*, 101, 185–201. [PubMed: 21604895]
- Crowe M, Carter NT, Campbell KW, & Miller JD (2016). Validation of the Narcissistic Grandiosity Scale and creation of item variants. *Psychological Assessment*, 28, 1550–1560. [PubMed: 27046276]
- Crowe ML, Edershile EA, Wright AGC, Lynam DR, & Miller JD (2018). Development and validation of the Narcissistic Vulnerability Scale: An adjective rating scale. *Psychological Assessment*, 30(7), 978–983. [PubMed: 29781662]
- Crowe ML, Sleep C, Carter N, Campbell WK, & Miller JD. (2017). Self-esteem and narcissism: An item response theory analysis of curvilinearity. <https://osf.io/9z24j/>
- Dashineau S, Edershile EA, Limms LJ, & Wright AGC (2019). Pathological Narcissism and Psychosocial Functioning. *Personality Disorders: Theory, Research, and Treatment*, 10(5), 473–478.
- Dejonckheere E, Mestdagh M, Houben M, Rutten I, Sels L, Kuppens P, & Tuerlinckx F (2019). Complex affect dynamics add limited information to the prediction of psychological well-being. *Nature human behaviour*, 3(5), 478–491.
- Dickinson KA, & Pincus AL (2003). Interpersonal analysis of grandiose and vulnerable narcissism. *Journal of personality disorders*, 17, 188–207. [PubMed: 12839099]
- Edershile EA, Simms LJ, & Wright AGC (2019). A multivariate analysis of Pathological Narcissism Inventory's nomological network. *Assessment*, 26(4), 619–629. [PubMed: 29577754]
- Edershile EA, & Wright AGC (2018, 6). A momentary perspective of narcissism and interpersonal behavior perceptions. Paper to be presented at the annual meeting of the Society for Interpersonal Theory and Research, Montreal, Quebec.
- Edershile EA, & Wright AGC (2019). Grandiose and vulnerable narcissistic states in interpersonal situations. *Self and Identity* 10.1080/15298868.2019.1627241
- Edershile EA, Woods WC, Sharpe BM, Crowe ML, Miller JD, & Wright AGC (2019b). A day in the life of Narcissus: Measuring narcissistic grandiosity and vulnerability in daily life. *Psychological Assessment*, 31(7), 913–924. [PubMed: 30883153]
- Eid M, Diener E (1999). Intraindividual variability in affect: Reliability, validity, and personality correlates. *Journal of Personality and Social Psychology*, 76(4), 662–676.
- Eisler Z, & Kertesz J (2006). Size matters: some stylized facts of the stock market revisited. *The European Physical Journal B-Condensed Matter and Complex Systems*, 51(1), 145–154.
- Ellison WD, Levy KN, Cain NM, Ansell EB, & Pincus AL (2013). The impact of pathological narcissism on psychotherapy utilization, initial symptom severity, and early-treatment symptom change: A naturalistic investigation. *Journal of personality assessment*, 95(3), 291–300. [PubMed: 23186259]
- Foster JD, & Campbell WK (2007). Are there such things as “narcissists” in social psychology? A taxometric analysis of the Narcissistic Personality Inventory. *Personality and Individual Differences*, 43(6), 1321–1332.

- Fleeson W, & Gallagher P (2009). The Implications of Big Five Standing for the Distribution of Trait Manifestation in Behavior: Fifteen Experience-sampling Studies and a Metaanalysis. *Journal of Personality and Social Psychology*, 97(6), 1097–1114. [PubMed: 19968421]
- Gabbard GO (2009). Transference and countertransference: developments in the treatment of narcissistic personality disorder. *Psychiatric Annals*, 39, 129–136.
- Geukes K, Nestler S, Hutteman R, Dufner M, Kufner ACP, Egloff B, Denissen JJA, & Back MD (2016). Puffed-up but shaky selves: State self-esteem level and variability in narcissists. *Journal of Personality and Social Psychology: Personality Processes and Individual Differences*, 10.1037/pspp0000093
- Giacomin M, & Jordan CH (2016). Self-focused and feeling fine: Assessing state narcissism and its relation to well-being. *Journal of Research in Personality*, 63, 12–21.
- Gignac GE, & Szodorai ET (2016). Effect size guidelines for individual differences researchers. *Personality and Individual Differences*, 102, 74–78.
- Glover N, Miller JD, Lynam DR, Crego C, & Widiger TA (2012). The five-factor narcissism inventory: A five-factor measure of narcissistic personality traits. *Journal of Personality Assessment*, 94(5), 500–512. [PubMed: 22475323]
- Gore WL, Widiger TA (2016). Fluctuation between grandiose and vulnerable narcissism. *Personality Disorders: Theory, Research, and Treatment*, 7, 363–371.
- Grubbs JB, Exline JJ (2016). Trait Entitlement: A cognitive-personality source of vulnerability to psychological distress. *Psychological Bulletin*, 142, 1204–1226. [PubMed: 27504935]
- Hendin HM, & Cheek JM (1997). Assessing Hypersensitive Narcissism: A Re-examination of Murray's Narcissism Scale. *Journal of Research in Personality*, 31, 588–599.
- Hopwood CJ (2018). Interpersonal dynamics in personality and personality disorders. *European Journal of Personality*, 32(5), 499–524.
- Houben M, Van Den Noortgate W, & Kuppens P (2015). The relation between short-term emotion dynamics and psychological well-being: A meta-analysis. *Psychological Bulletin*, 141, 901–930. [PubMed: 25822133]
- Houben M, Vansteelandt K, Claes L, Sienaert P, Berens A, Sleuwaegan E, & Kuppens P (2016). Emotional switching in Borderline Personality Disorder: A daily life study. *Personality Disorders: Theory, Research, and Treatment*, 7, 50–60.
- Houlcroft L, Bore M, & Munro D (2012). Three faces of narcissism. *Personality and Individual Differences*, 53, 274–278.
- Hyatt CS, Sleep CE, Lynam DR, Widiger TA, Campbell WK, & Miller JD (2017). Ratings of affective and interpersonal tendencies differ for grandiose and vulnerable narcissism: a replication and extension of Gore and Widiger (2016). *Journal of Personality*, 1–13.
- Hyler SE (1994). *Personality Diagnostic Questionnaire-4 (PDQ-4)*. New York, NY: New York State Psychiatric Institute.
- Jahng S, Wood PK, & Trull TJ (2008). Analysis of Affective Instability in Ecological Momentary Assessment: Indices Using Successive Difference and Group Comparison via Multilevel Modeling. *Psychological Methods*, 13(4), 354–375. [PubMed: 19071999]
- Kalokerinos EK, Murphy SC, Koval P, Bailen NH, Crombez G, Hollenstein T, ... & Bastian B (2020). Neuroticism may not reflect emotional variability. *Proceedings of the National Academy of Sciences*, 117(17), 9270–9276.
- Kernberg OF (1975). *Borderline conditions and pathological narcissism*. New York, NY: Aronson.
- Kernberg OF (2009). Narcissistic personality disorders: part 1. *Psychiatry. Ann*, 39, 105–67.
- Krizan Z, & Herlache AD (2017). The narcissism spectrum model: a synthetic review of narcissistic personality. *Personality and Social Psychology Review*, 22, 3–31. [PubMed: 28132598]
- Krueger RF, Eaton NR, Clark, Watson D, Markon KE, Derringer J, Skodol A, & Livesley WJ. (2011). Deriving an empirical structure of personality pathology for DSM-5. *Journal of Personality Disorders*, 25(2), 170–191. [PubMed: 21466248]
- Levy KN, Reynoso JS, Wasserman RH, Clarkin JF (2007). Narcissistic personality disorder. In O'Donohue W, A Fowler K, O Lilienfeld S (Ed.) *Personality Disorders: Toward the DSM-V* (pp.233–77). Thousand Oaks, CA: Sage

- Lynam DR, & Widiger TA (2001). Using the five-factor model to represent the DSM-IV personality disorders: An expert consensus approach. *Journal of Abnormal Psychology*, 110(3), 401–412. [PubMed: 11502083]
- Mathieu JE, Aguinis H, Culpepper SA, & Chen G (2012). Understanding and estimating the power to detect cross-level interaction effects in multilevel modeling. *Journal of Applied Psychology*, 97, 951–966.
- Mestdagh M, Pe M, Pestman W, Verdonck S, Kuppens P, & Tuerlinckx F (2018). Sidelineing the mean: The relative variability index as a generic mean-corrected variability measure for bounded variables. *Psychological Methods*. Advance online publication.
- Miller JD, & Lynam DR (2019). On the ubiquity and importance of antagonism. In Miller JD & Lynam DR (Eds.). *The Handbook of Antagonism: Conceptualizations, assessment, consequences, and treatment of the low end of agreeableness* (pp. 1–24). Elsevier.
- Miller JD, Dir A, Gentile B, Wilson L, Pryor LR, & Campbell WK (2010). Searching for a vulnerable dark triad: Comparing factor 2 psychopathy, vulnerable narcissism, and borderline personality disorder. *Journal of Personality*, 78, 1529–1564. [PubMed: 20663024]
- Miller JD, Hoffman BJ, Gaughan ET, Gentile B, Maples J, & Campbell WK (2011). Grandiose and vulnerable narcissism: A nomological network analysis. *Journal of Personality*, 79, 1013–1042. [PubMed: 21204843]
- Miller JD, Lynam DR, & Campbell WK (2016). Measures of narcissism and their relations to DSM-5 pathological traits: a critical reappraisal. *Assessment*, 23, 3–9. [PubMed: 24550548]
- Miller JD, Lynam DR, Hyatt CS, & Campbell WK (2017). Controversies in narcissism. *Annual Review of Clinical Psychology*, 13, 1–54.
- Miller JD, Lynam DR, McCain JL, Few LR, Crego C, Widiger TA, & Campbell WK (2015). Thinking structurally about narcissism: an examination of the five-factor narcissism inventory and its components. *Journal of Personality Disorder*, 29, 1–18.
- Miller JD, Lynam DR, McCain JL, Few LR, Crego C, Widiger TA, Campbell WK (2016). Thinking structurally: A test of the factor structure of the Five-Factor Narcissism Inventory. *Journal of Personality Disorders*, 30, 1–18. [PubMed: 25710734]
- Miller JD, McCain J, Lynam DR, Few LR, Gentile B, MacKillop J, Campbell WK (2014). A comparison of criterion validity of popular measures of narcissism and Narcissistic Personality Disorder via the use of expert ratings. *Psychological Assessment*, 26, 958–969. [PubMed: 24773036]
- Miskewicz K, Flesoon W, Arnold EM, Law MK, Mneimne M, & Furr RM (2015). A contingency-oriented approach to understanding borderline personality disorder: Situational triggers and symptoms. *Journal of personality disorders*, 29(4), 486–502. [PubMed: 26200848]
- Morf CC (2006). Personality reflected in a coherent idiosyncratic interplay of intra- and interpersonal self-regulatory processes. *Journal of Personality*, 76, 1527–1556.
- Morf C, & Rhodewalt F (2001). Unraveling the paradoxes of narcissism: A dynamic self-regulatory processing model. *Psychological Inquiry*, 12, 177–196.
- Morf CC, Schürch E, Kufner A, Siegrist P, Vater A, Back M, & Schröder-Abé M (2017). Expanding the nomological net of the Pathological Narcissism Inventory: German validation and extension in a clinical inpatient sample. *Assessment*, 24, 419–443. [PubMed: 26874362]
- Muthén LK, & Muthén BO. (1998). *Mplus User's Guide*. (Eighth Edition.). Los Angeles, CA: Muthén & Muthén.
- Paulhus DL, & Williams KM (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 36, 556–63.
- Pincus AL, Ansell EB, Pimentel CA, Cain NM, Wright AGC, & Levy KN (2009). Initial construction and validation of the Pathological Narcissism Inventory. *Psychological Assessment*, 21, 265–279.
- Pincus AL, Cain NM, & Wright AGC (2014). Narcissistic grandiosity and narcissistic vulnerability in psychotherapy. *Personality Disorders: Theory, Research, and Treatment*, 1–5.
- Pincus AL, & Lukowitsky MR, (2010). Pathological narcissism and narcissistic personality disorder. *Annual Review of Clinical Psychology*, 6, 421–446.

- Raskin R, & Terry H (1988). A principal-components analysis of the Narcissistic Personality Inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology*, 54(5), 890–902. [PubMed: 3379585]
- Rhodewalt F, Madrian JC, & Cheney S (1998). Narcissism, self-knowledge organization, and emotional reactivity: The effect of daily experiences on self-esteem and affect. *Personality and Social Psychology Bulletin*, 24(1), 75–87.
- Rhodewalt F, & Morf CC (1995). Self and interpersonal correlates of the Narcissistic Personality Inventory: A review and new findings. *Journal of Research in Personality*, 29, 1–23.
- Rhodewalt F, & Morf CC (1998). On self-aggrandizement and anger: A temporal analysis of narcissism and affective reactions to success and failure. *Journal of Personality and Social Psychology*, 74, 672–685. [PubMed: 9523411]
- Ronningstam E (2005). Narcissistic personality disorder: A review. In Maj M, Akiskal HS, Mezzich JE, & Okasha A (Eds.), *Personality disorders* (pp.277–327). New York, NY: Wiley.
- Rosenthal SA, Hooley JM, Montoya RM, van der Linden SL, & Steshenko Y (2020). The Narcissistic Grandiosity Scale: A measure to distinguish narcissistic grandiosity from self-esteem. *Assessment*, 27 (3), 487–507. [PubMed: 31267782]
- Rosenthal SA, Hooley JM, Steshenko Y (2007). Distinguishing grandiosity from self-esteem: Development of the Narcissistic Grandiosity Scale. Unpublished Manuscript.
- Ringwald WR, Hallquist MN, Dombrowski AY, & Wright AGC (2020). Transdiagnostic predictors of interpersonal and affective variability in borderline personality pathology. Manuscript submitted for publication. <https://psvarxiv.com/sh7cz/>
- Ronningstam EF (2009). Narcissistic personality disorder: facing DSM-V. *Psychiatry Ann*, 39, 111–21.
- Ronningstam E (2011). Narcissistic personality disorder: A clinical perspective. *Journal of Psychiatric Practice*, 17, 89–99. [PubMed: 21430487]
- Rosenberg M (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosenthal SA, Hooley JM, Steshenko Y (2007). Distinguishing grandiosity from self-esteem: Development of the Narcissistic Grandiosity Scale. Unpublished Manuscript.
- Russell JJ, Moskowitz DS, Zuroff DC, Sookman D, & Paris J (2007). Stability and variability of affective experience and interpersonal behavior in borderline personality disorder. *Journal of abnormal psychology*, 116(3), 578–588. [PubMed: 17696713]
- Schoenleber M, Roche MJ, Wetzel E, Pincus AL, & Roberts BW (2015). Development of a brief version of the Pathological Narcissism Inventory. *Psychological Assessment*, 27(4), 1520–1526. [PubMed: 26011478]
- Taylor LR (1961). Aggregation, variance and the mean. *Nature*, 189, 732–735.
- Thomas KM, Wright AGC, Lukowitsky MR, Donnellan MB, Hopwood CJ (2012). Evidence for the criterion validity and clinical utility of the Pathological Narcissism Inventory. *Assessment*, 19, 135–45. [PubMed: 22315481]
- Trull TJ, Solhan MB, Tragesser SL, Jahng S, Wood PK, Piasecki TM, & Watson D (2008). Affective instability: measuring a core feature of borderline personality disorder with ecological momentary assessment. *Journal of abnormal psychology*, 117(3), 647–661. [PubMed: 18729616]
- Wang L, Hamaker E, & Bergeman CS (2012). Investigating Inter-Individual Differences in Short-Term Intra-Individual Variability. *Psychological Methods*, 17(4), 567–581. [PubMed: 22924600]
- Wendt LP, Wright AGC, Pilkonis PA, Woods WC, Denissen JJA, Kühnel A, & Zimmermann J (2019). Indicators of affect dynamics: Structure, reliability, and personality correlates. <https://psvarxiv.com/nyqst>
- Wink P (1991). Two faces of narcissism. *Journal of Personality and Social Psychology*, 61, 590–597. [PubMed: 1960651]
- Wright AGC (2011). Quantitative and qualitative distinctions in personality disorder. *Journal of Personality Assessment*, 93(4), 370–379. [PubMed: 22804676]
- Wright AGC (2014). Integrating trait and process based conceptualizations of pathological narcissism in the DSM-5 era. In Besser A (Ed.), *Handbook of psychology of narcissism: Diverse perspectives* (pp.153–174). Hauppauge, NY: Nova Science Publishers.

- Wright AGC (2016). On the Measure and Mismeasure of Narcissism: A Response to “Measures of narcissism and their relations to *DSM-5* pathological traits: A critical re-appraisal. *Assessment*, 23, 10–17. [PubMed: 26253571]
- Wright AGC, & Edershile EA (2018). Issues resolved and unresolved in pathological narcissism. *Current Opinion in Psychology*, 21, 74–79. [PubMed: 29059578]
- Wright AGC, & Kaurin A (2020). Integrating structure and function in conceptualizing and assessing pathological traits. *Psychopathology*. 10.1159/000507590
- Wright AGC, Lukowitsky MR, Pincus AL, & Conroy DE (2010). The higher order factor structure and gender invariance of the Pathological Narcissism Inventory. *Assessment*, 17, 467–483. [PubMed: 20634422]
- Wright AGC, Pincus AL, Thomas KM, Hopwood CJ, Markon KE, & Krueger RF (2013). Conceptions of narcissism and the DSM-5 pathological traits. *Assessment*, 20, 339–352. [PubMed: 23610234]
- Wright AGC & Simms LJ (2016). Stability and fluctuation of Personality Disorder features in daily life. *Journal of Abnormal Psychology*, 125, 641–656. [PubMed: 27196437]

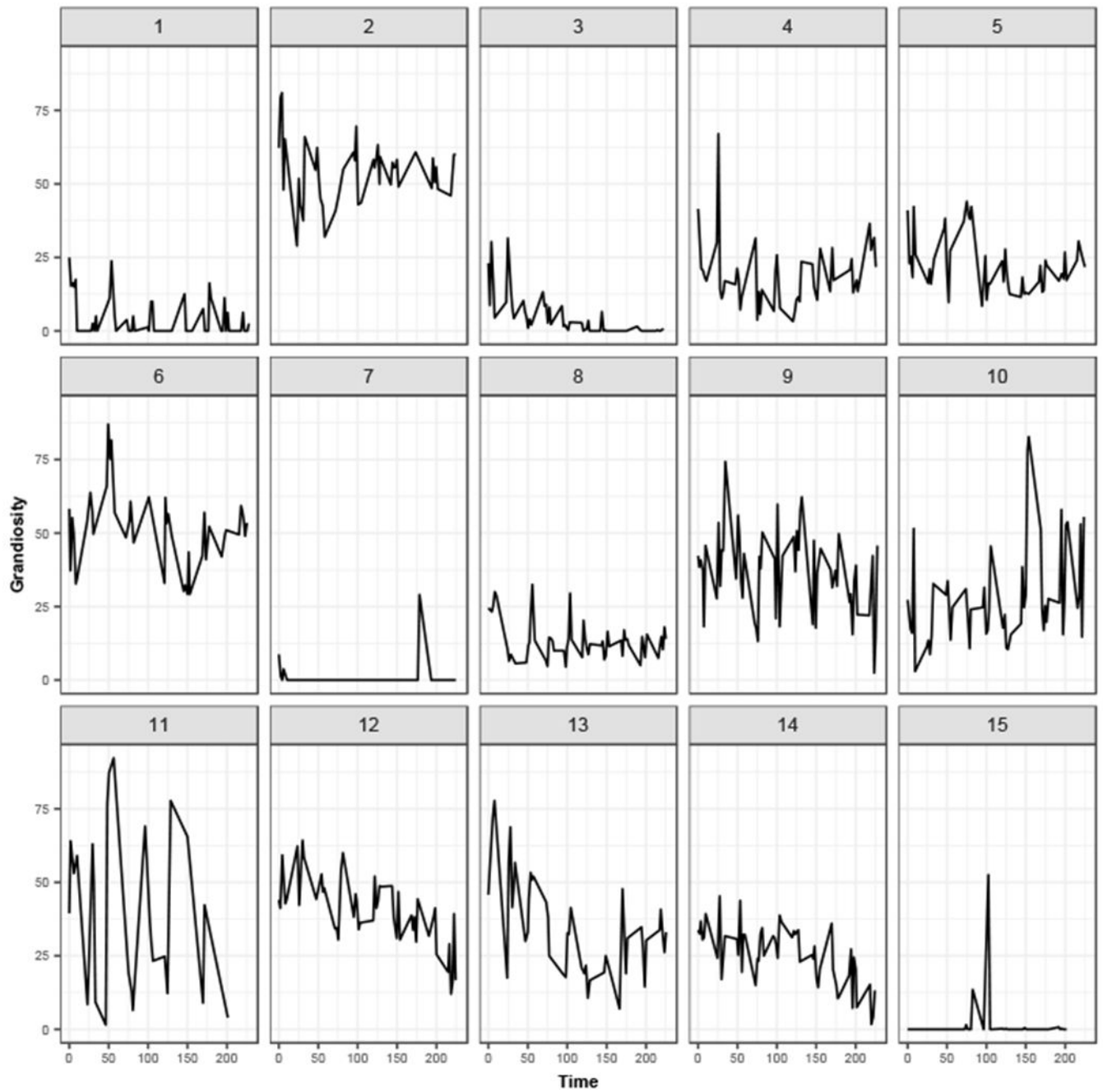


Figure 1. Individual Variability of Momentary Grandiosity

Note. Subset of S3 demonstrating individual variability of momentary grandiosity across time.

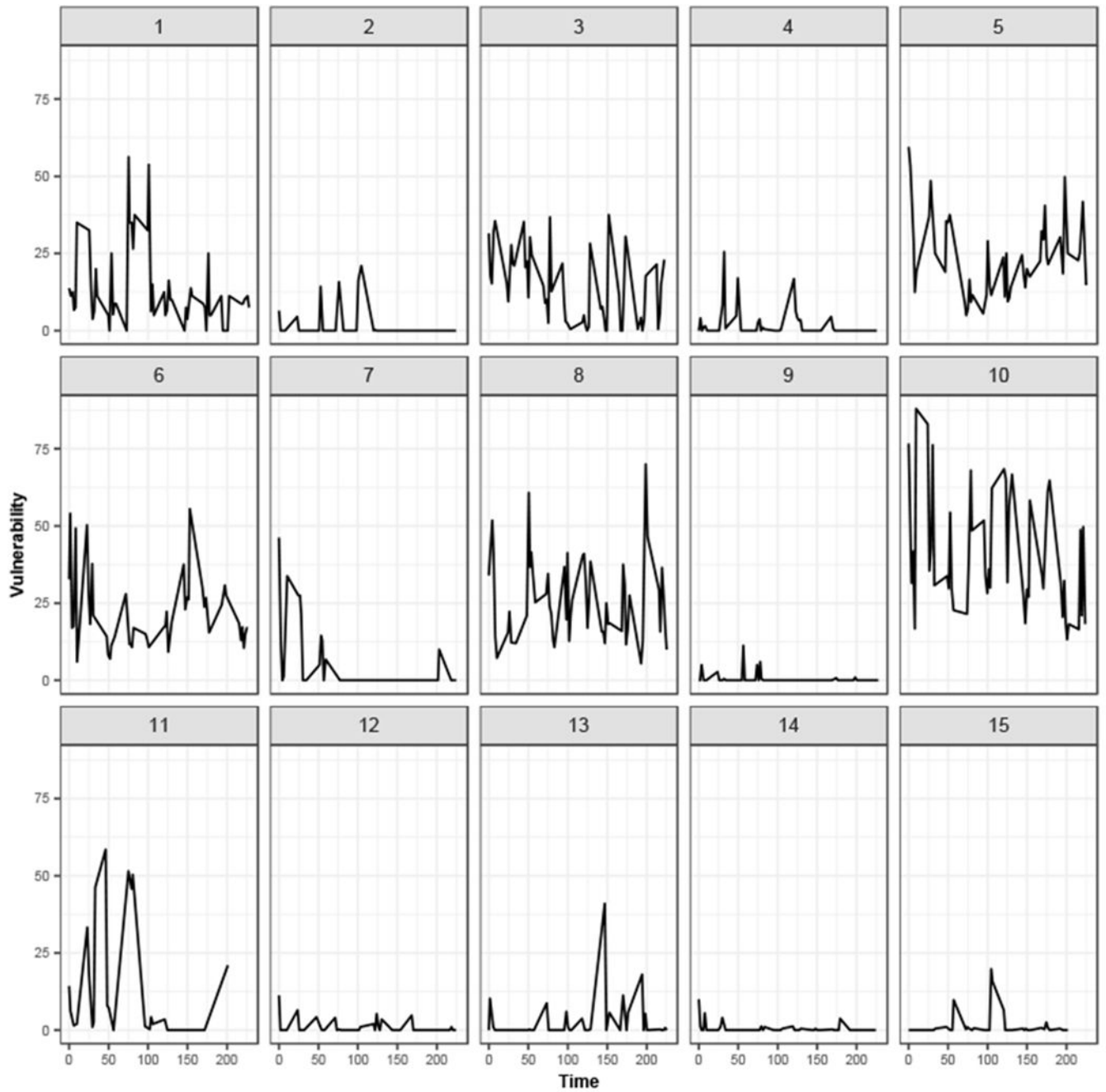


Figure 2. Individual Variability of Momentary Vulnerability

Note. Subset of S3 demonstrating individual variability of momentary vulnerability across time.

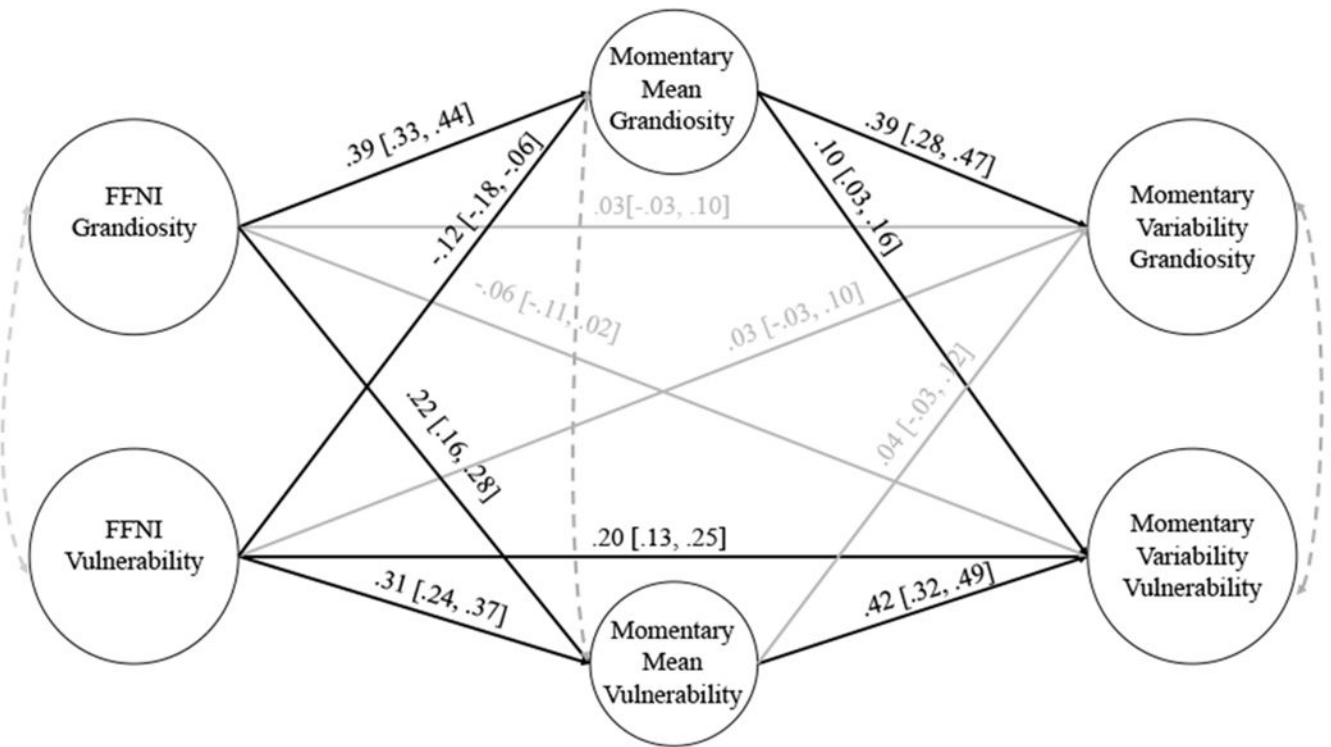


Figure 3. Between-person path model using dispositional narcissism and mean level as predictors for average level variability across grandiosity and vulnerability.

Note. Mega-analytic results $N=862$. Bolded values are those in which the credibility interval did not contain zero. Mean grandiosity and mean vulnerability were correlated at $.26$ $[.19, .31]$, variability of grandiosity and variability of vulnerability were correlated at $.35$ $[.21, .42]$. FFNI grandiosity and FFNI vulnerability are correlated at $.09$ $[.03, .16]$. FFNI = Five Factor Narcissism Inventory.

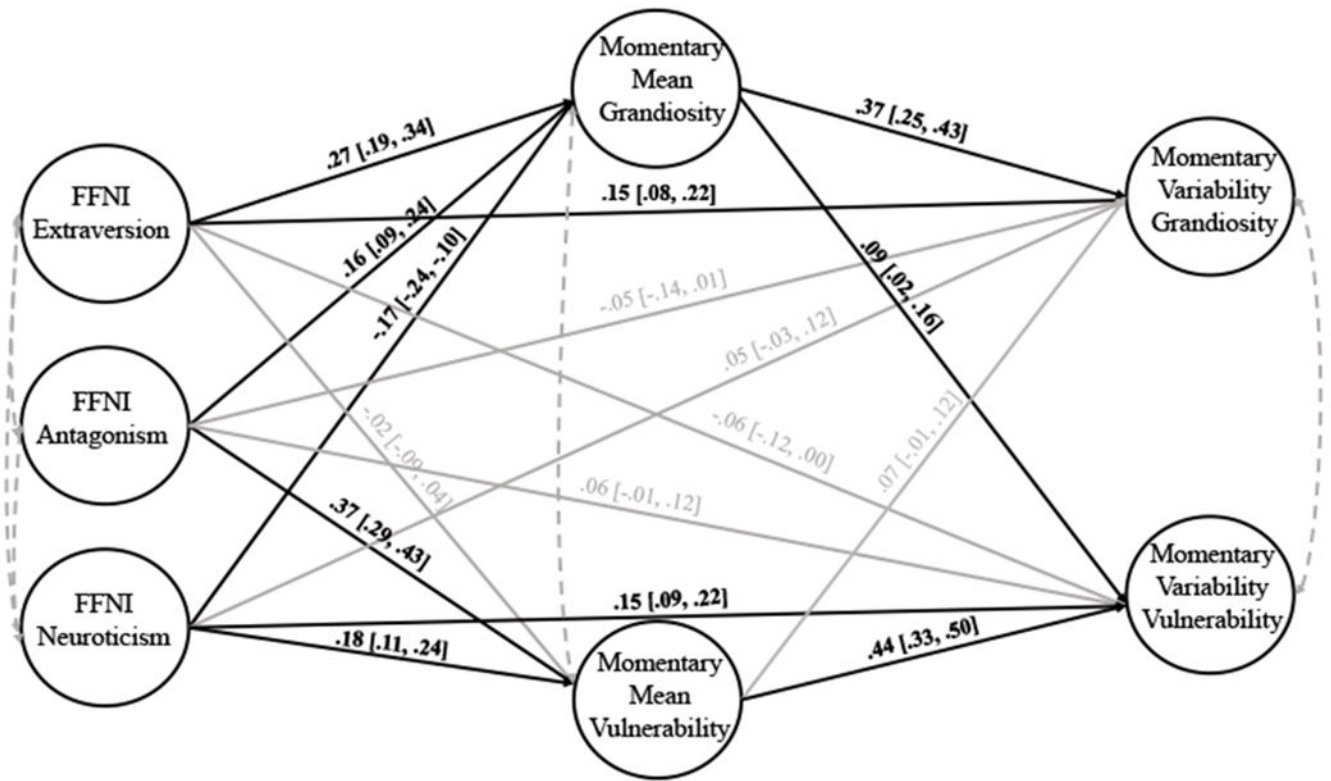


Figure 4. Between-person path model using dispositional narcissism and mean level as predictors for average level variability across grandiosity and vulnerability.

Note. $N = 862$. Bolded values are those in which the credibility interval did not contain zero.

Mean grandiosity and mean vulnerability were correlated at .25 [.19, .32], variability of grandiosity and variability of vulnerability were correlated at .36 [.20, .42]. FFNI extraversion and FFNI neuroticism were correlated at $-.09$ $[-.15, -.03]$. FFNI extraversion with FFNI antagonism .42 [.36, .46]. FFNI Antagonism and FFNI Neuroticism were correlated at $-.03$ $[-.10, .04]$. FFNI = Five Factor Narcissism Inventory.

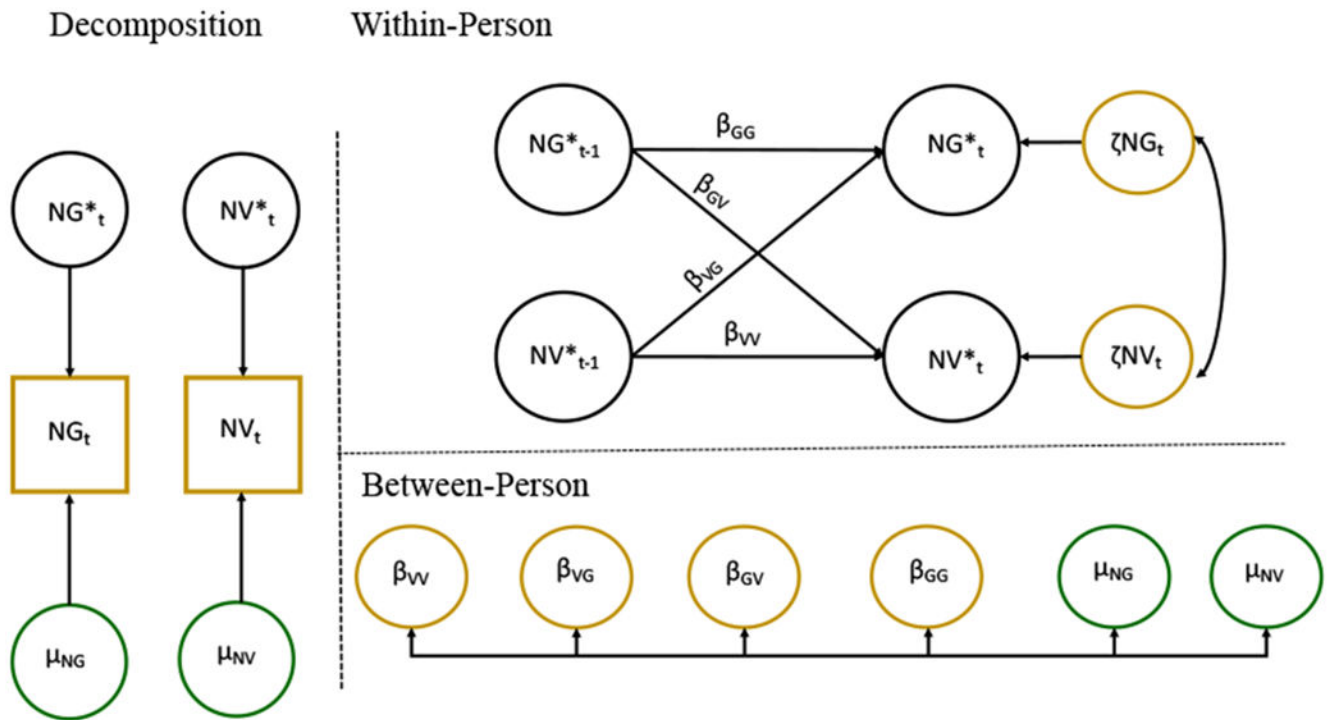


Figure 5. Proposed model of inertia at the between and within person level

Note. NG = Narcissistic Grandiosity; NV = Narcissistic Vulnerability. The left panel shows the decomposition of observed variables (rectangles) into their latent within-person (top circles) and between-person (bottom circles) components.

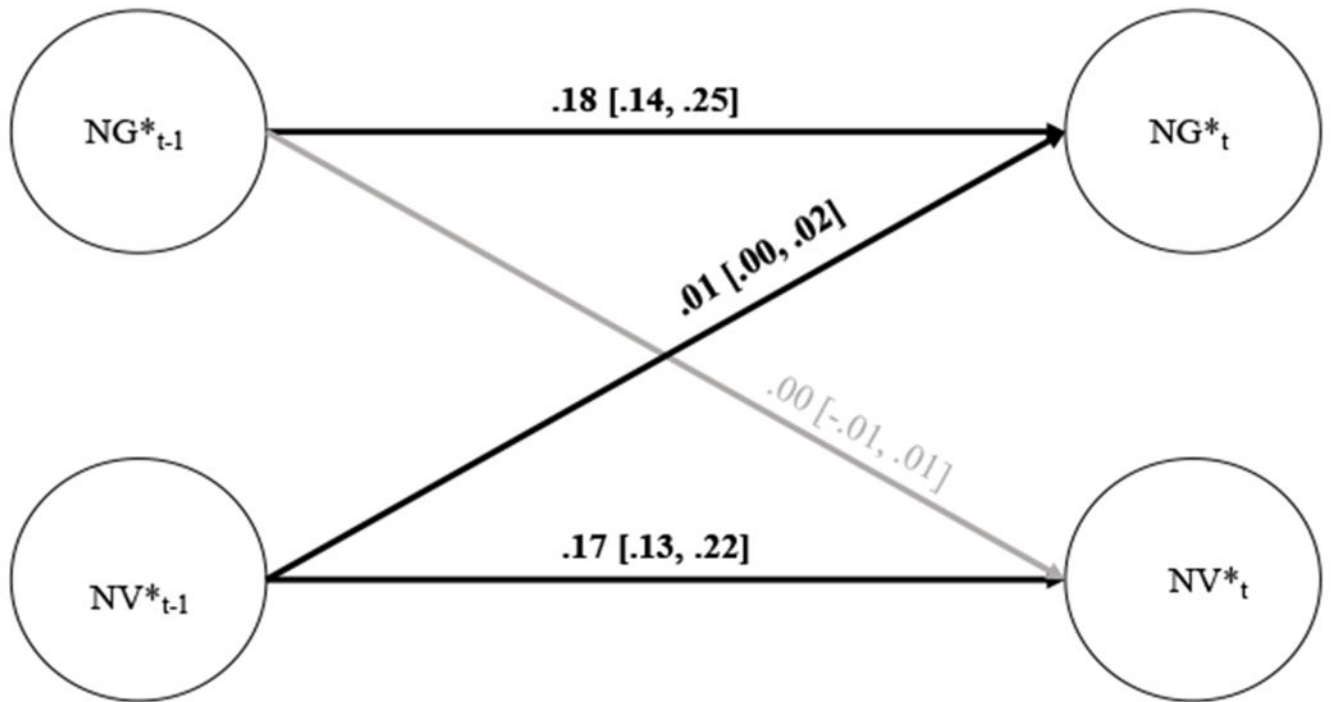


Figure 6. Within-person results of inertia

Note. $N=862$. NG= Narcissistic Grandiosity; NV= Narcissistic Vulnerability.

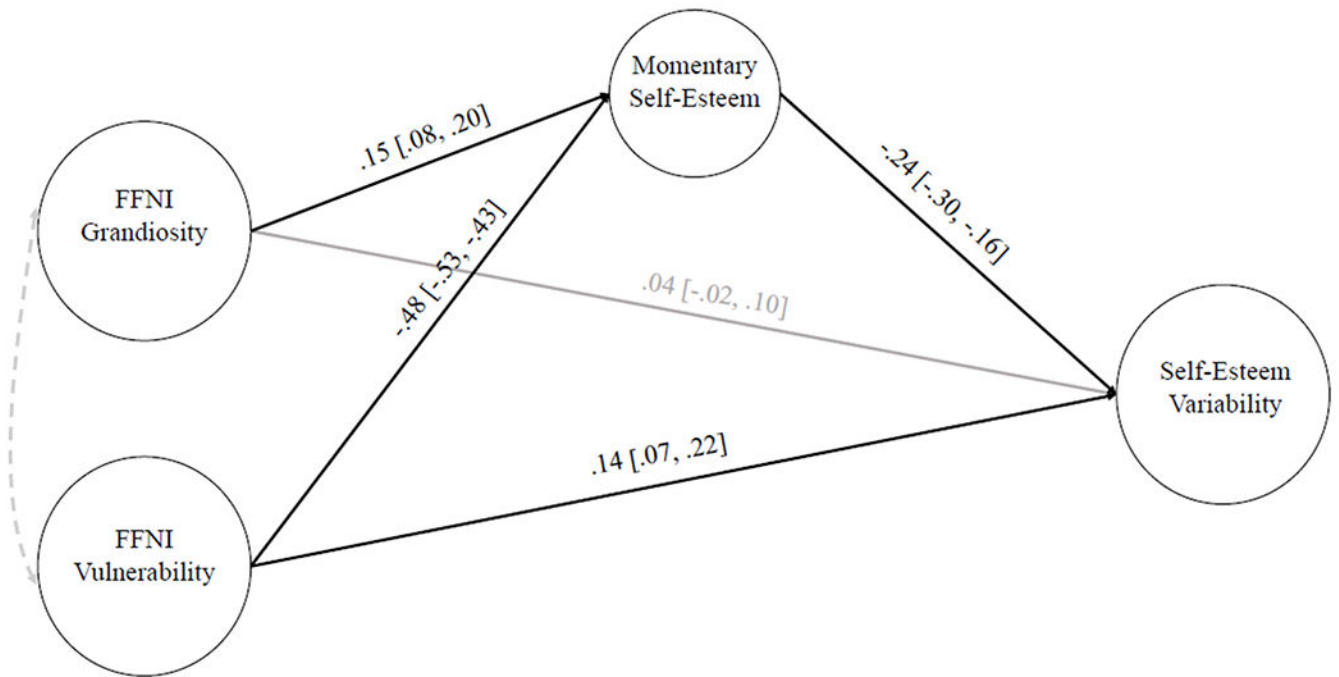


Figure 7. Mega-Analytic Findings for fluctuations between baseline narcissism and momentary self-esteem

Note. $N = 862$. FFNI = Five-Factor Narcissism Inventory. FFNI grandiosity and FFNI vulnerability are correlated at $.09 [.04, .16]$.

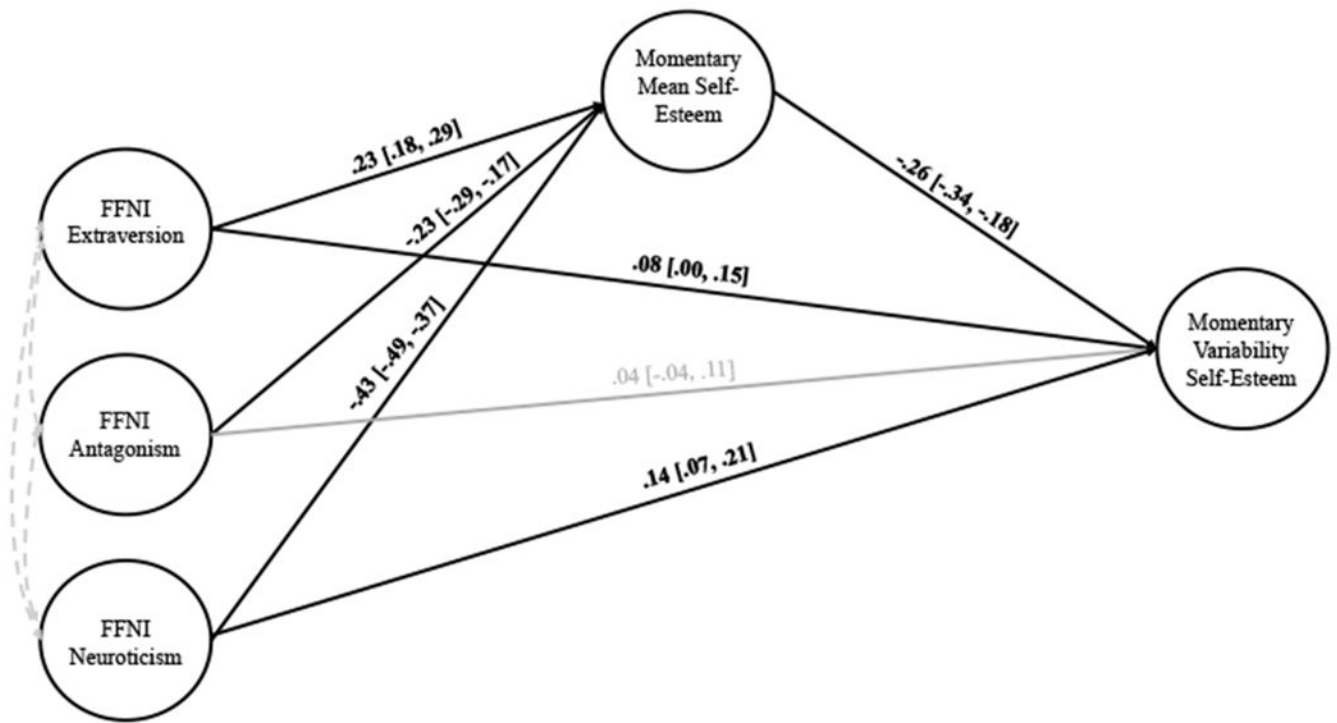
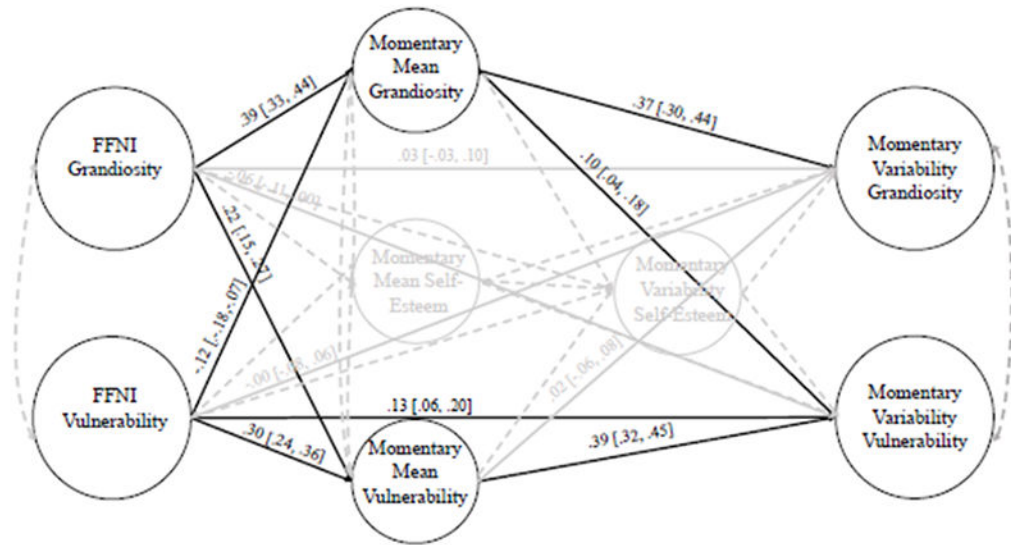


Figure 8. Mega-Analytic Findings for fluctuations between baseline narcissism (three-factor structure) and momentary self-esteem.

Note. $N = 862$. FFNI extraversion with FFNI antagonism $.42$ [.36, .47]. FFNI antagonism and FFNI neuroticism were correlated at $-.03$ [-.10, .03]. FFNI extraversion and FFNI neuroticism were correlated at $-.10$ [-.16, -.03]. FFNI = Five Factor Narcissism Inventory.

Panel 1.



Panel 2.

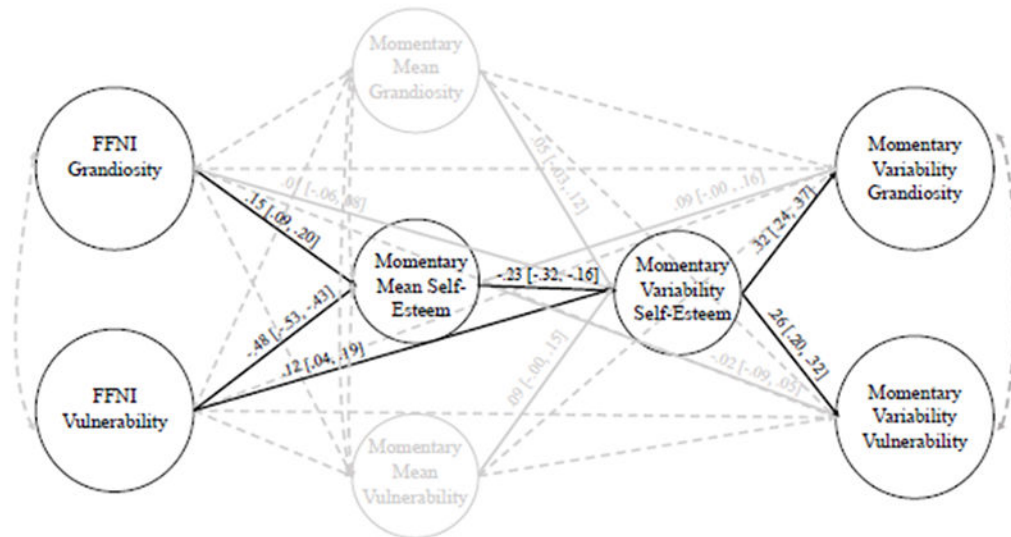


Figure 9. Mega-Analytic Findings for fluctuations between baseline narcissism (two-factor structure) and momentary variability in narcissism.

Note. $N = 862$. Panel 1 shows associations between the narcissism variables (solid lines) controlling for self-esteem (dotted lines). Panel 2 shows associations between narcissism and self-esteem variables (solid lines). Both Panel 1 and Panel 2 are from the same model but portions are greyed out for presentation. Variability in grandiosity and variability in vulnerability are correlated at .30 [.22, .36]. Momentary self-esteem and momentary grandiosity are correlated at .30 [.24, .36]. Momentary self-esteem and momentary vulnerability are correlated at $-.23 [-.29, -.17]$. Momentary grandiosity and momentary

vulnerability are correlated at .26 [.19, .32]. FFNI grandiosity and FFNI vulnerability are correlated at .10 [.03, .16]. FFNI = Five Factor Narcissism Inventory.

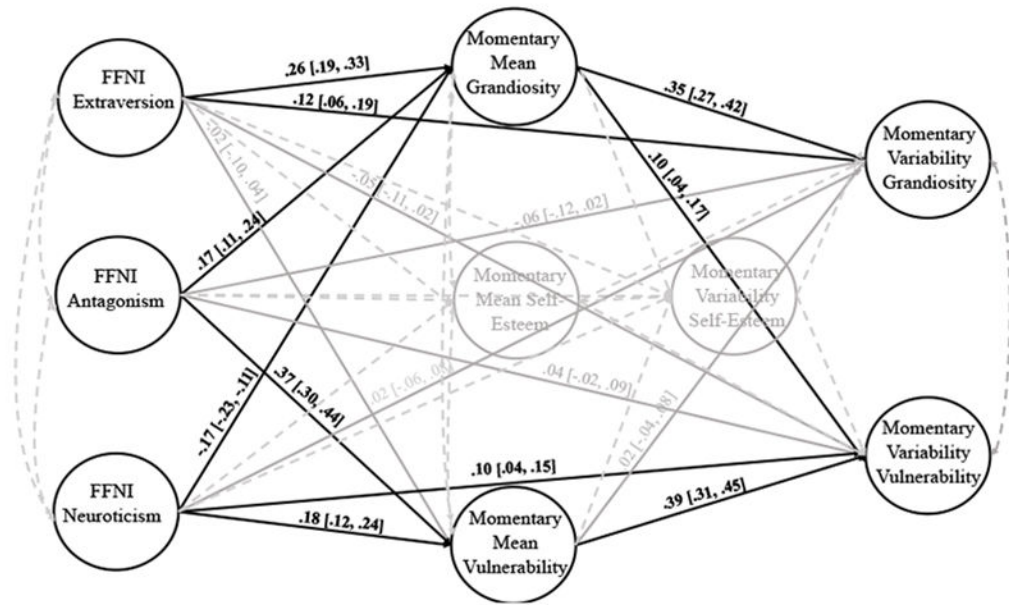
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Panel 1.



Panel 2.

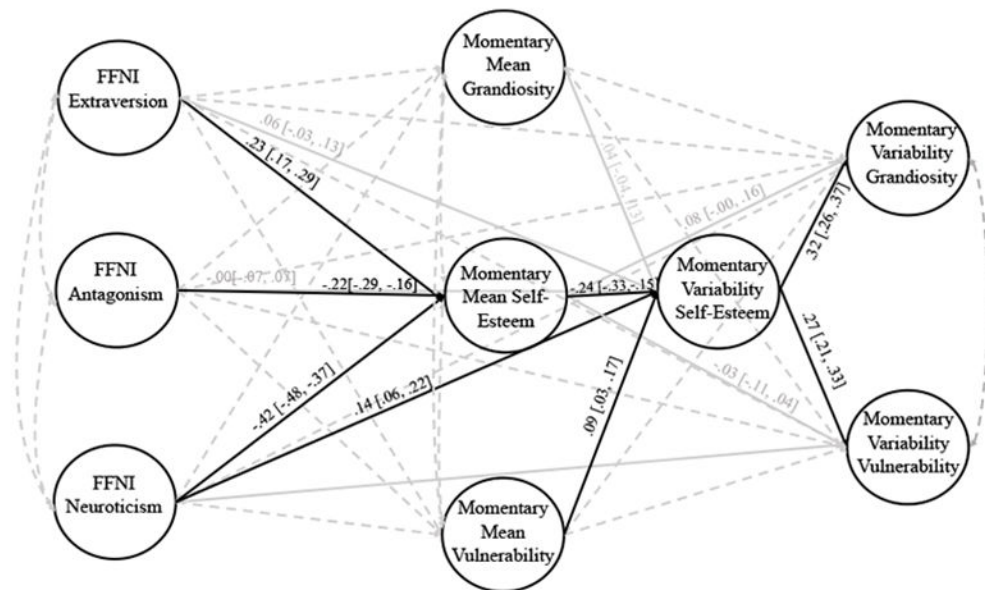


Figure 10. Mega-Analytic Findings for fluctuations between baseline narcissism (three-factor structure) and momentary variability in narcissism

N = 862. Mega-Analytic Findings for fluctuations between baseline narcissism (three-factor structure) and momentary variability in narcissism. Panel 1 shows associations between the narcissism variables (solid lines) controlling for self-esteem (dotted lines). Panel 2 shows associations between narcissism and self-esteem variables (solid lines). Both Panel 1 and Panel 2 are from the same model but portions are greyed out for presentation. Variability in grandiosity and variability in vulnerability are correlated at .30[.21, .36]. Momentary self-esteem and momentary grandiosity are correlated at .29[.21, .36]. Momentary self-esteem

and momentary vulnerability are correlated at $-.23[-.30, -.16]$. Momentary grandiosity and momentary vulnerability are correlated at $.26[.20, .32]$. FFNI extraversion with FFNI antagonism were correlated at $.42 [.36, .47]$. FFNI Antagonism and FFNI Neuroticism were correlated at $-.03 [-.10, .04]$. FFNI extraversion with FFNI neuroticism were correlated at $-.10[-.17, -.03]$. FFNI = Five Factor Narcissism Inventory.

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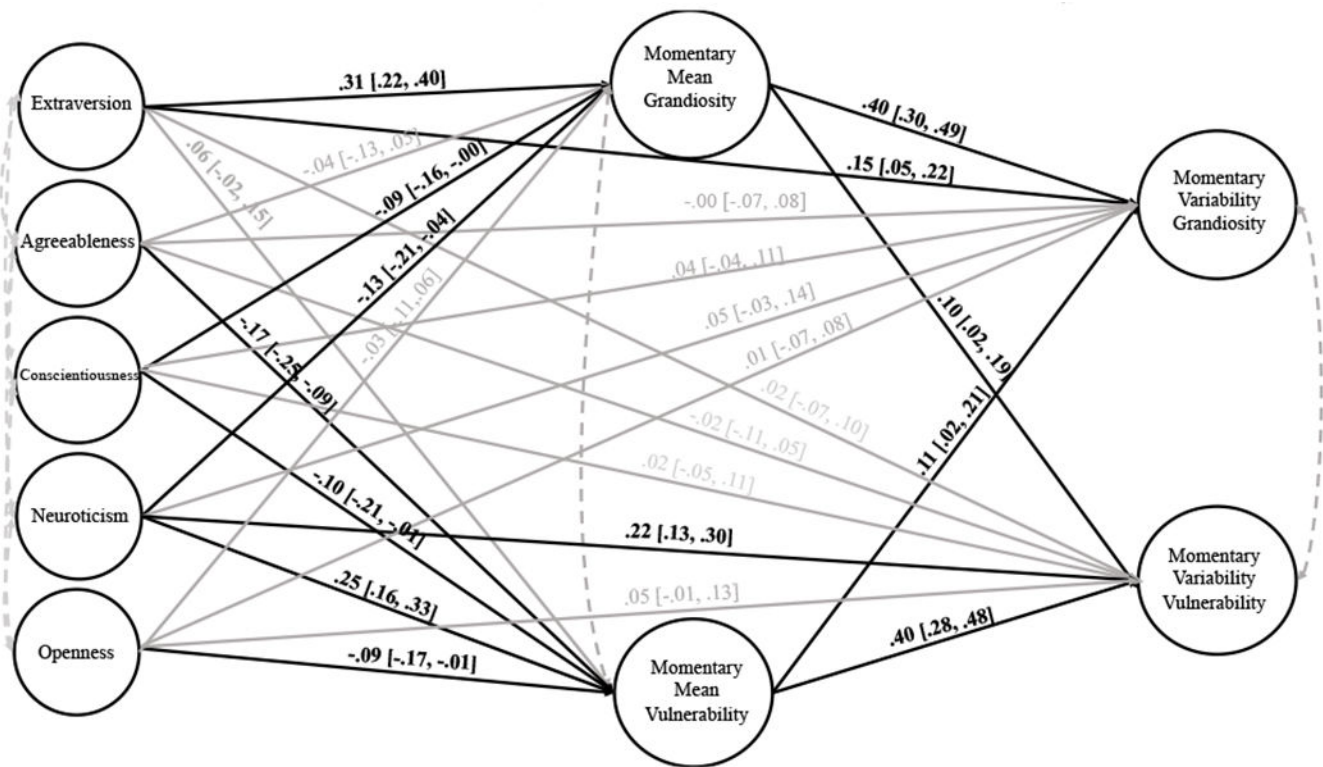
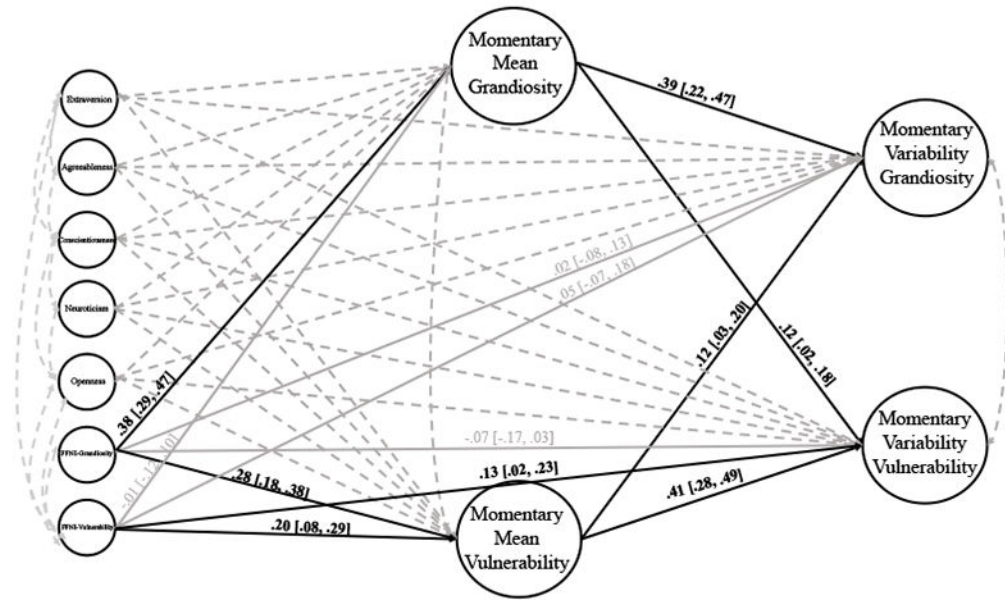


Figure 11. Mega-Analytic Findings for fluctuations between baseline Big-5 and fluctuations in narcissism

Note. $N = 548$. Momentary grandiosity and momentary vulnerability are correlated at .36 [.28, .43]. Variability in grandiosity and variability in vulnerability are correlated at .35 [.23, .44]. Extraversion and agreeableness were correlated at .08 [.00, .16], Extraversion and conscientiousness were correlated at .25 [.17, .32], Extraversion and neuroticism were correlated at $-.28$ [$-.36$, $-.20$], Extraversion and openness were correlated at .21 [.12, .29], Agreeableness and conscientiousness were correlated at .27 [.19, .36], Agreeableness and neuroticism were correlated at $-.26$ [$-.33$, $-.18$], Agreeableness and openness were correlated .17 [.09, .25], Conscientiousness and neuroticism were correlated at $-.29$ [$-.37$, $-.19$], Conscientiousness and openness were correlated at .08 [.00, .16], Neuroticism and openness were correlated at $-.03$ [$-.10$, .06].

Panel 1.



Panel 2.

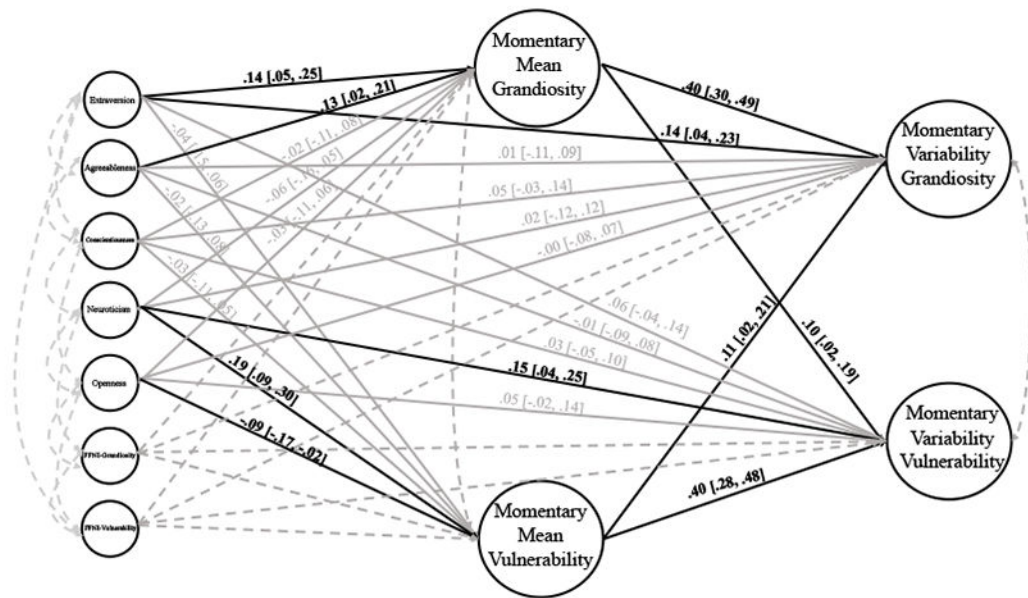
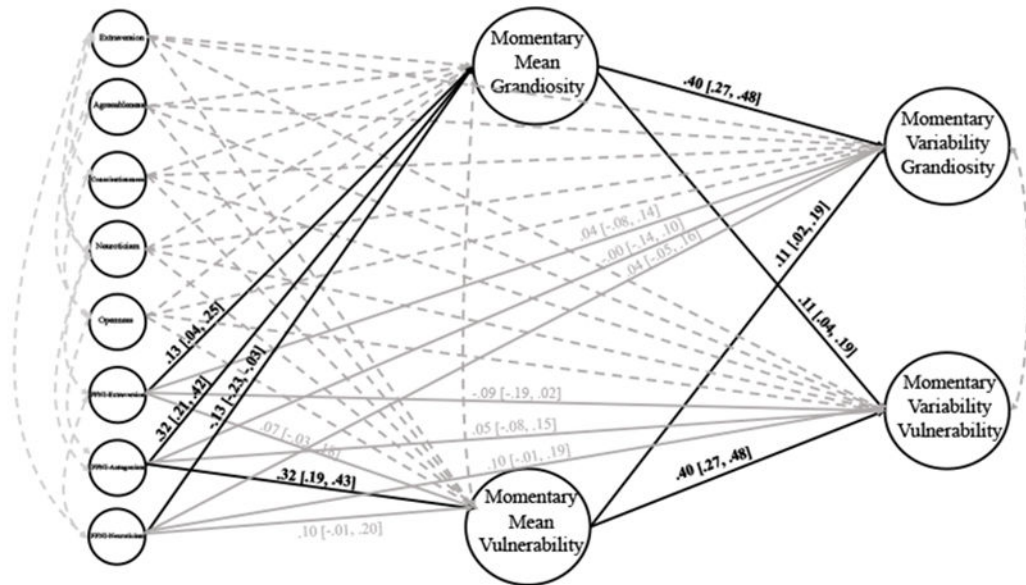


Figure 12. Mega-Analytic Findings for fluctuations between baseline narcissism (two-factor structure), Big-5, and momentary variability in narcissism.

Note. $N = 548$. Panel 1 shows associations between the narcissism variables (solid lines) controlling for Big-5 (dotted lines). Panel 2 shows associations between Big-5 and variability in narcissism (solid lines). Both Panel 1 and Panel 2 are from the same model but portions are greyed out for presentation. Variability in grandiosity and variability in vulnerability are correlated at $.37$ [.22, .47]. Momentary grandiosity and momentary vulnerability are correlated at $.31$ [.22, .38]. Extraversion and agreeableness were correlated at $.08$ [-.01, .17], Extraversion and conscientiousness were correlated at $.25$ [.17, .33],

Extraversion and neuroticism were correlated at $-.28$ [$-.36, -.21$], Extraversion and openness were correlated at $.21$ [$.14, .29$], Agreeableness and conscientiousness were correlated at $.28$ [$.19, .36$], Agreeableness and neuroticism were correlated at $-.26$ [$-.34, -.19$], Agreeableness and openness were correlated $.17$ [$.09, .24$], Conscientiousness and neuroticism were correlated at $-.29$ [$-.37, -.22$], Conscientiousness and openness were correlated at $.09$ [$.01, .18$], Neuroticism and openness were correlated at $-.04$ [$-.11, .05$]. FFNI Grandiosity and extraversion were correlated at $.42$ [$.35, .49$]. FFNI Grandiosity and agreeableness were correlated at $-.39$ [$-.45, -.32$]. FFNI Grandiosity and conscientiousness were correlated at $-.16$ [$-.24, -.09$]. FFNI Grandiosity and neuroticism were correlated at $-.15$ [$-.22, -.07$]. FFNI Grandiosity and openness were correlated at $.01$ [$-.08, .08$]. FFNI Vulnerability and extraversion were correlated at $-.28$ [$-.37, -.19$]. FFNI Vulnerability and agreeableness were correlated at $-.41$ [$-.48, -.34$]. FFNI Vulnerability and conscientiousness were correlated at $-.31$ [$-.39, -.24$]. FFNI Vulnerability and neuroticism were correlated at $.69$ [$.63, .73$]. FFNI Vulnerability and openness were correlated at $-.08$ [$-.17, .01$]. FFNI Vulnerability and FFNI Grandiosity were correlated at $.07$ [$-.02, .15$]. FFNI = Five Factor Narcissism Inventory.

Panel 1.



Panel 2.

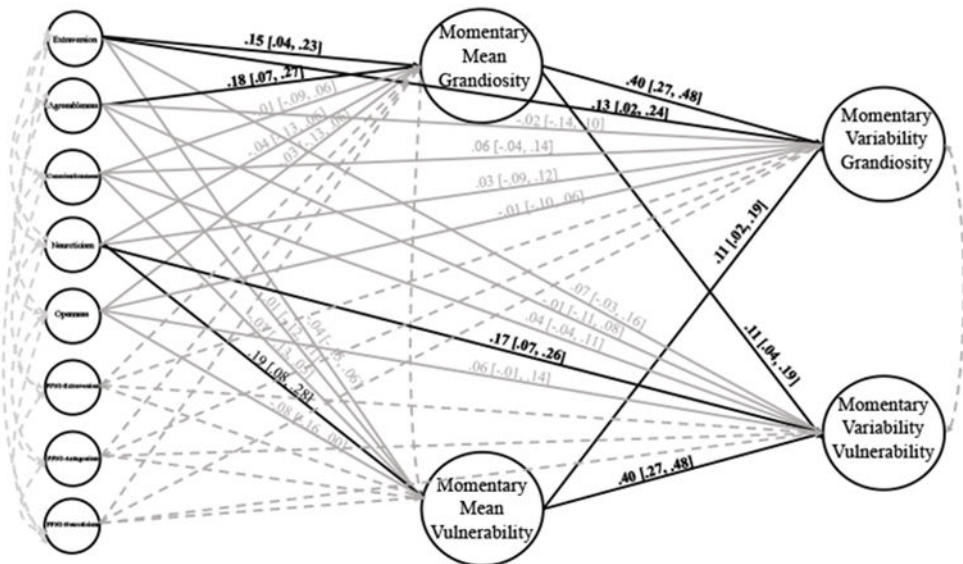


Figure 13. Mega-Analytic Findings for fluctuations between baseline narcissism (three-factor structure), Big-5, and momentary variability in narcissism.

Note. $N = 548$. Panel 1 shows associations between the narcissism variables (solid lines) controlling for Big-5 (dotted lines). Panel 2 shows associations between Big-5 and variability in narcissism (solid lines). Both Panel 1 and Panel 2 are from the same model but portions are greyed out for presentation. Variability in grandiosity and variability in vulnerability are correlated at $.36[.24, .44]$. Momentary grandiosity and momentary vulnerability are correlated at $.31[.23, .37]$. Extraversion and agreeableness were correlated at $.09[.01, .17]$, Extraversion and conscientiousness were correlated at $.25[.17, .33]$,

Extraversion and neuroticism were correlated at $-.28$ [$-.38, -.20$], Extraversion and openness were correlated at $.21$ [$.13, .30$], Agreeableness and conscientiousness were correlated at $.27$ [$.20, .35$], Agreeableness and neuroticism were correlated at $-.26$ [$-.34, -.17$], Agreeableness and openness were correlated $.17$ [$.08, .26$], Conscientiousness and neuroticism were correlated at $-.29$ [$-.38, -.22$], Conscientiousness and openness were correlated at $.09$ [$-.01, .17$], Neuroticism and openness were correlated at $-.03$ [$-.12, .05$]. FFNI Antagonism and extraversion were correlated at $.12$ [$.03, .20$]. FFNI Antagonism and agreeableness were correlated at $-.63$ [$-.68, -.58$]. FFNI Antagonism and conscientiousness were correlated at $-.31$ [$-.38, -.23$]. FFNI Antagonism and neuroticism were correlated at $.15$ [$.03, .23$]. FFNI Antagonism and openness were correlated at $-.13$ [$-.21, -.04$]. FFNI Antagonism and FFNI Extraversion were correlated at $.42$ [$.35, .48$]. FFNI Antagonism and FFNI Neuroticism were correlated at $-.01$ [$-.10, .06$]. FFNI Extraversion and extraversion were correlated at $.60$ [$.54, .65$]. FFNI Extraversion and agreeableness were correlated at $-.08$ [$-.15, .02$]. FFNI Extraversion and conscientiousness were correlated $.05$ [$-.04, .13$]. FFNI Extraversion and neuroticism were correlated at $-.14$ [$-.23, -.05$]. FFNI Extraversion and openness were correlated at $.18$ [$.09, .26$]. FFNI Extraversion and FFNI Neuroticism were correlated at $-.12$ [$-.19, -.03$]. FFNI Neuroticism and extraversion were correlated at $-.31$ [$-.38, -.23$]. FFNI Neuroticism and agreeableness were correlated at $-.07$ [$-.15, .01$]. FFNI Neuroticism and conscientiousness were correlated at $-.20$ [$-.28, -.13$]. FFNI Neuroticism and neuroticism were correlated at $.67$ [$.62, .71$]. FFNI Neuroticism and openness were correlated at $-.01$ [$-.10, .06$]. FFNI = Five Factor Narcissism Inventory.

Table 1

analytic between-person correlations among all variables for which Gross Variability was examined.

Variable	Momentary Variables				FFNI							
	Grandiosity	Vulnerability	Self-Esteem	Two-Factor Structure	Three-Factor Structure	FFNI			Big-5 Personality			
	Momentary Mean	Momentary Mean	Momentary Mean	FFNI-G	FFNI-V	FFNI-E	FFNI-A	FFNI-N	Openness	Conscientiousness	Extraversion	Agreeableness
Momentary Mean												
Grandiosity	.41 [.32, .46]											
Vulnerability	.17 [.09, .23]											
Self-Esteem	.18 [.12, .24]	.51 [.40, .56]										
Two-Factor Structure	.34 [.27, .39]	-.30 [-.36, -.24]										
Three-Factor Structure	-.01 [-.08, .05]	.21 [.16, .27]	-.30 [-.37, -.24]									
Openness	.19 [.11, .26]	.25 [.18, .31]	.10 [.03, .17]	.03 [-.03, .10]								
Conscientiousness	-.08 [-.15, -.01]	.33 [.26, .38]	-.48 [-.53, -.42]	.26 [.20, .31]	.10 [.04, .16]							
Extraversion	.34 [.29, .40]	.12 [.06, .18]	.18 [.12, .25]	.03 [-.04, .09]	.77 [.74, .79]	.06 [-.02, .11]						
Agreeableness	.28 [.22, .34]	.36 [.29, .41]	-.12 [-.18, -.06]	.10 [.02, .16]	.85 [.82, .86]	.44 [.38, .47]	.42 [.36, .47]					
FFNI-G												
FFNI-V												
FFNI-E												
FFNI-A												
FFNI-N												

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Variable	Momentary Variables					FFNI					Big-5 Personality				
	Grandiosity	Vulnerability	Self-Esteem	Two-Factor Structure	Three-Factor Structure	FFNI-G	FFNI-V	FFNI-E	FFNI-A	FFNI-N	Openness	Conscientiousness	Extraversion	Agreeableness	
	Momentary Mean	Momentary Mean	Momentary Mean	FFNI-G	FFNI-V	FFNI-E	FFNI-A	FFNI-N							
Openness	.02 [-.06, .12]	-.12 [-.21, -.05]	.16 [.07, .24]	.01 [-.09, .09]	-.08 [-.17, -.00]	.18 [.09, .27]	-.12 [-.21, -.04]	-.02 [-.11, .06]							
Conscientiousness	.02 [-.07, .10]	-.21 [-.29, -.13]	.30 [.22, .37]	-.16 [-.25, -.06]	-.31 [-.39, -.24]	.04 [-.03, .13]	-.31 [-.39, -.22]	-.20 [-.28, -.12]		.09 [.00, .17]					
Extraversion	.32 [.24, .39]	-.06 [-.15, .02]	.38 [.30, .45]	.42 [.35, .49]	-.28 [-.37, -.18]	.60 [.55, .65]	.12 [.04, .21]	-.32 [-.39, -.23]		.21 [.12, .29]	.25 [.17, .34]				
Agreeableness	-.01 [-.11, .09]	-.28 [-.37, -.20]	.26 [.19, .36]	-.40 [-.46, -.32]	-.42 [-.48, -.33]	-.08 [-.16, -.00]	-.63 [-.68, -.67]	-.07 [-.17, .02]		.17 [.09, .27]	.28 [.19, .36]	.08 [-.00, .16]			
Neuroticism	-.18 [-.27, -.10]	.31 [.22, .38]	-.54 [-.59, -.49]	-.15 [-.26, -.05]	.69 [.63, .73]	-.14 [-.24, -.05]	.14 [.04, .24]	.67 [.61, .71]		-.03 [-.10, .05]	-.28 [-.35, -.21]	-.28 [-.35, -.19]	-.26 [-.34, -.17]		

862. Bolded values represent those in which the credibility interval did not contain zero. FFNI-G = Five Factor Narcissism Inventory-Grandiosity; -V = Vulnerability; -E = Extraversion; -A = Agreeableness; -N = Neuroticism; FFNI-G = Five Factor Narcissism Inventory-Grandiosity; -V = Vulnerability; -E = Extraversion; -A = Agreeableness; -N = Neuroticism; FFNI-G = Five Factor Narcissism Inventory-Grandiosity; -V = Vulnerability; -E = Extraversion; -A = Agreeableness; -N = Neuroticism. The first correlation presented in text is presented here (however all values were similar). Values are drawn from a mega-analysis across Sample 1, Sample 2, and Sample 3. Estimates from associations with the Big-5 are from a mega-analysis of Sample 1 and Sample 3 (The BFI-2 was not used in Sample 2).

Table 2

Zero order correlation and regression paths of instability at the between-person level-Mega analytic results

Measure	Squared Difference			
	Grandiosity		Vulnerability	
	<i>r</i>	β	<i>r</i>	β
FFNI-G	.20 [.13, .27]	.19 [.13, .27]	.14 [.05, .20]	.11 [.04, .20]
FFNI-V	.07 [.01, .14]	.05 [-.02, .12]	.26 [.19, .34]	.25 [.19, .32]

Note. $N=862$. The squared difference variables were regressed on the FFNI. FFNI= Five Factor Narcissism Inventory; G = Grandiosity; V = Vulnerability. Bolded values are those for which the credibility interval did not contain zero. Squared Successive Differences of Grandiosity and Vulnerability were correlated at .44[.36, .49].

Table 3

Zero order and regression paths of instability at the between-person level-Mega analytic results

Measure	Squared Difference			
	Grandiosity		Vulnerability	
	<i>r</i>	β	<i>r</i>	β
FFNI-Extraversion	.19 [.10, .26]	.16 [.09, .23]	.10 [.03, .16]	.03 [-.04, .10]
FFNI-Antagonism	.17 [.09, .25]	.11 [.04, .18]	.20 [.14, .26]	.20 [.12, .28]
FFNI-Neuroticism	.01 [-.05, .09]	.03 [-.03, .10]	.17 [.11, .23]	.18 [.12, .24]

Note. $N = 862$. The squared difference variables were regressed on the FFNI. FFNI= Five Factor Narcissism Inventory. Squared Successive Differences of grandiosity and vulnerability were correlated at .43. Bolded values are those for which the credibility interval did not contain zero.

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Table 4

Mega-Analytic Results of multilevel regression results of inertia at the between person level for the FFNI Two-Factor structure

Measure	$\beta_{G \rightarrow G}$	$\beta_{V \rightarrow V}$	$\beta_{V \rightarrow G}$	$\beta_{G \rightarrow V}$
FFNI Grandiosity	-.02 [-.08, .04]	-.04 [-.10, .02]	-.03 [-.11, .05]	.00 [-.11, .10]
FFNI Vulnerability	-.06 [-.12, .01]	.16 [.09, .22]	-.05 [-.15, .03]	.05 [-.03, .14]

Note. N= 862. Bolded values are those for which the credibility interval did not contain zero. Values on the right predicted column headings. FFNI=Five Factor Narcissism Inventory.

Table 5

Mega-analytic Results of multilevel regression results of inertia at the between person level for the FFNI
Three-factor structure

Measure	$\beta_{G \rightarrow G}$	$\beta_{V \rightarrow V}$	$\beta_{V \rightarrow G}$	$\beta_{G \rightarrow V}$
FFNI Extraversion	.04 [-.03, .12]	-.04 [-.10, .03]	.03 [-.07, .13]	.04 [-.07, .15]
FFNI Neuroticism	-.06 [-.12, .01]	.12 [.06, .17]	-.05 [-.13, .04]	.06 [-.03, .15]
FFNI Antagonism	-.07 [-.15, .01]	.05 [-.01, .12]	-.08 [-.18, .03]	-.01 [-.10, .09]

Note. $N=862$. Bolded values are those for which the credibility interval did not contain zero. Values on the right predicted column headings. FFNI = Five Factor Narcissism Inventory.