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# The Effect of Pathological Narcissism on Interpersonal and Affective Processes in Social Interactions

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#### **Abstract**

Narcissism has significant interpersonal costs, yet little research has examined behavioral and affective patterns characteristic of narcissism in naturalistic settings. Here we studied the effect of narcissistic features on the dynamic processes of interpersonal behavior and affect in daily life. We used interpersonal theory to generate transactional models of social interaction (i.e., linkages among perceptions of others' behavior, affect, and one's own behavior) predicted to be characteristic of narcissism. Psychiatric outpatients (N=102) completed clinical interviews and a 21-day ecological momentary assessment protocol using smartphones. After social interactions (N=5,781), participants reported on perceptions of their interaction partner's behavior (scored along the dimensions of dominant-submissive and affiliative-quarrelsome), their own affect, and their own behavior. Multilevel structural equation modeling was used to examine dynamic links among behavior and affect across interactions, and the role of narcissism in moderating these links. Results showed that perceptions of others' dominance did not predict dominant behavior, but did predict quarrelsome behavior, and this link was potentiated by narcissism. Further, the link between others' dominance and one's own quarrelsome behavior was mediated by negative affect. Moderated mediation was also found: Narcissism amplified the link between ratings of others' dominance and one's own quarrelsomeness and negative affect. Narcissism did not moderate the link between other dominance and own dominance, nor the link between other affiliation and own affiliation. These results suggest that narcissism is associated with specific interpersonal and affective processes, such that sensitivity to others' dominance triggers antagonistic behavior in daily life.

#### Keywords

Narcissism; Narcissistic Personality Disorder; Dynamic Processes; Ambulatory As	ssessment
Event Contingent Recording; Multilevel Structural Equation Modeling	

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Narcissism is associated with significant interpersonal problems (Gurtman, 1992; Ogrodniczuk, Piper, Joyce, Steinberg, & Duggal, 2009; Pincus et al., 2009) and negative impacts on others (Campbell, Bush, Brunell, & Shelton, 2005; Campbell, Foster, & Finkel, 2002). In addition, the social processes driving narcissism's negative impacts exert cumulative effects, even spoiling early advantages (Miller, Campbell, & Pilkonis, 2007; Lavner et al., 2016; Oltmanns & Turkheimer, 2009; Paulhus, 1998). However, little systematic research has addressed the manner in which narcissism influences social situations in daily life. To date, most investigations into narcissism's interpersonal effects have relied on either retrospective self-reports (e.g., Wright et al., 2013) or laboratory experiments (e.g., Bushman & Baumesiter, 2008; Thomaes, Bushman, Stegge, & Olthof, 2008). In the current study, we examined the effect of contextualized dynamic processes associated with narcissism, using ambulatory assessment and an event contingent recording (ECR) protocol to sample the interpersonal perceptions, behaviors, and affect that characterize social interactions in daily life.

Narcissism is a complex construct whose definition is actively under debate (e.g., Wright, 2016; Miller, Lynam, & Campbell, 2016). Here we focus on pathological narcissistic features captured by the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) criteria for narcissistic personality disorder (NPD). The NPD criteria emphasize grandiose narcissistic features (Cain, Pincus, & Ansell, 2008; Miller & Campbell, 2010), but also show modest to moderate associations with distress and affective dysregulation (Miller & Campbell, 2008; Wright et al., 2013). In addition to our focus on the clinical manifestations of narcissism, we also draw from the broader literature on trait narcissism to inform our hypotheses (Miller & Campbell, 2010).

## **Contemporary Interpersonal Theory and the Interpersonal Situation**

Contemporary Integrative Interpersonal theory of personality (CIIT; Pincus & Ansell, 2013) provides an ideal framework for studying the maladaptive social processes associated with narcissism. Rooted in relational psychoanalytic theory (Sullivan, 1953), interpersonal theory emphasizes the expression of personality within the context of social relating. Specifically, interpersonal theory argues that an individual's personality is reflected in consistent dynamic patterns of perceptual, behavioral, and affective processes that arise in *interpersonal* situations (Kiesler, 1996). Observational (e.g., Leary, 1957) and psychometric research (e.g., Wiggins, 1991) established the primary dimensions of interpersonal functioning as agency (e.g., dominant vs. submissive behavior) and communion (e.g., affiliative vs. quarrelsome behavior), instantiated in the interpersonal circumplex structural model. These two dimensions organize the most salient features of interpersonal perception and behavior. An interpersonal situation can be defined succinctly as the transaction cycles of two or more individuals interacting, including the proximal behavior, mental construal of self and other, and associated affect. It follows, that personality reflects the characteristic patterning of the affective and behavioral responses made to internal (i.e., mental construal) and external (i.e., proximal behavior of others) social cues.

A useful way of conceptualizing the component parts of interpersonal situations and transaction cycles is by articulating *input—intermediary—output* chains (Fleeson &

Jayawickreme, 2015; Wright, 2014). As illustrated in the top half of Figure 1, inputs can include external or internal events, which lead to behavioral or internal state outputs, mediated by various potential intermediaries. In this process-based description of personality, dispositional traits reflect, in part, individual differences in the linkages in the chain. Moreover, the outputs of a given sequence can serve as inputs in the next iteration of the cycle. When the focus is on pathological interpersonal processes, such chains may give rise to self-fulfilling prophecies (e.g., paranoia leads to perceptions of hostility, which prompts the individual to preemptively aggress, inviting the feared hostile response) (Carson, 1982) or maladaptive transaction cycles (e.g., in borderline personality pathology, perceptions of withdrawal motivate dramatic efforts to avoid abandonment, which evoke engagement but also increase the future likelihood of dramatic behavior) (Kiesler, 1996). From the perspective of CIIT, the key inputs in an interpersonal situation include an individual's perceptions of the partner's behaviors, important intermediaries include evoked affects, and outputs include the individual's own behavior (Hopwood, Pincus, & Wright, in press).

Segmenting the flow of lived experience into any specific sequence of thoughts, feelings, and behaviors is a useful abstraction for the study of dynamic processes in psychopathology. For example, Miskewicz and colleagues (2015) adopted a contingency-oriented approach to studying momentary borderline PD symptoms, finding that (a) stressors were strong predictors of momentary fluctuations in symptoms, and (b) this link was potentiated by borderline diagnostic status. This approach has also been applied to study patterns in the interpersonal situation. For instance, Sadikaj, Moskowitz, Russell, Zuroff, and Paris (2013) examined perceptions of others' quarrelsome behavior (input) as predictors of one's own quarrelsome behavior (output), with mediation by negative affect (NA; intermediary). They found all paths to be significant, with some moderated by borderline PD diagnostic status. Specifically, individuals with a borderline diagnosis, relative to controls, were more likely to respond to perceptions of quarrelsomeness with NA. However, behaving in a quarrelsome way when experiencing NA appeared to be a general process not specific to individuals diagnosed with borderline PD. These findings accord with theoretical models of borderline PD that emphasize sensitivity to withdrawal or disaffiliation from others. They also demonstrate how positive feedback loops might occur, such that perceived coldness/ quarrelsomeness sparks additional cold/quarrelsome behavior on the partner's behalf, escalating the maladaptive transaction cycle. Others have investigated similar interpersonal processes in borderline PD that can be interpreted in this framework (e.g., Berenson, Downey, Rafaeli, Coifman, & Paquin, 2011; Coifman, Berenson, Rafaeli, & Downey, 2012; Scott et al., in press). Taken together, these studies provide strong evidence that affective dysregulation and interpersonal hostility in borderline PD reflect contextualized dynamic processes, and they have important implications for potential maintenance mechanisms and points of intervention.

To date, only a single study has adopted a similar approach with narcissism (Roche et al., 2013). The authors found some evidence that the link between individuals' perceptions of others' behaviors and their own dominance was moderated by narcissistic features. However, this effect was modest and emerged only in the context of a four-way interaction. The authors suggested a number of potential methodological limitations (e.g., use of paper

diaries that lacked time-stamps, sampling effects) that may have dampened their results. Additionally, this study did not include momentary assessment of affects, precluding an examination of the full CIIT model. Therefore, additional research is needed to examine the processes of the interpersonal situation relevant to narcissism.

## **Narcissism in the Interpersonal Situation**

Theoretical models of narcissism emphasize the importance of agentic motivations for those high in narcissistic features (e.g., Brown, Budzek & Tamborski, 2009; Johnson, Leedom, & Muhtadie, 2012; Morf, Horvath, & Torchetti, 2011; Ronningstam, 2009; Sedikides & Gregg, 2001). Consistent with this, individuals high in narcissistic grandiosity rate themselves as dispositionally assertive (Samuel & Widiger, 2008) and even domineering (Pincus & Wiggins, 1990). Narcissistic grandiosity is also associated with dispositional ratings of antagonism (e.g., Samuel & Widiger, 2008; Wright et al., 2013), suggesting it is predictive of interpersonal hostility. However, some have argued that hostility, as it relates to narcissism, is reactive or self-regulatory (Ronningstam, 2009; Morf et al., 2011), and a large body of research has investigated "provoked" hostility in narcissism (see e.g., Rassmusen, 2016 for a meta-analytic review). Methods used include experimental designs in the laboratory, retrospective reports, and responses to hypothetical scenarios. The type of provocation used has largely been criticism-based, although social rejection has been used as well. Hostility or aggression is operationalized either via self-report (e.g., attitudes, thoughts, intentions) or observed behavior. In the classic design (Bushman & Baumeister, 1998), undergraduate students wrote essays that were randomly criticized or praised by a nonexistent partner. Students then played a competitive game against the partner, in which they were allowed to set the punishment (white noise blast). Threat condition and narcissism scores interacted to predict higher punishments.

Integrating the findings of dispositional self-reports and the provoked aggression literature suggests that individuals high in narcissistic features seek out social status via dominant behavior, are highly attuned to the behavior of others that threaten their own status, and respond with hostility and aggression when their status is threatened. Theory also suggests that the expressed hostility/aggression are in the service of regulating the self, interpersonal field, and affect (Hopwood, Wright, Ansell, & Pincus, 2013; Wright, Hopwood, & Simms, 2015).

Despite the wealth of accumulated findings, significant questions remain about the exact nature of interpersonal and affective processes among those high in narcissism. For instance, dispositional research provides information about general patterns of behavior, but not whether certain behaviors are dynamic and contextual. The provoked aggression literature speaks to this issue, but certain key features of the interpersonal situation have not been investigated. Notably, the perception of the other has not been assessed. Therefore, it is not clear which appraised features of the situation constitute the provocation. Indeed, both criticism and social rejection result in provoked aggression, but both may be the result of similar perceptions of the other taking a "one-up" (dominant) position. Alternatively, it may be that perceptions of others' coldness (lack of affiliation/quarrelsomeness) serve as a provocation. To disentangle these issues, assessment of the individual's perceptions is

needed. Additionally, a more complete test of the hypothesis that hostility is expressed in the service of self-regulation requires the assessment of experienced affect. Finally, the literature would benefit from study designs that emphasize generalizability (assessing across many different situations) and ecological validity (assessing face-to-face interactions with important persons in one's life such as a spouse or boss). In the current study, we sought to build on the strengths of the existing literature by assessing perceptions of others, affect, and interpersonal behavior in daily life.

## The Current Study

Our overarching aim was to investigate the effect of narcissistic features on the behavioral and affective processes that characterize interpersonal situations in daily life. To accomplish this aim, we tested a series of hypotheses related to whether narcissism moderated the dynamic links among perceptions of others' behavior, affect, and one's own interpersonal behavior as they fluctuate, within-person, from situation to situation. Similar to Sadikaj and colleagues (2013), psychiatric outpatients (N=102) completed clinical interviews and a 21day ECR protocol, reporting on perceptions of their interaction partner's behavior, their own affect, and their own interpersonal behavior following interactions several times per day. Consistent with interpersonal theory's focus, we sampled perceptions and behaviors using the dimensions of dominance and affiliation, as well as experienced affect. We then examined within-person models to test whether contextual features that varied across situations (i.e., perceptions of others' behavior) predicted affective and interpersonal responses. The direction and strength of within-person effects are presumed to differ between individuals, and therefore traditional between-person variables (e.g., narcissistic features) were tested as moderators of individual differences in those effects. Within-person mediational models (i.e., *Perceptions*  $\rightarrow$  *Affect*  $\rightarrow$  *Behavior*), which are diagrammed in the bottom half of Figure 1, were designed to test the hypothesis that individuals with elevated levels of narcissistic features were more sensitive to perceived dominance during interpersonal interactions, which would result in antagonistic behaviors toward the other, and that this process is mediated through increased negative affect.

Specifically, our hypotheses were:

- H1. Narcissistic features would amplify the within-person association between perceptions of others' dominance and one's own quarrelsomeness during interpersonal situations.
- H2. Narcissistic features would amplify the within-person association between perceptions of others' dominance and one's own dominance during interpersonal situations.
- H3. The within-person association between perceptions of others' dominance and own behavior would be mediated by NA during interpersonal situations.
- H4. Narcissistic features would amplify the within-person association between perceptions of others' dominance and NA.

H5. Narcissistic features would amplify the within-person association between negative affect and own behavior.

We tested these hypotheses in multiple steps, starting with narcissism as a moderator of perceptions of other behavior and own behavior (H1 and H2), followed by estimating a mediational model where affect mediated perceptions and behavior (H3), and finally narcissism as a moderator of the individual paths in the mediational model (H4 and H5). Additionally, we explored the boundary conditions of these effects in several ways. First, we investigated whether the links between perceptions of others' affiliation (rather than dominance) and one's own NA, and one's own dominance or affiliation were also amplified by narcissistic features. Second, we tested the discriminant validity of the effect of narcissistic features on these processes by replacing them with the "near-neighbor" construct of antisocial PD features (e.g., Paulhus & Williams, 2002) in a new set of models, and then including both NPD and antisocial features in the same models. Third, we explored whether the same paths would be moderated by NPD features if general NA was replaced with the specific affects of *anxiety/fear*, *anger/hostility*, *shame/guilt*, and *depression/sadness*.

#### Method

All procedures were approved by the University of Pittsburgh Institutional Review Board (Protocol #12030125).

#### **Participants**

Romantic couples were recruited via flyers posted in psychiatric treatment clinics. The parent study from which these data are drawn was designed to investigate the role of borderline personality disorder (BPD) in the functioning of romantic couples. The larger study used a stratified design: current outpatients were screened by phone for both BPD and any other PD using the McLean Screening Instrument for BPD (Zanarini, Vujanovic, Parachini, Boulanger, Frankenburg, & Hennen, 2003) and the Inventory of Interpersonal Problems PD Scales (Pilkonis, Kim, Proietti, & Barkham, 1996), respectively. Participants reflected a spectrum that ranged from a positive screen for BPD, to a positive screen for any PD other than BPD, to few or no symptoms of PD. Patients were excluded from enrolling in the parent study if they met criteria for a lifetime diagnosis of bipolar disorder or psychosis. All patients who had completed the EMA portion of the study and who had usable (i.e., cleaned and compiled) data by the start of analyses (October 1, 2016) were included in the current study. Of the current sample (N=102), 78 (76.5%) were female, 74 (72.5%) were white, 17 (16.7%) were black, 2 (2%) were Asian, and the remaining 9 (8.8%) were of mixed race. The average age was 29.74 (SD=5.87). One third (n=34) met the diagnostic threshold for BPD.

#### **Procedure**

Participants were administered structured clinical interviews, then given a smartphone preloaded with an application designed for this study. Participants were instructed in how to use the web application to submit records about their mood, behavior, and interpersonal interactions every day for 21 days. Records were to be completed immediately following every interpersonal interaction that lasted at least 10 minutes in duration.

To ensure compliance with study procedures, the application was designed to enable access to data in real-time. As a participant submitted responses, data were immediately transferred to a secure database accessible to study staff via a virtual web server. This feature allowed study staff to monitor compliance daily. If a participant did not complete at least one interpersonal interactions record per day, study staff called the participant and assessed whether or not any interpersonal interactions had occurred that day and, if necessary, problem-solved technical and/or motivational issues. Participants were compensated \$40 for completion of the interview, and up to \$165 for completion of the ambulatory assessment. Rates of compliance were generally good, averaging around 3 interactions per day (M= 57.6, SD= 32.4). In total, six patients enrolled in the study were not included in these analyses due to lack of EMA data; two became ineligible because their relationships ended, and four never provided any EMA responses. No differences were found between these six participants to those retained on relevant variables like sex, age, and personality pathology. Results of all reported models did not differ if participants with low numbers of reported interactions ( 10) were excluded from the sample when estimating models.

#### Measures

Personality Disorder Features—Participants were interviewed using the Structured Interview for DSM-IV Personality (*SIDP-IV*; Pfohl, Blum, & Zimmerman, 1994). Interviewers rated each PD criterion on a scale ranging from 0–3. We operationalized pathological narcissism as the dimensional sum of the NPD criterion scores, and used the total of the remaining PD criteria as a covariate. To determine inter-rater agreement, video recordings of the SCID-I and SIDP-IV interviews from a sample of 5 participants were reviewed and scored independently by 7 research team members. Agreement was good for NPD features (intraclass correlation coefficient = 0.78), and was excellent for the sum of all remaining PD features (intraclass correlation coefficient = 0.97). Seven (7%) individuals met the diagnostic threshold for NPD (5 criteria), and the majority of the sample (56%) met at least one criterion.

Momentary Interpersonal Behavior of Self and Other—The participant's interpersonal behaviors and the participant's perceptions of the other's behavior during the interaction were assessed using the Social Behavior Inventory (SBI; Moskowitz, 1994). The SBI is a checklist (i.e., rated *yes* or *no*) of 46 behavioral items designed to assess the two dimensions of the interpersonal circumplex, dominance and affiliation. The dominant dimension includes Dominant (e.g., *I expressed an opinion*; *I asked the other to do something*) and Submissive (e.g., *I gave in*; *I let the other make plans or decisions*) behaviors. The affiliative dimension includes Quarrelsome (e.g., *I criticized the other*, *I made a sarcastic comment*) and Agreeable (e.g., *I listened attentively to the other*, *I expressed reassurance*) behaviors.

Participants responded to a checklist with a subset of 12 items to describe their own behavior during each interaction. Consistent with previous research (Sadikaj et al., 2013) designed to decrease the likelihood of participants adopting a patterned way of responding to these items, we created four forms comprised of three items from the poles of each interpersonal behavior dimension. Thus, each form contained 12 interpersonal behavior items, and forms

were administered in a daily cycle. From these we created two subscales corresponding to dominance (Dominance = Dominant - Submissive) and affiliation (Affiliation = Agreeable - Quarrelsome). Prior work has treated the four scales as separate, but we collapsed them based on theoretical grounds, and to reduce number of statistical models/tests. The proportion of between-person variance, calculated using the intraclass correlation (ICC =  $\sigma^2_{\text{BETWEEN}}/(\sigma^2_{\text{BETWEEN}} + \sigma^2_{\text{WITHIN}})$ ), for the dominance dimension was .09, and for the affiliation dimension was .16. Between- and within-person reliabilities (coefficient  $\omega$ ) were calculated for these scales using the approach in Geldhof et al. (2014), modified for use with categorical items based on the polychoric correlation matrix. Average coefficients across daily cycles were as follows: dominance ( $\omega_{\text{BETWEEN}}/\omega_{\text{WITHIN}}$ )=.58/.81; affiliation=.68/.84.

Participants rated their perceptions of the interaction partner's behaviors on a subset of 7 items that did not vary and that were scored similarly for dominance and affiliation (see supplementary materials for this list). The ICC for perceptions of dominance was .16, and for perceptions of affiliation was .21. Reliability coefficients were: dominance  $(\omega_{BETWEEN}/\omega_{WITHIN})=.34/.33$ ; affiliation=.62/.52.

**Momentary Affect**—Each electronic diary record presented 19 negative affect adjectives on a 5-point scale (1 = *very slightly or not at all*, 5 = *extremely*) from the Positive and Negative Affect Schedule-Extended version (PANAS-X; Watson & Clark, 1999). Ten items were averaged to create an overall NA score, 6 were averaged to create an anxiety/fear scale, 6 were averaged to create an anger/hostility scale, 2 were averaged to create a shame/guilt scale, and the remaining 5 were averaged to create a depression/sadness scale. ICCs for each scale were NA = .34, anxiety/fear = .38, anger/hostility = .23, shame/guilt = .29, depression/sadness = .27. Reliability coefficients were as follows: NA ( $\omega_{\text{BETWEEN}}/\omega_{\text{WITHIN}}$ )=.97/.91; anxiety/fear=.97/.89, anger/hostility=.95/.93, shame/guilt=.98/.81, depression/sadness=.97/.91.

#### **Analytic Plan**

Multilevel structural equation modeling (MSEM) was used to test study hypotheses. MSEM combines the capabilities of multilevel models with those of SEM. Like standard multilevel models, MSEM can accommodate hierarchical data (i.e., momentary events nested within persons) and allows for the estimation of random effects (i.e., intercepts and slopes that vary across individuals). Like single level SEM, MSEM allows for the estimation of complex models (i.e., path analysis with multiple mediators and outcomes, latent variables). Additionally, MSEM can be used to decompose the variance for each observed variable: the total variance can be decomposed into the latent Level 2 (between-person) variance and the Level 1 (within-person) residual variance (see Figure 2). This decomposition is done in a standard multilevel model when estimating a random intercept. However, in MSEM, all observed variables, whether they are predictors or outcomes, are partitioned into betweenand within-person variance estimates. Adopting this approach to variance decomposition guards against bias in Level 2 parameters involving nested variables, when the number of observations differs across individuals (Lüdtke et al., 2008), as is the case in most ambulatory assessment research. In the current study the between-person variance reflects individual differences in the observed variables, and the within-person variance reflects

situation-to-situation departures from each individual's mean on these variables. Thus, the MSEM used in this study estimates separately the Level 2 portion of the model, which represents associations among individual differences in observed variables collapsed across all situations, and the Level 1 portion of the model, which represents the within-person associations among variables that fluctuate across situations. All models were estimated in Mplus version 8.0 (Muthén & Muthén, 2017), using a robust maximum likelihood estimator (MLR). Although model fit in MSEM can be evaluated using standard SEM model fit indices (e.g., chi-square, RMSEA, CFI), these indices are not applicable here because our models included random slopes.

Four sets of models were estimated, with each predictor (perceptions of other behavior) paired with each outcome (own behavior). Figure 2 provides a diagram of the estimated models. The baseline models (Model 1) regressed the patient's rating of their own behavior on their perception of the other's behavior at Level 1 (i.e., momentary perceptions and behavior) and Level 2 (i.e., associations among individual differences in perceptions of others' and own behavior). Level 1 regression paths were estimated as randomly varying across individuals. Model 2 introduced NPD features as a moderator of the momentary link between perceptions of others' behavior and one's own behavior, while also predicting individual differences in ratings of one's own behavior. In the current sample, NPD features correlated moderately with all other PD features (r = .49). This result is expected, given the importance of general impairments described in theoretical formulations of PD, and it is consistent with recent empirical work (e.g., Hopwood et al., 2011). However, Sharp and colleagues (2015) found that NPD features form a specific factor distinct from general PD features. Therefore, the sum of the remaining PD features was included as a covariate to adjust for general PD in our models and to isolate the specific effects of narcissism. Sex (0=male, 1=female) and age (centered on age 30) were also included as covariates of NPD features in all models at Level 2, and observation number (i.e., time) was included as a Level 1 covariate. Model 3 introduced NA as a mediator of the perception of other's behavior and ratings of one's own behavior at Level 1, and as a predictor of individual differences in one's own interpersonal behavior at Level 2. Our interest is on mediation at Level 1, because the focus of interpersonal theory is on the immediate situation (i.e., momentary behavior) and between-person mediation without temporal precedence is of limited conceptual importance. Finally, Model 4 introduced NPD features and covariates as moderators of all Level 1 paths, as well as predictors of individual differences in NA and one's own behavior.

#### Results

Our hypotheses were specific to the effect of perceptions of others' dominance on one's own affect and interpersonal behavior. Therefore, the fixed effects from these models are presented here in the text, and to save space, we present the results for models examining the effect of perceptions of others' affiliation in the online supplementary material. Note that the primary within-person effects were estimated as random (i.e., varying freely across

<sup>&</sup>lt;sup>1</sup>We attempted to fit a complex full model that included both predictors, both outcomes, and all possible mediation paths. The model converged and produced estimates that were highly consistent with each of the simpler models. However, the model also returned errors that suggested that the parameter estimates and standard errors might not be fully trustworthy. Therefore, we report the series of simpler models, which are also more conceptually accessible.

individuals) in all models, and all random effects were significant. Descriptive statistics for all variables can be found in Table 1. Multivariate MSEM regression models predicting individual differences in momentary variables from NPD and other PD are reported in Supplementary Table S1. Mplus output for all models can be found at: <a href="https://osf.io/82vw8/">https://osf.io/82vw8/</a>.

#### Model 1 - Baseline Model

Results from the baseline models, where perceptions of other dominance predicted one's own behavior at both the within- and between-person levels can be found in the left column of Table 2. We found no effect of perceptions of other dominance on own dominant behavior at the within-person level ( $c_i$ = 0.034, SE= 0.028, p= 0.229) nor at the between-person level ( $\beta_{\text{Beh.Perc}}$ = 0.154, SE= 0.155, p= 0.321). The non-significant  $c_i$  path precludes mediation models for the perceptions of dominance on own dominant behavior. However, we found the strength of the within-person  $c_i$  path varied significantly across individuals, as do all other within-person paths reported in the following models.

For the model testing perceptions of dominance on own affiliative behavior, we found a significant negative within-person effect ( $c_i$ = -0.139, SE= 0.038, p< .001), as well as a positive between-person effect ( $\beta_{\rm Beh,Perc}$ = 0.486, SE= 0.196, p= 0.013). Thus, on average in the moment, when individuals perceived an interaction partner behaving more dominantly, they behaved in a more quarrelsome manner. However, individuals who tended to perceive others as more dominant on average behaved in a more affiliative manner.

#### Model 2 - Moderation Model

We next evaluated whether NPD predicted individual differences in (i.e., moderated) the within-person path  $c_i$  effects, controlling for other PD features, age, and sex. Results are summarized in the right column of Table 2. Coefficients for covariates are not presented for parsimony. When perceptions of dominance predicted own dominance, we found no moderation effect of any of the predictors, but we found a significant positive between-person effect of NPD features on between-person differences in reported dominant behavior ( $\beta_{\text{Beh.NPD}} = 0.053$ , SE = 0.019, p = 0.006).

When predicting one's own affiliation from perceptions of dominance, we found that NPD features significantly amplified the association between perceptions of dominance and own quarrelsomeness (i.e., a negative coefficient for the effect of NPD features on the link between others' dominance and own affiliation; ( $\beta_{c.NPD} = -0.058$ , SE = 0.020, p = 0.004), but there was no effect of other PD features on this path. In contrast, other PD features significantly negatively predicted between-person differences in affiliative behavior ( $\beta_{Beh.OPD} = -0.012$ , SE = 0.003, p < .001), whereas NPD features had no effect.

#### Model 3 - Mediation Model

We next tested whether the momentary link between perceptions of dominance and own affiliative behavior was mediated by NA. The results of this model are presented in the left column of Table 3. We found that perceptions of others' dominance significantly predicted NA (path  $a_i$ ), and NA significantly negatively predicted affiliative behavior (path  $b_i$ ). The indirect effect ( $a_i * b_i + \psi_{ab}$ , where  $\psi_{ab}$  = covariance of random effects  $a_i$  and  $b_i$ ; Shrout &

Bolger, 2002) was also significant ( $\beta_{ab} = -0.092$ , SE = 0.020, p < .004), and the  $c_i$  path just crossed the threshold for significance ( $c_i = -0.052$ , SE = 0.026, p = 0.046), suggesting NA almost fully mediated the within-person link between perceptions of dominance and quarrelsomeness.

#### Model 4 - Moderated Mediation Model

In a final model, we tested whether NPD features moderated the paths of the within-person mediational model. Individual differences in the strength of paths  $a_i$ ,  $b_i$ , and  $c_i$  were regressed on NPD features, other PD features, sex, and age, as were the intercepts of one's own affiliative behavior and NA. Coefficients from this model are displayed in the right column of Table 3. Results showed that NPD features amplified the positive link between perceptions of dominance and NA ( $\beta_{a,NPD} = 0.291$ , SE = 0.095, p = 0.002) as well as the negative link between NA and affiliative behavior ( $\beta_{b,NPD} = -0.006$ , SE = 0.003, p = 0.044). Other PD features had no significant effect on either pathway, although they did have a significant direct effect on between-person differences in NA ( $\beta_{NA OPD} = 0.057$ , SE = 0.021, p = 0.006), and a significant negative direct effect on between-person differences in affiliative behavior ( $\beta_{\text{Beh.OPD}} = -0.010$ , SE = 0.004, p = 0.007). Thus, we found evidence for moderated mediation, such that NPD features amplified the within-person links between perceptions of others' dominance, NA, and one's own quarrelsome behavior. We probed the conditional indirect (i.e., moderated mediation) effect using equations from Preacher, Rucker, and Hayes (2007). The indirect effect was not significant at values of zero NPD features (i.e., the modal value;  $\beta_{ab}$ =-.053, SE=.033; p=.104), but was significant at the mean  $(\beta_{ab}=-.111, SE=.037; p=.003)$ , one SD above the mean  $(\beta_{ab}=-.214, SE=.059; p<.001)$ , and two SDs above the mean ( $\beta_{ab}$ =-.319, *SE*=.088; *p*<.001).

#### **Supplementary Analyses**

We estimated a series of additional exploratory models to clarify the discriminant validity of our primary findings. Supplementary analyses included (a) models examining the moderating effect of NPD features on the links between perceptions of others' affiliative behavior on one's own behavior, (b) models replacing general NA with specific negative affects, and (c) models examining the effect of antisocial PD features on all of the investigated pathways. To conserve space, the results of these models are provided in the online supplementary materials. Briefly, we found that (a) that NPD features did not moderate the effects of perceptions of others' affiliation on one's own dominant or affiliative behavior, (b) all specific negative affects mediated perceptions of dominance and quarrelsome behavior, but moderation varied across specific negative affect, and (c) including ASPD features in models had no impact.

#### Discussion

We tested several hypotheses related to the effect of pathological narcissism on the processes that unfold across interpersonal situations. We found that perceptions of others' dominance predicted one's own quarrelsomeness, and that negative affect mediated this link. However, perceptions of dominance did not predict one's own dominance. Consistent with predictions, NPD features amplified the link between perceptions of dominance and quarrelsome

behavior, as well as the links between perceptions of dominance, negative affect, and own quarrelsomeness in the mediation model. We also showed that these effects were specific, i.e., that the same effects did not hold for perceptions of others' affiliative behavior, did not apply to antisocial features, and showed some specificity with regard to the individual affects considered. On the whole, these results suggest that narcissism is characterized in part by specific, contextualized, dynamic processes.

We begin our discussion by reviewing between-person effects, because they provide a bridge to traditional cross-sectional analyses, while also providing new information about potential individual differences in perceptual tendencies. Dispositional levels of pathological narcissism and other PD features assessed using clinical interviews significantly predicted individual differences in situationally assessed variables (i.e., between-person effects). General PD (all PD symptoms other than NPD) expectably predicted higher average momentary NA (including all specific negative affects), lower dominance (i.e., higher submissiveness), lower affiliation (i.e., higher quarrelsomeness), and perceiving others as higher in quarrelsomeness on average. NPD features only predicted higher average dominant behavior and anger/hostility, consistent with well-established dispositional results (e.g., Gurtman, 1992) and the only other study to examine the effect of narcissism on momentary interpersonal behavior (cf. grandiose effects from Roche et al., 2013). Narcissism did not uniquely predict differences in ratings of others behavior. Thus, in terms of dispositional behavior and perceptions, narcissism stands apart from the impairments associated with PD generally.

We turn next to discussing the within-person effects. Dispositional findings average over potentially interesting contextualized effects that might be indicative of the processes that generate and maintain the social impairments associated with narcissism. Indeed, it has been argued that aggressive behavior serves a regulatory function for individuals high in narcissism (e.g., Ronningstam, 2009). Studies examining provoked aggression in the laboratory have been interpreted as such (Rasmussen, 2016). We similarly found that perceptions of others' behavior and one's own quarrelsomeness were linked, and amplified by one's level of narcissism. Our results bolster the laboratory findings, by virtue of using a study design that maximizes ecological validity, sampling across the naturally occurring interpersonal interactions that occur in the participants' daily lives. Moreover, our findings clarify that it is likely the perception of dominance in the other person that triggers quarrelsome behavior that is amplified by narcissism, not perceptions of others' quarrelsome behavior. This suggests that when the individual high in narcissism perceives others exerting control, attempting to subordinate them, or otherwise asserting themselves, they respond with increased cold and antagonistic behavior.

That NA mediated the links between perceptions of dominance and quarrelsome behavior also suggests that these processes are regulatory in nature. In line with predictions, narcissism amplified the linkage between perceptions of others' dominance and one's general NA, as well as the linkage between NA and quarrelsome behavior. We did not find similar effects for perceptions of quarrelsomeness in line with the view that narcissistic processes are focused on status and hierarchy, not closeness. Thus, individuals high in narcissism are more likely to experience affective dysregulations when confronted with

others' dominance, and in turn they are more likely to be antagonistic when experiencing negative affect. These findings provide an important missing link in the theoretical articulation that aggression serves a regulatory function in those high in narcissism. They suggest that certain interpersonal perceptions serve to evoke NA, and that aggression is enacted in the service of diminishing the power or control the other is asserting, or as retaliation. As such, antagonistic behavior and aggression may be negatively reinforcing (remove stimulus), positively reinforcing (gratifying to punish other), or both, increasing the likelihood of the behavior despite negative interpersonal consequences. This process, wherein others' assertion triggers hostility from the individual high in narcissism, is likely to interfere with the development of mutual and satisfying interpersonal relationships thereby contributing to the deterioration of relationships over time (e.g., Lavner et al., 2016; Paulhus, 1998).

Although exploratory, the results from the specific affect analyses provide a more nuanced look at the processes of narcissism in interpersonal situations. Differences emerged in the mediation models, such that narcissism significantly moderated the link between perceptions of dominance and affect (*a* path) for anxiety and anger, but not the link between affect and behavior (*b* path), whereas for shame the opposite was true. Both were amplified for depression. What this suggests is that narcissism leads to greater anger and anxiety reactivity when one is confronted with others' dominance, and greater behavioral reactivity when one experiences shame and depression. Although the depression results are somewhat unexpected, the shame results are consistent with the finding that humiliation can spark fury (e.g., Tangney, Wagner, Fletcher, & Gramzow, 1992) and with the role of shame in pathological narcissism (e.g., Broucek, 1982; Kohut & Wolf, 1978; Lewis, 1971). However, behaving in a quarrelsome manner when experiencing anger or anxiety is a general response, and narcissism does not lead to greater behavioral reactivity in these instances.

We based our study predictions, in part, on the laboratory findings demonstrating that narcissism predicts reactive aggression in response to threatened egotism (e.g., Bushman & Baumeister, 1998; Thomaes et al., 2008). Unlike these studies, we did not measure behavior in situations designed to threaten egotism or elicit shame. Thus, we must clarify how our results complement this literature. We do not believe that perceptions of dominance are identical to ego threats. Rather, our results suggest that perceptions of dominance result similarly in quarrelsomeness and that this may be due to a pathway through shame or through feelings of anger, anxiety, or depression. Our exploratory results suggest that effects of narcissism can be differentiated depending on the affective path. Traditionally, the threatened egotism literature has presumed specific affective pathways, but has not devoted much effort to assessing all the steps along these pathways. Based on the current results, the manipulations in the threatened egotism literature may elicit perceptions of dominance, or they may bypass these and stimulate affect directly. Future laboratory work should probe these issues.

Our findings are also relevant to current debates about the nature and role of grandiosity and vulnerability in pathological narcissism (Krizan & Herlache, in press; Miller, Lynam, Hyatt, & Campbell, in press). Narcissistic vulnerability has long played a central role in the conceptualization of pathological narcissism as discussed in the clinical literature (Cain et

al., 2008; Pincus & Lukowitsky, 2010). However, some researchers have raised concerns about how disparate the nomological networks are for measures of narcissistic grandiosity and vulnerability (e.g., Miller et al., 2016), suggesting these are difficult to reconcile within a single construct. Indeed, although experts generally agree that grandiosity is both the core of and captures the unique aspects of the narcissism construct (Ackerman, Hands, Donnellan, Hopwood, & Witt, in press), there is less agreement about the role and nature of vulnerability. Some have argued that grandiosity is a defense against vulnerability (e.g., Morf et al., 2011), whereas others have suggested these reflect distinct types (e.g., Russ et al., 2008) or distinct dimensional manifestations of pathological narcissism (e.g., Pincus et al., 2009).

An alternative, but not inconsistent perspective, is that vulnerability is manifested in "dysregulation of self (i.e., shifts in social cognition and self-concept), affect (e.g., anger, shame, anxiety), and interpersonal behavior (e.g., hostility, withdrawal, avoidance) when entitled expectations or needs are challenged or not met (Wright, 2016; pg. 11)." Ronningstam (2009) similarly referred to "strong reactions to perceived challenges and threats" (pg. 117). Accordingly, vulnerability is a context-dependent state shift contingent on the evoking features of the individual's experiences. Our results align with this understanding of narcissistic vulnerability, and suggest that under specific circumstances individuals high in narcissism will become dysregulated, but not necessarily that they will exhibit chronic dysregulation in the absence of relevant triggers. Our results also suggest that narcissism is relatively specific as a predictor of these vulnerabilities. In a recent study, Gore and Widiger (2016) asked participants to select an acquaintance that fit the description of a grandiose or vulnerable prototype and rate them on various scales. They then asked if the individuals ever exhibited behavior consistent with the other prototype. Individuals selected for narcissistic grandiosity were rated as having episodes of vulnerability, but the opposite was not true. Taken together, we interpret these findings as suggesting that there are triggers of dysregulation and maladaptive behaviors in narcissistic individuals, but these may be unique to narcissism as opposed to those processes that are broadly shared across all personality pathology.

#### **Limitations and Future Directions**

The results of this study should be interpreted in light of its context. Sampling may have had an effect on our results in various ways. For one, the sample consisted of psychiatric outpatients in contrast to the majority of published narcissism research which has relied on assessment in undergraduate populations. We view this aspect as a strength, as our sample was more diverse in age and socioeconomic status than most college student samples. Beyond this, however, these data were drawn from a study designed primarily to study BPD, a third of the sample met diagnostic threshold for BPD, and others had subthreshold borderline pathology. Thus, patients in this sample are likely more prone to dysregulation than other types of samples. This may account for the observed pattern of affective and behavioral responses to perceptions of others' behavior. As such, this same study design should be repeated in nonclinical samples. In line with this, the sample had more women than men, and future research should aim for greater sex balance given notable gender differences in the base-rates of NPD features. Yet, we also note that our analyses were

regression-based, and there is scant evidence for gender moderation in the associations among narcissistic features and external correlates (e.g., Wright et al., 2010; Zimmermann & Wright, 2017). We would therefore expect the results to be largely the same in a sample with a higher proportion of males. Furthermore, there were relatively low rates of individuals meeting the NPD diagnostic cutoff (7%), although dimensional NPD was present in over half of the sample.

As noted in the introduction, the precise definition of narcissism and best measurement approach is under active debate (Wright, 2016). We used DSM symptoms here, although many other assessment instruments are available. The DSM's focus on narcissistic grandiosity and minimization of vulnerability has been criticized (e.g., Cain et al., 2008). It is notable, however, that the DSM criteria do show associations with affective dysregulation and distress, albeit not as strongly as measures of narcissistic vulnerability (Miller & Campbell, 2008). Perhaps more importantly, they capture core aspects of the construct (e.g., entitlement; Brown et al., 2009). In the future, researchers may wish to include diverse measures of narcissism.

Finally, it is worth noting that our study assessed models based on the perceptions of the individual as the initial predictor. This choice was by design, as interpersonal theory emphasizes the situation as construed by the individuals participating in it (Kiesler, 1996). Other perspectives prioritize objective assessments of the situation (Rauthmann et al., 2015), which we did not have at our disposal. Thus, alternative study designs that use passive recording technology to study situations are warranted.

#### Conclusion

In summary, we examined the effect of NPD features on interpersonal behavior and affective processes in interpersonal situations in the lived experience of a sample of psychiatric patients. We found that individuals higher in NPD features responded to perceptions of other's dominance with higher negative affectivity, and higher quarrelsomeness. These results clarify prior work that has not distinguished between perceived dominance and affiliation in the interaction partner. The inclusion of measures of NA also lend support to the notion that aggressive behavior in individuals high in narcissistic features is regulatory. These processes appear specific to narcissism, in that we controlled for general PD features in all of our models, and antisocial PD features in sensitivity analyses. Future work should assess additional relevant variables (e.g., perceptions of others affect, goals during the interaction) and use multimethod assessments (e.g., passive recording of ambient features).

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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### References

Ackerman RA, Hands AJ, Donnellan MB, Hopwood CJ, Witt EA. Experts' views regarding the conceptualization of narcissism. Journal of Personality Disorders. 2017

- Berenson KR, Downey G, Rafaeli E, Coifman KG, Paquin NL. The rejection-rage contingency in borderline personality disorder. Journal of Abnormal Psychology. 2011; 120(3):681–690. [PubMed: 21500875]
- Broucek F. Shame and its relationship to early narcissistic developments. International Journal of Psychoanalysis. 1982; 63:369–378. [PubMed: 7129781]
- Brown RP, Budzek K, Tamborski M. On the meaning and measure of narcissism. Personality and Social Psychology Bulletin. 2009; 35(7):951–964. [PubMed: 19487486]
- Bushman BJ, Baumeister RF. Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? Journal of Personality and Social Psychology. 1998; 75:219–229. [PubMed: 9686460]
- Cain NM, Pincus AL, Ansell EB. Narcissism at the crossroads: Phenotypic description of pathological narcissism across clinical theory, social/personality psychology, and psychiatric diagnosis. Clinical psychology review. 2008; 28(4):638–656. [PubMed: 18029072]
- Campbell WK, Bush CP, Brunell AB, Shelton J. Understanding the social costs of narcissism: The case of the tragedy of the commons. Personality and Social Psychology Bulletin. 2005; 31(10): 1358–1368. [PubMed: 16143668]
- Campbell WK, Foster CA, Finkel EJ. Does self love lead to love for others? A story of narcissistic game playing. Journal of Personality and Social Psychology. 2002; 83:340–354. [PubMed: 12150232]
- Carson, RC. Self-fulfilling prophecy, maladaptive behavior, and psychotherapy. In: Anchin, JC., Kiesler, DJ., editors. Handbook of interpersonal psychotherapy. New York, NY: Pergamon Press; 1982. p. 64-77.
- Coifman KG, Berenson KR, Rafaeli E, Downey G. From negative to positive and back again: Polarized affective and relational experience in borderline personality disorder. Journal of Abnormal Psychology. 2012; 121:668–679. [PubMed: 22686872]
- Fleeson W, Jayawickreme E. Whole trait theory. Journal of Research in Personality. 2015; 56:82–92. [PubMed: 26097268]
- Gore WL, Widiger TA. Fluctuation between grandiose and vulnerable narcissism. Personality Disorders: Theory, Research, and Treatment. 2016; 7(4):363–371.
- Gurtman MB. Construct validity of interpersonal personality measures: The interpersonal circumplex as a nomological net. Journal of Personality and Social Psychology. 1992; 63(1):105–118.
- Hopwood CJ, Malone JC, Ansell EB, Sanislow CA, Grilo CM, McGlashan TH, Morey LC. Personality assessment in *DSM-5*: Empirical support for rating severity, style, and traits. Journal of Personality Disorders. 2011; 25:305–320. [PubMed: 21699393]
- Hopwood CJ, Wright AGC, Ansell EB, Pincus AL. The interpersonal core of personality pathology. Journal of Personality Disorders. 2013; 27(3):271–295.
- Hopwood, CJ., Wright, AGC., Pincus, AL. The interpersonal situation: Integrating clinical assessment, formulation, and intervention. In: Samuel, D., Lynam, D., editors. Using basic personality research to inform the personality disorders. New York: Oxford; 2017.
- Johnson SL, Leedom LJ, Muhtadie L. The Dominance Behavioral System and Psychopathology: Evidence from Self-Report, Observational, and Biological Studies. Psychological Bulletin. 2012; 138(4):692–743. [PubMed: 22506751]
- Kiesler, DJ. Contemporary interpersonal theory and research: Personality, psychopathology, and psychotherapy. New York City, NY: John Wiley & Sons; 1996.
- Kohut H, Wolf E. The disorders of the self and their treatment: An outline. International Journal of Psychoanalysis. 1978; 59:413–425.
- Krizan Z, Herlache AD. The narcissism spectrum model: A synthetic view of narcissistic personality. Personality and Social Psychology Review. (in press).

Lavner JA, Lamkin J, Miller JD, Campbell WK, Karney BR. Narcissism and newlywed marriage: Partner characteristics and marital trajectories. Personality Disorders: Theory, Research, and Treatment. 2016; 7(2):169–179.

- Leary, T. Interpersonal diagnosis of personality. New York, NY: Ronald Press; 1957.
- Lüdtke O, Marsh HW, Robitzsch A, Trautwein U, Asparouhov T, Muthén B. The multilevel latent covariate model: a new, more reliable approach to group-level effects in contextual studies. Psychological methods. 2008; 13(3):203–229. [PubMed: 18778152]
- Miskewicz K, Fleeson W, Arnold EM, Law MK, Mneimne M, Furr RM. A contingency-oriented approach to understanding borderline personality disorder: Situational triggers and symptoms. Journal of Personality Disorders. 2015; 29:486–502. [PubMed: 26200848]
- Miller JD, Campbell WK. Comparing clinical and social–personality conceptualizations of narcissism. Journal of personality. 2008; 76(3):449–476. [PubMed: 18399956]
- Miller JD, Campbell WK. The case for using research on trait narcissism as a building block for understanding narcissistic personality disorder. Personality Disorders: Theory, research, and treatment. 2010; 1(3):180–191.
- Miller JD, Campbell WK, Pilkonis PA. Narcissistic personality disorder: Relations with distress and functional impairment. Comprehensive Psychiatry. 2007; 48:170–177. [PubMed: 17292708]
- Miller JD, Lynam DR, Campbell WK. Rejoinder: A Construct Validity Approach to the Assessment of Narcissism. Assessment. 2016; 23(1):18–22. [PubMed: 26463683]
- Miller JD, Lynam DR, Hyatt CS, Campbell WK. Controversies in narcissism. Annual Review of Clinical Psychology. (in press).
- Millon, T. Disorders of personality: DSM-IV and beyond. New York: Wiley; 1996.
- Miskewicz K, Fleeson W, Arnold EM, Law MK, Mneimne M, Furr RM. A contingency-oriented approach to understanding borderline personality disorder: Situational triggers and symptoms. Journal of personality disorders. 2015; 29(4):486–502. [PubMed: 26200848]
- Morf, CC., Torchetti, L., Schürch, E. Narcissism from the perspective of the dynamic self-regulatory processing model. In: Campbell, WK., Miller, JD., editors. The handbook of narcissism and narcissistic personality disorder: Theoretical approaches, empirical findings, and treatment. New York, NY: Wiley; 2011. p. 56-70.
- Moskowitz DS. Cross-situational generality and the interpersonal circumplex. Journal of Personality and Social Psychology. 1994; 66(5):921–933.
- Muthén, LK., Muthén, BO. Mplus User's Guide. 7th. Los Angeles, CA: Author; 2014.
- Ogrodniczuk JS, Piper WE, Joyce AS, Steinberg PI, Duggal S. Interpersonal problems associated with narcissism among psychiatric outpatients. Journal of Psychiatric Research. 2009; 43(9):837–842. [PubMed: 19155020]
- Oltmanns TF, Turkheimer E. Person perception and personality pathology. Current Directions in Psychological Science. 2009; 18(1):32–36. [PubMed: 20539833]
- Paulhus DL. Interpersonal and intrapsychic adaptiveness of trait self-enhancement: A mixed blessing? Journal of Personality and Social Psychology. 1998; 74:1197–1208. [PubMed: 9599439]
- Paulhus DL, Williams KM. The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. Journal of Research in Personality. 2002; 36:556–563.
- Pfohl, B., Blum, N., Zimmerman, M. Structured Interview for DSMIV Personality. Washington, DC: American Psychiatric Press; 1997.
- Pilkonis PA, Kim Y, Proietti JM, Barkham M. Scales for personality disorders developed from the Inventory of Interpersonal Problems. Journal of Personality Disorders. 1996; 10(4):355–369.
- Pincus, AL., Ansell, EB. Interpersonal theory of personality. In: Suls, J., Tennen, H., editors. Handbook of psychology Vol. 5: Personality and social psychology. 2nd. Hoboken, NJ: Wiley; 2013. p. 141-159.
- Pincus AL, Lukowitsky MR. Pathological narcissism and narcissistic personality disorder. Annual Review of Clinical Psychology. 2010; 6:421–446.
- Pincus AL, Wiggins JS. Interpersonal problems and conceptions of personality disorders. Journal of Personality Disorders. 1990; 4:342–352.

Preacher KJ, Rucker DD, Hayes AF. Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. Multivariate behavioral research. 2007; 42(1):185–227. [PubMed: 26821081]

- Rasmussen K. Entitled vengeance: A meta–analysis relating narcissism to provoked aggression. Aggressive Behavior. 2016; 42(4):362–379. [PubMed: 26522921]
- Rauthmann JF, Sherman RA, Funder DC. Principles of situation research: Towards a better understanding of psychological situations. European Journal of Personality. 2015; 29(3):363–381.
- Roche MJ, Pincus AL, Conroy DE, Hyde AL, Ram N. Pathological narcissism and interpersonal behavior in daily life. Personality Disorders: Theory, Research, and Treatment. 2013; 4(4):315–323.
- Ronningstam E. Narcissistic personality disorder: Facing DSM-V. Psychiatric Annals. 2009; 39(3): 111–121.
- Sadikaj G, Moskowitz DS, Russell JJ, Zuroff DC, Paris J. Quarrelsome behavior in borderline personality disorder: Influence of behavioral and affective reactivity to perceptions of others. Journal of Abnormal Psychology. 2013; 122:195–207. [PubMed: 23231460]
- Samuel DB, Widiger TA. A meta-analytic review of the relationships between the five-factor model and DSM-IV-TR personality disorders: A facet level analysis. Clinical psychology review. 2008; 28(8):1326–1342. [PubMed: 18708274]
- Scott LN, Wright AGC, Beeney JE, Lazarus SA, Stepp SD. Borderline personality disorder symptoms and aggression: A within-person process model. Journal of Abnormal Psychology. (in press).
- Sedikides C, Gregg AP. Narcissists and feedback: Motivational surfeits and motivational deficits. Psychological Inquiry. 2001; 12(4):237–239.
- Sharp C, Wright AGC, Fowler JC, Freuh C, Allen JG, Oldham J, Clark LA. The structure of personality pathology: Both general ('g') and specific ('s') factors? Journal of Abnormal Psychology. 2015; 124(2):387–398. [PubMed: 25730515]
- Shrout PE, Bolger N. Mediation in experimental and nonexperimental studies: new procedures and recommendations. Psychological Methods. 2002; 7(4):422–445. [PubMed: 12530702]
- Sullivan, HS. The interpersonal theory of psychiatry. New York, NY: Norton; 1953.
- Tangney JP, Wagner P, Fletcher C, Gramzow R. Shamed into anger? The relation of shame and guilt to anger and self-reported aggression. Journal of personality and social psychology. 1992; 62(4):669–675. [PubMed: 1583590]
- Thomaes S, Bushman BJ, Stegge H, Olthof T. Trumping shame by blasts of noise: narcissism, self–esteem, shame, and aggression in young adolescents. Child development. 2008; 79(6):1792–1801. [PubMed: 19037950]
- Watson D, Clark LA. The PANAS-X: Manual for the positive and negative affect schedule-expanded form. 1999
- Wiggins, JS. Agency and communion as conceptual coordinates for the understanding and measurement of interpersonal behavior. In: Cicchetti, D., Grove, WM., editors. Thinking clearly about psychology: Essays in honor of Paul E. Meehl, Vol. 2: Personality and psychopathology. Minneapolis, MN: University of Minnesota Press; 1991. p. 89-113.
- Wright, AGC. Integrating trait and process based conceptualizations of pathological narcissism in the DSM-5 era. In: Besser, A., editor. Handbook of psychology of narcissism: Diverse perspectives. Hauppauge, NY: Nova Science Publishers; 2014. p. 153-174.
- Wright AGC. 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. 2016; 23(1): 10–17. [PubMed: 26253571]
- Wright AGC, Hopwood CJ, Simms LJ. Daily interpersonal and affective dynamics in personality disorder. Journal of Personality Disorders. 2015; 29(4):503–525. [PubMed: 26200849]
- Wright AGC, Pincus AL, Thomas KM, Hopwood CJ, Markon KE, Krueger RF. Conceptions of Narcissism and the DSM-5 Pathological Personality Traits. Assessment. 2013; 20(3):339–352. [PubMed: 23610234]
- Wright AGC, Simms LJ. Stability and fluctuation of personality disorder features in daily life. Journal of Abnormal Psychology. 2016; 125(5):641–656. [PubMed: 27196437]

Zanarini MC, Vujanovic AA, Parachini EA, Boulanger JL, Frankenburg FR, Hennen J. A screening measure for BPD: The McLean screening instrument for borderline personality disorder. Journal of personality disorders. 2003; 17(6):568–573. [PubMed: 14744082]

# **Personality Processes**

General Framework Individual

Intermediaries

Interpretation
Appraisal
Activation of goals
Initiation of Self-regulatory forces

Intermediaries

Output

Behavioral
Manifestation of trait
Internal state shift
Symptom Expression

Narcissism Processes in Interpersonal Situations

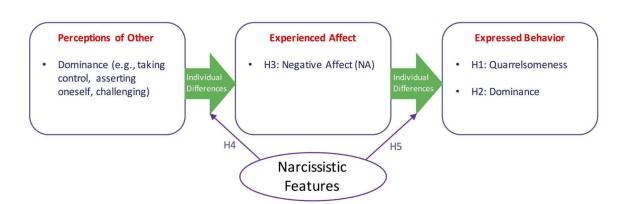


Figure 1.

Diagram of conceptual model for personality processes depicted as generic input→intermediary→output chains (top) and with the specific features of interpersonal features hypothesized to be impacted by pathological narcissism (bottom). H1 refers to first hypothesized output in this process, and H2 refers to second hypothesized output. H1 is predicted to be more likely to occur. H3 refers to hypothesized intermediary, and H4 and H5 refer to hypothesized points of amplification due to narcissism.

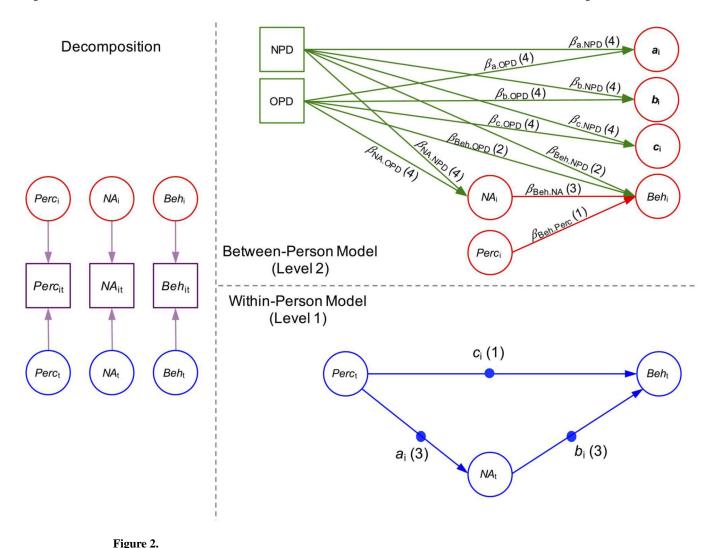


Diagram of general framework for multilevel structural equation models estimated in this study. The panel on the left depicts the latent decomposition of observed momentary variables into between- (subscript i) and within-person (subscript t) variance. The bottom right panel depicts the within-person portion of the model, and the top left panel depicts the between-person portion of the model. Relevant regression parameters are labelled (e.g.,  $\beta_{Beh,Perc}$ ) for the between-person portion of the model. Darkened circles denote random slopes on within-person regression paths, and correspond to and are labelled using mediation convention (i.e., a, b, and c). Numbers in parentheses correspond to paths introduced in consecutively estimated models (e.g., Model 1, Model 2, etc.). Parameters not reported in the tables (e.g., residual variances, covariances among between-person variables) are not depicted in diagrams, but full specification can be found online at: https://osf.io/82vw8/

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Table 1

Descriptive Statistics and Correlations Among Study Variables

	Negative Affect	Self Dominance	Self Affiliation	Other Dominance	Other Affiliation	NPD Features	Other PD Features	Sex	Age
Correlations									
Negative Affect	1	.01	30	.18***	30 ***	1	1	;	I
Self Dominance	05	ŀ	17 ***	.00	.00	1	1	ŀ	1
Self Affiliation	18	.18	ŀ	08	.36***	1	1	ŀ	1
Other Dominance	.02	.23	.17	I	22 ***	1	1	ŀ	ı
Other Affiliation	28	*62.	.74 ***	.11	1	1	ŀ	ŀ	ı
NPD Features	.31***	.12	22	04	26*	1	1	;	I
Other PD Features	.41	14	46	18	45	.48	1	;	1
Sex	11	.14	.04	.10	.12	39 ***	14	ŀ	ı
Age	04	.05	14	10	16	90.	14.	14	ı
Descriptives									
M	3.41	0.49	0.79	0.40	0.61	1.71	25.79	77% Female	29.74
SD	5.30	1.24	1.17	0.78	0.84	2.32	17.56		5.84

Note. Person-Level N=102; Momentary-Level N=5,674. Between-Person correlations reported below the diagonal, Within-Person correlations above the diagonal. PD = Personality Disorder; NPD = Narcissistic Personality Disorder.

p < .05; \* \* \* \* \* \*

p < .01; p < .01; p < .001

Table 2

Primary coefficients from baseline multilevel models predicting interpersonal behavior from perceptions of others' behavior (Model 1) and moderation by personality disorder features (Model 2).

	Dascillic Models (Model 1)	í.		Model adolf Modes (Model 4)	IS (IVIOGEI	í	
Perceptions of Other Dominance -> Self Dominant Behavior Models	ınce -> Sel	f Dominai	ıt Behavio	r Models			
	Coeff.	SE	р		Coeff.	SE	р
Intercept $(Beh_{\rm i})$	0.428	0.070	<.001	Intercept $(Beh_{i})$	0.384	0.117	0.001
B/P Perc. $(\beta_{Beh.Perc})$	0.154	0.155	0.321	B/P Perc. $(\beta_{Beh.Perc})$	0.128	0.152	0.400
				NPD $(\beta_{Beh.NPD})$	0.053	0.019	0.006
				OPD $(\beta_{\mathrm{Beh.OPD}})$	-0.004	0.002	0.041
W/P Perc. $\rightarrow$ Beh. Mean $(c_i)$	0.034	0.028	0.229	W/P Perc. Intercept (c <sub>i</sub> )	0.082	0.093	0.377
				$NPD*W/P\; Perc. {\longrightarrow} Beh.\; (\beta_{c.NPD})$	-0.013	0.014	0.326
				$OPD*W/P~Perc.{\rightarrow}Beh.~(\beta_{c,OPD})$	-0.001	0.002	0.720
Perceptions of Other Dominance -> Self Affiliative Behavior Models	ınce -> Sel	f Affiliativ	e Behavio	r Models			
	Coeff.	SE	р		Coeff.	SE	р
Intercept $(\textit{Beh}_{\!\scriptscriptstyle 1})$	0.746	0.102	< .001	Intercept $(Beh_{i})$	1.159	0.173	<.001
B/P Perc. $(\beta_{Beh.Perc})$	0.486	0.196	0.013	B/P Perc. $(\beta_{Beh.Perc})$	0.355	0.282	0.208
				$NPD~(\beta_{Beh.NPD})$	0.019	0.027	0.483
				OPD (β <sub>Beh.OPD</sub> )	-0.012	0.003	< .001
W/P Perc. $\rightarrow$ Beh. Mean ( $c_i$ )	-0.139	0.038	< 0.001	W/P Perc. Intercept $(c_i)$	-0.156	0.095	0.099
				$NPD*W/P~Perc.{\rightarrow}Beh.~(\beta_{c.NPD})$	-0.058	0.020	0.004
				$OPD*W/P~Perc.{\rightarrow}Beh.~(\beta_{c.OPD})$	0.002	0.002	0.236
Perceptions of Other Affiliation -> Self Dominant Behavior Models	ion -> Self	Dominan	Behavior	Models			
	Coeff.	SE	Ь		Coeff.	SE	р
Intercept $(\textit{Beh}_i)$	0.322	0.125	0.010	Intercept $(Beh_i)$	0.066	0.188	0.724
B/P Perc. $(\beta_{Beh.Perc})$	0.160	0.148	0.281	B/P Perc. $(\beta_{Beh.Perc})$	0.233	0.161	0.148
				NPD $(\beta_{\rm Beh.NPD})$	0.062	0.028	0.027
				OPD $(\beta_{\mathrm{Beh,OPD}})$	-0.001	0.003	0.652

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Baseline Models (Model 1)	ls (Mode	11)		Moderation Models (Model 2)	s (Model	2)	
W/P Perc. →Beh. Mean (c;) 0.077 0.030	0.077	0.030	0.012	W/P Perc. Intercept (c <sub>i</sub> )	0.207	0.207 0.084	0.014
				$NPD^*W/P~Perc.{\rightarrow}Beh.~(\beta_{c.NPD})~-0.014$	-0.014	0.015	0.331
				OPD*W/P Perc. $\rightarrow$ Beh. ( $\beta_{c.OPD}$ ) $-0.002$	-0.002	0.002	0.203
Perceptions of Other Affiliation -> Self Affiliative Behavior Models	n -> Self.	Affiliative	Behavior	Models			
	Coeff.	SE	Д		Coeff.	SE	р
Intercept $(Beh_{ m i})$	0.025	0.130	0.130 0.848	Intercept $(Beh_i)$	0.298	0.298 0.215 0.165	0.165
B/P Perc. $(\beta_{Beh.Perc})$	0.487	0.156	0.002	B/P Perc. $(\beta_{Beh.Perc})$	0.411	0.175	0.019
				$NPD(\beta_{Beh.NPD})$	-0.028	0.025	0.250
				$OPD~(\beta_{Beh.OPD})$	-0.004	0.004	0.242
W/P Perc. $\rightarrow$ Beh. Mean ( $c_i$ )	0.462	0.032	< .001	W/P Perc. $\rightarrow$ Beh. Intercept ( $c_i$ )	0.448	0.087	< .001
				$NPD*W/P~Perc.{\longrightarrow}Beh.~(\beta_{c.NPD})$	0.036	0.019	0.064
				OPD*W/P Perc. $\rightarrow$ Beh. ( $\beta_{c.OPD}$ ) $-0.003$	-0.003	0.002	0.218

Note. Person-Level N=102; Momentary-Level N=5,706-5,728. OPD=Other Personality Disorder; NPD = Narcissistic Personality Disorder; Perc. = Perceptions; Beh. = Behavior; NA = Negative Affect; B/P=Between-Person; W/P=Within-Person; c<sub>1</sub>=c-path. Bolded values significant p < .05.

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Table 3

Primary coefficients from multilevel models with perceptions of others' dominance predicting affiliative behavior mediated by negative affect (Model 3) and moderation of these effects by personality disorder features (Model 4).

Mediation Model (Model 3)	del (Mode	13)		Moderated Mediation Model (Model 4)	Model (M	odel 4)	
	Я	SE	d		В	SE	d
Intercept $(Beh_{i})$	0.951	0.166	<.001	Intercept $(Beh_i)$	1.204	0.201	< .001
B/P Perceptions ( $\beta_{Beh.Perc}$ )	0.409	0.289	0.157	B/P Perc. $(\beta_{Beh.Perc})$	0.308	0.321	0.337
$NA_i (\beta_{Beh.NA})$	-0.002	0.030	0.952	$NA_{i} \; (\beta_{Beh.NA})$	0.013	0.029	0.657
				$NPD~(\beta_{Beh.NPD})$	0.044	0.031	0.163
				OPD (β <sub>Beh.OPD</sub> )	-0.010	0.004	0.007
NA Mean (NA;)	2.544	0.287	< .001	NA Intercept (NA <sub>i</sub> )	0.920	1.050	0.381
				$NPD{\longrightarrow}NA~(\beta_{NA.NPD})$	0.058	0.142	0.681
				OPD→NA (β <sub>NA.OPD</sub> )	0.057	0.021	0.006
W/P Perc. $\rightarrow$ NA Mean $(a_i)$	0.990	0.168	< .001	W/P Perc. $\rightarrow$ NA. Intercept ( $a_i$ )	0.634	0.374	0.090
				NPD*W/P Perc. $\rightarrow$ NA. ( $\beta_{a.NPD}$ )	0.291	0.095	0.002
				$OPD*W/P~Perc.{\rightarrow}NA.~(\beta_{a.OPD})$	0.005	0.008	0.473
W/P NA $\rightarrow$ Beh. Mean ( $b_i$ )	-0.089	0.008	< .001	W/P NA. $\rightarrow$ Beh. Intercept ( $b_i$ )	-0.093	0.020	< .001
				$NPD^*W/P\ NA.{\to}Beh.\ (\beta_{b.NPD})$	-0.006	0.003	0.044
				$OPD^*W/P\ NA.{\rightarrow}Beh.\ (\beta_{b.OPD})$	0.001	0.000	0.135
W/P Perc. $\rightarrow$ Beh. Mean $(c_i)$	-0.052	0.026	0.046	W/P Perc. $\rightarrow$ Beh. Intercept ( $c_i$ )	-0.055	0.076	0.467
				NPD*W/P Perc. $\rightarrow$ Beh. ( $\beta_{c.NPD}$ )	-0.023	0.013	0.077
				$OPD*W/P~Perc.{\rightarrow}Beh.~(\beta_{c.OPD})$	0.001	0.002	0.421
Indirect Effect $(\beta_{ab})$	-0.092	0.020	< .001	Indirect Effect $(\beta_{ab})$	-0.053	0.033	0.104

Note. Person-Level N=102; Momentary-Level N=5,674. OPD = Other Personality Disorder; NPD = Narcissistic Personality Disorder; Perc. = Perceptions; Beh. = Behavior; NA = Negative Affect; B/P=Between-Person; W/P=Within-Person; G=c-path. Bolded values significant p < .05.