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Abstract

The Pathological Narcissism Inventory (PNI) is a recently developed multidimensional inventory for the assessment of pathological narcissism. The authors describe and report the results of two studies that investigate the higher order factor structure and gender invariance of the PNI. The results of the first study indicate that the PNI has a higher order factor structure that conforms to the theoretical structure of pathological narcissism with one factor representing narcissistic grandiosity and the other capturing narcissistic vulnerability. These results uniquely place the PNI as the only measure to broadly assess the two phenotypic themes of pathological narcissism. In the second study, results from tests of measurement invariance indicate that the PNI performs similarly in large samples of men ($n = 488$) and women ($n = 495$). These results further establish the psychometric properties of the PNI and suggest that it is well suited for the assessment of pathological narcissism.

Keywords

Pathological Narcissism Inventory, narcissism, narcissistic grandiosity, narcissistic vulnerability, measurement invariance

The concept of narcissism is long standing and has a broad theoretical and empirical literature spanning the related fields of clinical psychology, psychiatry, and social/personality psychology. Despite its longevity and importance as a psychological construct, narcissism and the associated narcissistic personality disorder (NPD) have been inconsistently defined and measured across disciplines (Cain, Pincus, & Ansell, 2008; Miller & Campbell, 2008). Several recent reviews have highlighted the issues associated with integrating the empirical and clinical literature on narcissistic pathology (e.g., Cain et al., 2008; Levy, Reynoso, Wasserman, & Clarkin, 2007; Pincus & Lukowitsky, 2010; Ronningstam, 2005a, 2005b, 2009). In their review, Pincus and Lukowitsky (2010) suggested that divergence in phenotypic and taxonomic models of pathological narcissism have led to a major criterion problem associated with the construct that has had significant implications for research and the accurate assessment of narcissistic pathology. The Pathological Narcissism Inventory (PNI; Pincus et al., 2009) was recently developed with these concerns in mind. It was designed to be a multidimensional measure of pathological narcissism that assesses both overt and covert expressions of narcissistic grandiosity and vulnerability. Although preliminary evidence for the construct validity of PNI scores has been demonstrated, the optimal higher

order structure of the measure has not yet been established. The purpose of the current study was to provide further psychometric support for the PNI by using confirmatory factor analytic techniques to clarify the higher order factor structure of the PNI, investigate measurement invariance across genders, and provide users with scoring procedures for estimating levels of narcissistic grandiosity and narcissistic vulnerability.

Evaluation of the appropriate structure of pathological narcissism has important measurement as well as conceptual implications. Pathological narcissism is most often conceptualized as NPD operationalized by the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, Text revision (*DSM-IV-TR*; American Psychiatric Association, 2000). However, *DSM* NPD criteria have become increasingly narrow in scope with each successive edition of the manual and currently capture predominantly grandiose themes of the disorder (Cain et al., 2008). Indeed, a recent confirmatory factor analysis of *DSM-IV-TR* NPD criteria

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has supported a one-factor solution (Miller, Hoffman, Campbell, & Pilkonis, 2008). Expressions of narcissistic grandiosity include entitled attitudes, an inflated self-image without requisite accomplishments and skills, as well as engagement in regulatory fantasies of unlimited power, superiority, perfection, and adulation. Narcissistic grandiosity is often expressed behaviorally through interpersonally exploitative acts, lack of empathy, intense envy, aggression, and exhibitionism. Although grandiosity is clearly a core component of narcissistic pathology, there is now increasing recognition that pathological narcissism includes two broad themes of dysfunction, one reflecting grandiosity and the other reflecting vulnerability (Cain et al., 2008). Vulnerable aspects of pathological narcissism include experiences of helplessness, emptiness, low self-esteem, and shame and may be associated with avoidance of interpersonal relationships because of a hypersensitivity to rejection and criticism rooted in intense needs for admiration and recognition (Akhtar, 2003; Dickinson & Pincus, 2003; Kohut & Wolf, 1978; Ronningstam, 2005a; Røvik, 2001).

Evidence for the two phenotypic themes of narcissistic grandiosity and narcissistic vulnerability come from clinical theory, social/personality psychology, and psychiatric diagnosis (Cain et al., 2008). There is now an accumulating body of empirical research that demonstrates that the two phenotypic expressions of narcissistic pathology have divergent relationships with a variety of constructs supporting the validity of this distinction (e.g., Dickinson & Pincus, 2003; Rathvon & Holmsrom, 1996; Russ, Shedler, Bradley, & Westen, 2008; Wink, 1991, 1992, 1996). The distinction between narcissistic grandiosity and narcissistic vulnerability has also been shown to have important clinical implications. In a recent study investigating pathological narcissism and psychotherapy, vulnerable characteristics of pathological narcissism (but not grandiose characteristics) were associated with increased treatment utilization, suggesting that therapists and diagnosticians may be more likely to see narcissistic patients when they are in a vulnerable self-state (Pincus et al., 2009). In the same study, both narcissistic grandiosity and narcissistic vulnerability were shown to be associated with aggression against the self and others (Pincus et al., 2009). When taken together with other findings that associate narcissistic pathology with clinical and relational problems (e.g., Heisel, Links, Conn, van Reekum, & Flett, 2007; Ménard & Pincus, 2009; Miller, Campbell, & Pilkonis, 2007; Pincus et al., 2009; Ronningstam, 2005a, 2005b; Ronningstam, Weinberg, & Maltsberger, 2008; Stinson et al., 2008), the importance of assessing the full phenotypic expression of narcissistic pathology is clear. Indeed, the lack of sufficient vulnerable content in *DSM-IV-TR* NPD has become a common criticism among researchers studying pathological narcissism (Cain et al., 2008; Gabbard, 2009; Levy et al., 2007; Pincus et al., 2009;

Ronningstam, 2009). Although narcissistic grandiosity and vulnerability might appear paradoxical on the surface level of analysis, the dynamic relationship between the two offers clarity and cohesion (Morf, 2006; Morf & Rhodewalt, 2001). Many contemporary clinical experts on NPD note that grandiose self-states often oscillate or co-occur with vulnerable self-states (Horowitz, 2009; Kernberg, 2009; Pincus & Lukowitsky, 2010; Ronningstam, 2009). For example, when grandiose self-enhancement strategies for regulating his or her esteem needs fail, the pathological narcissist may experience episodes of vulnerability characterized by emptiness, low self-esteem, shame, and even suicidality. What distinguishes narcissistic patients from each other are their *relative* levels of grandiosity and vulnerability (Pincus & Lukowitsky, 2010).

Variation in the phenotypic expression of narcissism should be reflected in the structure of the disorder, and it would behoove researchers to have access to valid instruments for assessing the full range of narcissistic dysfunction. Unfortunately, researchers and clinicians are limited in the number of instruments that assess both narcissistic grandiosity and narcissistic vulnerability. The absence of vulnerable content in the most commonly used instruments for assessing NPD may also help to explain the low prevalence rate (0.0% to 5.7%; median < 1.0%) of NPD in most epidemiological studies (Mattia & Zimmerman, 2001; Zimmerman, Rothschild, & Chelminski, 2005) as compared with the greater frequency noted in most clinical settings (Clemence, Perry, Plakun, 2009; Doidge et al., 2002; Morey & Ochoa, 1989; Ronningstam & Gunderson, 1990; Shedler & Westen, 2007; Westen, 1997; Westen & Arkowitz-Western, 1998). However, it is notable that the most recent epidemiological study of NPD (Stinson et al., 2008) found a higher lifetime prevalence rate than did many prior studies (men, 7.7%; women, 4.8%).

Currently, the most frequently used self-report measure of narcissism is the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979, 1981). Although the NPI was originally developed to align with the NPD criteria in *DSM-III* (American Psychiatric Association, 1980), the measure not only has an unstable factor structure with two-factor (Corry, Merritt, Mrug, & Pamp, 2008), three-factor (Kubarych, Deary, & Austin, 2004), four-factor (Emmons, 1987), and seven-factor (Raskin & Terry, 1988) solutions reported but also includes a confusing mix of adaptive and maladaptive content (Cain et al., 2008). Several investigators have noted that the NPI predominantly assesses nondistressed expressions of narcissism (Miller & Campbell, 2008; Pincus et al., 2009; Samuel & Widiger, 2008). In light of the broader contemporary conceptualizations of pathological narcissism (Pincus & Lukowitsky, 2010; Ronningstam, 2009), the NPI may be useful for assessing individual differences in grandiose narcissistic traits but, given its lack of vulnerable

content, the NPI may not be suitable for assessing the full scope of pathological narcissism.

Clinical psychologists hoping to assess pathological variants of narcissism have a number of semistructured interviews, observer ratings, and self-report measures to choose from (Hilsenroth, Handler, & Blais, 1996; Levy et al., 2007; Pincus & Lukowitsky, 2010). However, many are based on *DSM* criteria and thus focus largely on narcissistic grandiosity. Other instruments include NPD scales derived from omnibus measures of pathological personality traits, which have little published validity data on their narcissism scales and have not established the extent of their grandiose and vulnerable content. A few unidimensional measures have been developed to assess aspects of either narcissistic grandiosity or narcissistic vulnerability. For example, the Psychological Entitlement Scale (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004) was designed to improve on its NPI counterpart and assess the negative consequences associated with this core narcissistic trait, and the Hypersensitive Narcissism Scale (Hendin & Cheek, 1997) was designed to capture narcissistic vulnerability. Although data attesting to the validity and utility of these scales are accumulating (e.g., Atlas & Them, 2008; R. P. Brown, Budzek, & Tamborski, 2009; Otway & Vignoles, 2006; Pryor, Miller, & Gaughan, 2008; Ryan, Weikel, & Sprechini, 2008; Smolewska & Dion, 2005), both assess a unidimensional construct and are therefore limited in that they do not comprehensively assess the full expression of narcissistic pathology. As a whole, prevailing measures of narcissism are limited in that they do not comprehensively assess clinically meaningful lower order characteristics of pathological narcissism spanning its grandiose and vulnerable expressions.

The PNI was recently developed to fill this important void (Pincus et al., 2009). The PNI is a 52-item multidimensional self-report measure of pathological narcissism that assesses overt and covert characteristics of grandiose and vulnerable affect and self states as described in the clinical, psychiatric, and social/personality psychology literature (Cain et al., 2008; Pincus & Lukowitsky, 2010). A preliminary structural examination of the measure using exploratory factor analysis suggested a seven-factor solution that was validated using confirmatory factor analysis in a second sample. The first factor was labeled Contingent Self-Esteem (CSE), reflecting a significantly fluctuating experience of self-esteem and acknowledgement of dysregulation in the absence of external sources of admiration and recognition. The second factor was labeled Exploitativeness (EXP), reflecting a manipulative interpersonal orientation. The third factor was labeled Self-Sacrificing Self-Enhancement (SSSE), reflecting the use of purportedly altruistic acts to support an inflated self-image. The fourth factor was labeled Hiding the Self (HS), reflecting an unwillingness to

show others faults and needs. The fifth factor was labeled Grandiose Fantasy (GF), reflecting engagement in compensatory fantasies of gaining success, admiration, and recognition. The sixth factor was labeled Devaluing (DEV), reflecting disinterest in others who do not provide needed admiration and shame over needing recognition from disappointing others. The final factor was labeled Entitlement Rage (ER), reflecting angry effects when entitled expectations are not met. The measure was validated in a normal sample and in a small clinical sample where the scales exhibited significant associations with parasuicidal behavior, suicide attempts, and homicidal ideation. The PNI scales were also associated with a range of interpersonal problems in theoretically meaningful ways, correlated negatively with self-esteem and empathy, and correlated positively with shame, interpersonal distress, aggression, and borderline personality organization.

The PNI appears to be appropriate for both clinical and nonclinical populations and is currently the only multifaceted self-report measure assessing clinically identified characteristics spanning the full phenotypic range of pathological narcissism. The psychometric properties of the PNI are strong, and scores exhibit minimal gender differences. However, in the initial validation studies, some factor and scale intercorrelations were significant. Furthermore, given the proposed structure of pathological narcissism, additional research investigating the higher order structure of the PNI is warranted. The purpose of the current article is therefore to provide further psychometric support for the PNI. In Study 1 we attempt to fit a theoretically derived higher order oblique two-factor structure reflecting narcissistic grandiosity and narcissistic vulnerability for the PNI, and we compare this with a model with all seven scales loading on a single factor (i.e., "pathological narcissism"). In Study 2, we evaluate measurement invariance across gender to provide support for the utility of the PNI across genders. Finally, we provide guidelines for the optimal scoring procedures for the PNI in both clinical and research settings.

Study 1: The Higher Order Factor Structure of the PNI

This first study explores the higher order factor structure of the PNI using confirmatory factor analysis. As noted above, the seven original scales of the PNI demonstrate modest to moderate intercorrelations suggesting that a higher order factor structure may exist. Based on extant empirical, theoretical, and clinical literature, either a one-factor higher order structure representing pathological narcissism as a single construct or a two-factor higher order structure representing narcissistic grandiosity and vulnerability seems viable. However, given seven scales, the two-factor structure could potentially take a number of forms. Therefore,

Table 1. Study 1: PNI Scale Intercorrelations and Descriptive Statistics

PNI Factors	1	2	3	4	5	6	7	Men (<i>n</i> = 1,080), Mean (<i>SD</i>)	Women (<i>n</i> = 1,721), Mean (<i>SD</i>)	<i>t</i>	<i>d</i>
1. CSE	(.93)							1.80 (1.12)	2.19 (1.11)	-8.87***	.35
2. EXP	.10	(.80)						2.40 (1.12)	2.15 (1.02)	6.11***	.24
3. SSSE	.44	.23	(.78)					2.80 (0.95)	2.92 (0.88)	-3.47**	.13
4. HS	.49	.22	.44	(.79)				2.46 (1.00)	2.59 (0.98)	-3.40**	.13
5. GF	.45	.32	.51	.44	(.89)			2.97 (1.16)	2.77 (1.14)	4.41***	.17
6. DEV	.57	.18	.38	.49	.35	(.86)		1.38 (0.94)	1.44 (0.98)	-1.86	.06
7. ER	.62	.31	.44	.44	.48	.59	(.87)	1.98 (1.03)	2.01 (1.01)	-0.68	.03
PNI Total								2.19 (0.76)	2.27 (0.75)	-2.84**	.11

Note. PNI = Pathological Narcissism Inventory; CSE = Contingent Self-Esteem; EXP = Exploitativeness; SSSE = Self-Sacrificing Self-Enhancement; HS = Hiding the Self; GF = Grandiose Fantasy; DEV = Devaluing; ER = Entitlement Rage. *N* = 2,801. Coefficient alpha on diagonal. Adapted from Pincus et al. (2009), with permission from the American Psychological Association.

p* < .05. *p* < .01. ****p* < .001.

three models are compared. In the first of these models, a single factor representing pathological narcissism is estimated. In the second model, a two-factor structure based on the initially proposed scale structure (Pincus et al., 2009) is estimated. In this model, the first-order factors of EXP, ER, and GF serve as indicators for a second-order factor of narcissistic grandiosity, with CSE, SSSE, DEV, and HS serving as indicators of narcissistic vulnerability. In the third model, an alternative two-factor structure is estimated with EXP, SSSE, and GF loading on narcissistic grandiosity and CSE, DEV, HS, and ER loading on narcissistic vulnerability. This structure is theoretically more appealing as it exchanges the locations of the SSSE and ER scales, reflecting the grandiose motivation of SSSE (i.e., self-enhancement and aggrandizement) and the vulnerability to negative affect associated with ER (i.e., rage in response to frustrations and unmet expectations). We believe this model more accurately groups the scales assessing self-enhancement strategies into indicators of narcissistic grandiosity and the scales assessing emotional- and self-dysregulation into indicators of narcissistic vulnerability. Thus, we hypothesized the third model would exhibit better fit than a one-factor superordinate model or the originally proposed two-factor model. In each of the two-factor models the higher order factors were allowed to freely covary as it was anticipated that these two factors of pathological narcissism would be associated with each other.

Method

Participants. Participants consisted of 2,801 predominantly Caucasian (86%), young adult, college students (1,721 women, 1,080 men) with a mean age of 18.50 (*SD* = 2.23) years. This sample was collected over four successive semesters, and all participants received partial course credit as compensation. This sample comprises the group of

participants used in the initial confirmatory analyses of the PNI first-order factors presented in Pincus et al. (2009).

Pathological Narcissism Inventory. The PNI is a 52-item measure that has respondents use a 6-point scale ranging from 0 (*not at all like me*) to 5 (*very much like me*) to rate each item. This format precludes the overuse of a scale's midpoint in responses. Of the 52 total items, 12 load on to CSE, 5 on EXP, 6 on SSSE, 7 on HS, 7 on GF, 7 on DEV, and 8 on ER. Because of the variability in scale length, mean scores are used instead of sums for easy comparison across scales. In large, nonclinical samples, the PNI has been shown to be positively correlated with depressive temperament, shame, aggression, stalking perpetration, interpersonal problems, and borderline personality organization and negatively correlated with self-esteem and empathy (Marino, Pincus, & Ménard, 2009; Pincus et al., 2009; Tritt, Ryder, Ring, & Pincus, 2010). In a modest-sized clinical sample, many of these same associations were found, but additionally the PNI total score negatively predicted medication use and number of client no-shows and positively predicted the number of suicide attempts (for a full review of individual scale associations, see Pincus et al., 2009). Cronbach's α values for the seven scales in this sample ranged from .78 to .93. The α value for the total score was .95. See Table 1 for descriptive statistics.

Statistical analysis. We conducted confirmatory factor analyses on the item covariance matrix using LISREL 8.80 (Jöreskog & Sörbom, 2006). As described above, three models were estimated. In the first model, the seven first-order factors served as indicators for a single second-order factor. In the second model, EXP, ER, and GF serve as indicators for one second-order factor, whereas CSE, SSSE, DEV, and HS served as indicators of the second. In the third model, EXP, SSSE, and GF loaded freely on the first second-order factor, and CSE, DEV, HS, and ER loaded freely on the second. Model fit was assessed using a number

Table 2. Study I Summary of Fit Statistics for the PNI Higher Order Factor Models

Model Description	χ^2	<i>df</i>	<i>p</i>	CFI	TLI	RMSEA	RMSEA 90% CI	AIC
1. Single second-order factor	13988.56	1,267	.00	.97	.97	.060	.059, .061	14210.56
2. Two second-order factors	13935.19	1,266	.00	.97	.97	.060	.059, .061	14159.19
3. Two second-order factors	13626.15	1,266	.00	.97	.97	.059	.058, .060	13850.15

Note. PNI = Pathological Narcissism Inventory; χ^2 = chi-square fit statistic; *df* = degrees of freedom; CFI = comparative fit index; TLI = Tucker–Lewis index; CI = confidence interval; AIC = Akaike information criterion. *N* = 2,801. Model 2 represents the Pincus et al. (2009) a priori expectations. Model 3 represents the revised expectations.

of indexes. The chi-square (χ^2) is the most widely used summary statistic for examining the adequacy of model fit in structural equation modeling; however, it is likely to overestimate lack of fit when sample size is large (Bollen, 1989) and when there are a large number of parameters in the model. Therefore, we used multiple complementary fit indices to evaluate individual model fit (Hu & Bentler, 1999), specifically the comparative fit index (CFI), Tucker–Lewis index (TLI), and the root mean square error of approximation (RMSEA) and its 90% confidence interval (CI; see MacCallum, Browne, & Sugawara, 1996). Acceptable model fit was defined by the following criteria: RMSEA < .08 (90% CI < .08), CFI > .90, TLI > .90 (Bentler, 1990; Hu & Bentler, 1999). Good model fit was defined by the following criteria RMSEA < .05, CFI > .95, TLI > .95 (Bentler, 1990; Hu & Bentler, 1999). To compare the non-nested models, the Akaike information criterion (AIC) was used. The AIC allows for a direct comparison across non-nested models with the model associated with the lower AIC being preferable (T. A. Brown, 2006). All cases had complete data for the PNI in this sample.

Results

The summary of fit statistics for each model can be found in Table 2. All three models had RMSEA and associated 90% CIs that suggested acceptable model fit, with Model 3 possessing slightly better fit (i.e., .059 vs. .060). 90% CIs were very narrow because of the large sample size. Additionally, all three models had CFI and TLI values that suggested good fit. As expected, χ^2 values were significant. Overall, these indices indicated that all models possessed good fit, and thus we relied on the AIC to determine the optimal higher order structure. The AICs for both of the two-factor higher order models were lower than the one-factor model as was expected based on the theoretical structure of pathological narcissism (Pincus & Lukowitsky, 2010). This is despite Model 2's higher order factors correlating at .95, which surpasses the threshold suggesting a common score.

Regardless, Model 3 had the lowest AIC, with the two higher order factors correlating at .81. By fixing this correlation to 1.0, the model is equivalent to a one-factor model, thus resulting in a significant degradation in fit. Although highly correlated, these factors are best modeled as separate. Therefore, based on an overall good model fit along with the lowest AIC and conformity with a priori theoretical assumptions, Model 3 was retained as the higher order structure of PNI. Table 3 provides a summary of items and standardized coefficients from the retained Model 3.

Discussion

As we predicted, based on theoretical and clinical descriptions of pathological narcissism, the results of Study I support a two-factor higher order solution for the PNI, with factors representing Narcissistic Grandiosity (SSSE, GF, EXP) and Narcissistic Vulnerability (ER, CSE, DEV, HS). The narcissistic grandiosity factor is characterized by self-serving beliefs and self-enhancement strategies (e.g., “I like to have friends who rely on me because it makes me feel important” [SSSE]; “I often fantasize about being recognized for my accomplishments” [GF]; “I can make anyone believe anything I want them to” [EXP]), whereas the narcissistic vulnerability factor is characterized by susceptibility to self- and emotional dysregulation (e.g., self-esteem, shame, anger, anxiety) when narcissistic needs are not met (e.g., “It irritates me when people don't notice how good a person I am” [ER]; “It's hard for me to feel good about myself unless I know other people admire me” [CSE]; “When others don't meet my expectations, I often feel ashamed about what I wanted” [DEV]; “When others get a glimpse of my needs, I feel anxious and ashamed” [HS]). An additional notable feature of each of these higher order factors is that they demonstrate that narcissistic grandiosity and narcissistic vulnerability are not isomorphic with overt and covert expressions of narcissism respectively (Pincus & Lukowitsky, 2010). On the contrary, grandiose and vulnerable expressions of narcissism each can be overt

Table 3. Study I Standardized First-Order Factor Loadings of PNI Items and Second-Order Factor Loadings of First-Order Factors

PNI Items	PNI First-Order Factors						
	CSE	EXP	SSSE	HS	GF	DEV	ER
36. It's hard for me to feel good about myself unless I know other people like me.	.81						
30. It's hard to feel good about myself unless I know other people admire me.	.80						
16. When others don't notice me, I start to feel worthless.	.79						
8. When people don't notice me, I start to feel bad about myself.	.79						
40. I am disappointed when people don't notice me.	.78						
48. I need others to acknowledge me.	.78						
47. When others don't respond to me the way that I would like them to, it is hard for me to still feel ok with myself.	.77						
32. I am preoccupied with thoughts and concerns that most people are not interested in me.	.71						
19. I sometimes need important others in my life to reassure me of my self-worth.	.70						
41. I often find myself envying others' accomplishments.	.65						
5. It's hard to feel good about myself when I'm alone.	.62						
2. My self-esteem fluctuates a lot.	.60						
10. I can make anyone believe anything I want them to.		.86					
15. I find it easy to manipulate people.		.82					
4. I can usually talk my way out of anything.		.73					
23. I can read people like a book.		.49					
35. Everybody likes to hear my stories.		.42					
39. I try to show what a good person I am through my sacrifices.			.70				
43. I help others in order to prove I'm a good person.			.67				
33. I like to have friends who rely on me because it makes me feel important.			.66				
22. I feel important when others rely on me.			.63				
25. Sacrificing for others makes me the better person.			.58				
6. I can make myself feel good by caring for others.			.37				
50. When others get a glimpse of my needs, I feel anxious and ashamed.				.77			
9. I often hide my needs for fear that others will see me as needy and dependent.				.74			
28. It's hard to show others the weaknesses I fell inside.				.66			
46. I can't stand relying on other people because it makes me feel weak.				.63			
44. It's important to show people I can do it on my own, even if I have some doubts inside.				.54			
7. I hate asking for help.				.49			
13. I wouldn't disclose all my intimate thoughts and feelings to someone I didn't admire.				.35			
45. I often fantasize about being recognized for my accomplishments					.83		
31. I often fantasize about being rewarded for my efforts.					.78		
42. I often fantasize about performing heroic deeds.					.75		
1. I often fantasize about being admired and respected.					.72		
14. I often fantasize about having a huge impact on the world around me.					.71		
26. I often fantasize about accomplishing things that are probably beyond my means.					.70		
49. I want to amount to something in the eyes of the world.					.64		
34. Sometimes I avoid people because I'm concerned they won't acknowledge what I do for them.						.73	
27. Sometimes I avoid people because I'm afraid they won't do what I want them to.						.73	
21. When others don't meet my expectations, I often feel ashamed about what I wanted.						.72	
17. Sometimes I avoid people because I'm concerned that they'll disappoint me.						.70	
24. When others disappoint me, I often get angry at myself.						.66	
3. I sometimes feel ashamed about my expectations of others when they disappoint me.						.62	

(continued)

Table 3. (continued)

PNI Items	PNI First-Order Factors						
	CSE	EXP	SSSE	HS	GF	DEV	ER
51. Sometimes it's easier to be alone than to face not getting everything I want from other people.							.61
37. It irritates me when people don't notice how good a person I am.							.76
11. I get mad when people don't notice all that I do for them.							.73
12. I get annoyed by people who are not interested in what I say or do.							.72
18. I typically get very angry when I'm unable to get what I want from others.							.70
38. I will never be satisfied until I get all that I deserve.							.65
20. When I do things for other people, I expect them to do things for me.							.65
29. I get angry when criticized.							.61
52. I can get pretty angry when others disagree with me.							.58
PNI second-order factors							
Narcissistic Grandiosity	—	.36	.82	—	.78	—	—
Narcissistic Vulnerability	.81	—	—	.71	—	.79	.85

Note. PNI = Pathological Narcissism Inventory; CSE = Contingent Self-Esteem; EXP = Exploitativeness; SSSE = Self-Sacrificing Self-Enhancement; HS = Hiding the Self; GF = Grandiose Fantasy; DEV = Devaluing; ER = Entitlement Rage. $N = 2,801$.

(e.g., “I try to show what a good person I am though my sacrifices” [SSSE]; “It’s important to show people I can do it on my own, even if I have some doubts inside” [HS]) or covert (e.g., “I often fantasize about performing heroic deeds” [GF]; “I often find myself envying others’ accomplishments” [CSE]). What is more, emerging research that has implemented this higher order factor structure has demonstrated discriminant validity for these factors in differential associations with external psychopathology and psychotherapy variables (e.g., Pincus et al., 2009; Tritt et al., 2010). The results of this study further illuminate the structure of pathological narcissism, and we now turn to examining the invariance of this structure across gender.

Study 2: The Gender Invariance of the PNI

The initial analyses of the PNI and the descriptive statistics presented in Table 1 suggest that there may be differential patterns of responding across genders. Specifically, in Study 1, women scored significantly higher on CSE, SSSE, HS, and the PNI total score, whereas men scored significantly higher on EXP and GF, and no differences were found on DEV or ER. The effect sizes (Cohen’s d) ranged from 0.03 to 0.35 ($M = 0.15$), generally of a small to medium effect size (Cohen, 1988). Although these differences are not large, they do raise the question of whether the PNI performs in a comparable fashion across men and women. Indeed, the theoretical and measurement literature on narcissism and personality pathology suggest more generally that gender differences may arise in the expression of narcissistic pathology and endorsement of narcissistic items on

self-report measures (e.g., Hibbard, 1992; Lindsay, Sankis, & Widiger, 2000; O’Leary & Wright, 1986; Wright, O’Leary, & Balkin, 1989). The differences noted in the PNI, albeit of modest magnitude, conform roughly to the hypothesized patterns.

Given the interest in narcissism and gender in the literature, it is useful to determine whether the PNI performs equivalently across men and women. The general framework for testing for measurement equivalence across groups has received extensive treatment (Chen, Sousa, & West, 2005; Meredith, 1993; Widaman & Reise, 1997). The primary goal is to establish whether equivalence exists in the constructs being measured across groups of substantive interest (Meredith, 1993). Therefore, we sought to test the measurement equivalence of the PNI across genders. In addition to this primary goal, we also sought as a practical matter to establish whether scale scores could be used in place of factor scores for the ease of using the PNI in actual practice as a clinical measure.

Method

Participants. Participants for this study consisted of 1,002 predominantly Caucasian (87%) college students who received course credit in return for participation. Of the initial 1,002 participants, 19 were excluded because of failure to provide gender information. Of the remaining 983 participants included in the study, 488 (49.6%) were male and 495 were female (50.4%). The average age of participants was 18.79 years ($SD = 1.53$).

Pathological Narcissism Inventory. As in Study 1, participants completed the 52-item PNI.

Table 4. Study 2 Descriptive Statistics

PNI Factors	Men (n = 475), Mean (SD)	Women (n = 488), Mean (SD)	t	d	α
1. CSE	1.95 (1.02)	2.27 (1.00)	-5.01***	.32	.92
2. EXP	2.67 (1.06)	2.34 (0.95)	5.11***	.33	.79
3. SSSE	3.06 (0.78)	3.13 (0.77)	-1.46	.09	.77
4. HS	2.61 (0.92)	2.76 (0.96)	-2.51*	.16	.78
5. GF	3.17 (1.04)	2.98 (1.01)	2.86**	.19	.87
6. DEV	1.49 (0.88)	1.60 (0.91)	-2.02*	.12	.84
7. ER	2.15 (0.92)	2.19 (0.92)	-0.61	.04	.84
NG	2.97 (0.67)	2.82 (0.66)	3.49**	.23	.84
NV	2.05 (0.74)	2.21 (0.73)	-3.34**	.22	.93
PNI Total	2.44 (0.60)	2.47 (0.60)	-0.68	.05	.93

Note. CSE = Contingent Self-Esteem; EXP = Exploitativeness; SSSE = Self-Sacrificing Self-Enhancement; HS = Hiding the Self; GF = Grandiose Fantasy; DEV = Devaluing; ER = Entitlement Rage; NG = Narcissistic Grandiosity; NV = Narcissistic Vulnerability. $N = 984$.

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

Statistical analysis. We sought to test the measurement invariance of the full second-order model detailed in Study 1 (Model 3) across genders. This model has 52 observed variables, seven first-order factors, and two second-order factors. To allow for tests of equivalence for first-order factor variances and second-order factor variances and covariances, factors were scaled by fixing marker variables. Because of the requirements of multigroup analyses, all model parameters were examined in unstandardized form (T. A. Brown, 2006; Chen et al., 2005) and are therefore difficult to directly interpret. Missing data occurred in 21 cases and appeared to be at random, with no item demonstrating greater than 0.5% lack of endorsement. Amount of missing data was not correlated with any of the demographic, PNI item, or PNI scale variables. Values for missing data points were created by multiple imputation using the expectation maximization algorithm in LISREL 8.80. The item covariances and item means were entered in to LISREL 8.80 for all measurement invariance analyses.¹

A number of approaches to establishing measurement invariance have been outlined within the literature (e.g., Jöreskog & Sörbom, 1988; Marsh, 1994; Widaman & Reise, 1997). However, the approach adopted here closely follows those outlined in Chen et al. (2005) for second-order CFA models. We proceeded by first testing the model in each gender by itself to establish model acceptability, followed by configural invariance (i.e., same form), invariance of the first-order factor loadings, second-order factor loadings, equivalence of first-order factor disturbances, equivalence of second-order variances and covariance, and, finally, intercept invariance. We did not explore the invariance of item residuals as this is generally considered to be a very stringent test that is rarely satisfied in applied settings and is of generally low practical concern (Byrne, 1998).

Overall goodness of fit for each model was established using the same multiple-index criteria outlined in Study 1.

In multigroup measurement equivalence testing, each successive model is nested within the less constrained models tested previously, allowing for a direct comparison using the χ^2 difference ($\Delta\chi^2$) test. The $\Delta\chi^2$ is distributed as a χ^2 , with the number of degrees of freedom equivalent to the difference in degrees of freedom between the two models. However, as with χ^2 statistic in basic CFA models, the $\Delta\chi^2$ is highly sensitive to sample size, and provides an overly stringent test of model comparison that is more a function of sample size as opposed to substantively or theoretically meaningful differences in fit. A more recent approach to testing for measurement equivalence has proposed a departure from the reliance on $\Delta\chi^2$ because of its high sensitivity to small departures from fit in large samples (Cheung & Rensvold, 2002). In this approach, it is suggested that the change in CFI (ΔCFI) might be employed as a less conservative yet viable test for model comparison in measurement equivalence tests. Nevertheless, as of this point the distribution of ΔCFI remains unknown, leaving investigators with no concrete guidelines for what an acceptable change score might be. Based on initial Monte Carlo studies, Cheung and Rensvold (2002) have suggested a change of .01 or less in the CFI is indicative of measurement equivalence, and a number of other authors have adopted this suggested cutoff (e.g., Ang & Raine, 2009; Chen et al., 2005; Rast, Zimprich, Van Boxtel, & Jolles, 2009; South, Krueger, & Iacono, 2009). For this study we present both the highly conservative $\Delta\chi^2$ (and its associated p values) and the more liberal ΔCFI and discuss the results accordingly.

Results

Descriptive statistics and mean comparisons. The means and standard deviations for each gender on each scale are presented in Table 4. In addition, the scale's internal consistency (Cronbach's alpha) for the whole sample is presented.

All internal consistencies are in acceptable ranges. Finally, the mean comparisons for the first- and second-order scales and PNI total score are provided. As in Study 1, a number of significant but generally small to medium effect size differences (i.e., range = 0.04-0.33, $M = 0.18$) were found. These are of similar, but not identical, direction and magnitude as in Study 1. In this study, women scored higher on CSE, HS, and DEV of the first-order scales and Narcissistic Vulnerability in the second-order scales, whereas men scored higher on EXP and GF in the first-order scales and Narcissistic Grandiosity in the second-order scales. No differences were found on SSSE, ER, or the PNI total score.

Measurement invariance tests. The results of the measurement invariance tests and fit for all models are summarized in Table 5. Table 6 presents the unstandardized coefficients for both equivalent and unequal parameters for the final model. We first conducted confirmatory factor analyses on the item covariance matrix for the male group ($n = 488$) and female group separately ($n = 495$). Models for both men and women (1 and 2) achieved satisfactory fit within each gender, suggesting that further tests of measurement invariance were worth pursuing. In addition, the model tested for configural invariance (Model 3) achieved acceptable model fit, indicating that both men and women possess the same factor structure for the PNI. Following this, all first-order factor loadings were constrained to be equal across groups (Model 4). Comparing Model 4 with Model 3 shows no change in the CFI, although the $\Delta\chi^2$ of 75.00 for 45 df was significant ($p = .00$). By relaxing the equivalence on two items in Model 5 (Item 15 loading on EXP: "I find it easy to manipulate people"; and Item 47 loading on CSE: "When others don't respond to me the way that I would like them to, it is hard for me to still feel ok with myself"), this resulted in a nonsignificant $\Delta\chi^2$ of 58.01 for 43 df ($p = .06$). With two items allowed to remain free, this would technically constitute partial measurement equivalence (T. A. Brown, 2006). It is important to note, however, that these are merely 2 out of 52 items, the difference was only in magnitude and not in sign, and there was no change in CFI. We take this as evidence for measurement equivalence in the first-order factor loadings. This level of factorial invariance indicates that the underlying first-order factors possess the same measurement scale across men and women, allowing for the comparison between the factors of the PNI and external variables across gender (Chen et al., 2005). In other words, these indicate that differences in correlations, regression coefficients, and structural parameters can be directly compared across gender.

Model 6 extended the constraints to include equivalence in the loadings of the first-order factors on the two higher order factors. Comparing Model 6 with Model 5 resulted in a nonsignificant $\Delta\chi^2$ of 6.05 for 5 df ($p = .30$), with no change in CFI, indicating that the higher order factor

loadings were equivalent and thus the second-order factors of Narcissistic Grandiosity and Narcissistic Vulnerability can be compared across gender in their relations to external variables.

Model 7 added constraints to the first-order factor disturbances resulting in a significant $\Delta\chi^2$ of 51.87 for 7 df ($p = .00$), although there was no associated change in CFI. By allowing the disturbances for EXP and HS to remain free across gender, Model 8 achieved a nonsignificant $\Delta\chi^2$ of 6.61 for 5 df ($p = .25$), again with no appreciable change in CFI. This form of invariance tests for the equivalence in first-order factor disturbances. Substantively, in a second-order CFA, this tests whether the same amount of variance remains unexplained across groups in the first-order factors after accounting for the variance explained by the higher order factors. Based on the $\Delta\chi^2$, the disturbances for CSE, SSSE, DEV, GF, and ER are all equivalent, and thus the same amount of variance remains unexplained for men and women alike. In contrast, the disturbances for EXP and HS are not equivalent across gender. A closer analysis reveals that EXP has a higher disturbance in men than in women, whereas the opposite is true of HS. This suggests that there is more specific variance in EXP unexplained by Narcissistic Grandiosity for men than women. For HS, there is more residual variance after accounting for Narcissistic Vulnerability in the factor for women than men.

Model 9 constrained the higher order variances and covariance to be equivalent across gender resulting in a nonsignificant $\Delta\chi^2$ of 2.63 for 3 df ($p = .45$), and no appreciable change in CFI. These results indicate that the second-order factors effectively share the same variance across gender, and they further share equivalent relationships to each other in men and women. This indicates that the higher order structure of pathological narcissism is equivalent in men and women and that these higher order factors have equal variances allowing for their direct comparison across genders in analyses such as path models (see Marsh, 1994).

The preceding hierarchy of models was all based on the covariance structure of the items. And although the results support the factorial invariance indicating that the PNI has the same scale across gender, the equivalence of intercept (i.e., origin of the scales) for each gender has not been established. In Model 10 the item-level intercepts (i.e., item means) were constrained to be equivalent resulting in a significant $\Delta\chi^2$ of 408.61 for 52 df ($p = .00$) and an associated ΔCFI of .01. Although the more liberal ΔCFI criterion would indicate that these intercepts are equivalent, the more conservative $\Delta\chi^2$ would argue against accepting the nested model, Model 10, and calling the intercepts equivalent. A review of the modification indices provided by LISREL suggested that some item intercepts were not invariant. Intercepts were freed item by item until a satisfactory model

Table 5. Summary of Fit Statistics of the Tests for Measurement Invariance Across Gender for the PNI

Model Description	Comparison	χ^2	df	$\Delta\chi^2$	Δdf	Δp	CFI	TLI	RMSEA	RMSEA 90% CI
1. Men only	—	3599.20	1,266	—	—	—	.95	.95	.062	.059, .064
2. Women only	—	3733.41	1,266	—	—	—	.94	.94	.063	.061, .065
3. Equivalent form	—	7332.83	2,532	—	—	—	.95	.94	.062	.061, .064
4. Equivalent first-order factor loadings	4 to 3	7407.83	2,577	75.00	45	.00	.95	.95	.062	.060, .064
5. Equivalent first-order factor loadings ^a	5 to 3	7390.84	2,575	58.01	43	.06	.95	.95	.062	.060, .063
6. Equivalent first- and second-order factor loadings	6 to 5	7396.89	2,580	6.05	5	.30	.95	.95	.062	.060, .063
7. Equivalent first- and second-order factor loadings and first-order disturbances	7 to 6	7448.76	2,587	51.87	7	.00	.95	.95	.062	.060, .064
8. Equivalent first- and second-order factor loadings and first-order disturbances ^b	8 to 6	7403.50	2,585	6.61	5	.25	.95	.95	.062	.060, .063
9. Equivalent first- and second-order factor loadings, first-order disturbances, and second-order variances and covariance	9 to 8	7406.13	2,588	2.63	3	.45	.95	.95	.062	.060, .063
10. Equivalent first- and second-order factor loadings, first-order disturbances, second-order variances and covariance, and intercepts	10 to 9	7814.74	2,640	408.61	52	.00	.94	.94	.063	.061, .065
11. Equivalent first- and second-order factor loadings, first-order disturbances, second-order variances and covariance, and intercepts ^c	11 to 9	7454.99	2,623	48.86	35	.06	.95	.95	.061	.060, .063

Note. PNI = Pathological Narcissism Inventory; χ^2 = chi-square fit statistic; df = degrees of freedom; $\Delta\chi^2$ = change in chi-square; Δdf = change in degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; CI = confidence interval. N = 963; Males n = 475; Females n = 488.

a. All first-order factor loadings invariant across gender with the exception of Item 15 loading on EXP and 47 loading on CSE.

b. Variances for first-order factors Exploitativeness and Hiding the Self were allowed to remain free across genders.

c. Means for Items 2, 4, 6, 8, 9, 10, 14, 15, 16, 26, 27, 32, 34, 38, 42, 48, and 52 were allowed to remain free across gender.

Table 6. Unstandardized Parameter Values for the Final Gender Equivalence Model

PNI Items	CSE	EXP	SSSE	HS	GF	DEV	ER	Item Means	
								Men	Women
Item 36	1.16							2.12	
Item 30	1.08							1.83	
Item 40	1.00							2.15	
Item 48	0.96						2.18	2.33	
Item 47	0.90-1.03							1.81	
Item 16	1.11						1.79	1.99	
Item 8	1.14						1.98	2.17	
Item 32	0.96						1.80	1.56	
Item 19	1.00							2.52	
Item 41	0.77							2.57	
Item 5	0.87							1.63	
Item 2	1.00						2.50	2.77	
Item 10		1.00					2.43	2.01	
Item 15		0.82-0.96					2.26	1.73	
Item 4		0.80					2.92	2.68	
Item 23		0.49						2.99	
Item 35		0.37						2.49	
Item 39			0.95					2.67	
Item 43			1.00					2.47	
Item 33			0.85					2.90	
Item 22			0.60					3.66	
Item 25			0.78					3.21	
Item 6			0.46				3.42	3.82	
Item 50				1.07				1.99	
Item 9				1.13			2.30	2.49	
Item 28				1.00				2.77	
Item 46				0.84				2.39	
Item 44				0.44				3.23	
Item 7				0.73				2.67	
Item 13				0.42				3.22	
Item 45						1.00		3.07	
Item 31						0.91		2.99	
Item 42						0.99	3.12	2.48	
Item 1						0.92		2.89	
Item 14						0.85	3.30	3.10	
Item 26						0.92	3.29	3.03	
Item 49						0.72		3.29	
Item 21							0.87	1.53	
Item 34							0.97	1.43	1.23
Item 24							0.83	1.54	
Item 17							1.00	1.47	
Item 27							1.05	1.42	1.22
Item 3							0.93	1.89	
Item 51							0.95	1.66	

(continued)

Table 6. (continued)

PNI Items	CSE	EXP	SSSE	HS	GF	DEV	ER	Item Means	
								Men	Women
Item 37							1.12	2.34	
Item 11							1.08	2.59	
Item 12							1.03	2.33	
Item 18							0.93	1.59	
Item 38							1.00	1.80	1.59
Item 20							0.93	2.29	
Item 29							0.88	2.53	
Item 52							0.80	2.06	1.77
PNI first-order disturbances									
Men		1.73		0.50					
Women	0.32	1.23	0.32	0.81	0.45	0.36	0.22		
PNI second-order factor loadings									
NG	—	0.35	0.75	—	1.00	—	—		
NV	1.10	—	—	0.88	—	0.88	1.00		

Note. PNI = Pathological Narcissism Inventory; CSE = Contingent Self-Esteem; EXP = Exploitativeness; SSSE = Self-sacrificing Self-enhancement; HS = Hiding the Self; GF = Grandiose Fantasy; DEV = Devaluing; ER = Entitlement Rage. Total $N = 983$; Men $n = 488$; Female $n = 495$. Values of 1.00 in boldface indicate parameters fixed in model estimation.

was achieved based on a nonsignificant $\Delta\chi^2$. Only 17 out of the 52 items were allowed to remain free across groups in Model 11, which achieved a nonsignificant $\Delta\chi^2$ of 48.86 for 35 df ($p = .06$) and a ΔCFI of .00. Of these 17 items, 6 were favored by women (Items 2, 8, 16, 48 [CSE], 6 [SSSE], and 9 [HS]) and 11 by men (Items 32 [CSE], 4, 10, 15 [EXP], 14, 26, 42 [GF], 27, 34 [DEV], 38 and 52 [ER]). Without intercept equivalence across groups, a test of the mean difference in latent factors is not generally supported. However, as the majority of items achieved invariance in intercept, exploratory analyses were conducted to test for invariance in the first-order factor intercepts and the second-order factor means. Latent mean differences were found for the CSE, EXP, and DEV factors, with the differences being .272, .343, and .177, respectively, with women achieving higher mean scores in CSE and DEV and men achieving higher scores in EXP. In terms of higher order scores, only Narcissistic Vulnerability, but not Narcissistic Grandiosity, had a significant latent mean difference of .173, with women having a higher mean.

Scoring the PNI in practice. As a final analysis, the factor scores for both first- and second-order factors were computed using LISREL 8.80. Factor scores were calculated for each individual and correlated with their mean unit-weighted scale scores. Results indicated that the first-order factor scores are highly correlated with the mean scale score (range of $r_s = .95-.99$). The factor scores of the second-order scales were also high at $r = .86$ and $.97$ for Narcissistic Grandiosity and Vulnerability, respectively. Based on these results,

we believe it is adequate for practicing clinicians to use the mean scale scores for ease of calculation.

Discussion

The results of Study 2 suggest that the PNI is a robust inventory that possesses strong measurement invariance across genders. Applying the recently suggested more liberal criterion of ΔCFI of .01 or less (Cheung & Rensvold, 2002), invariance was achieved at all levels (i.e., configural, factorial of first- and second-order, disturbances, second-order variances and covariance, and intercept). In light of the large sample size used here, and consistent with recent investigations of invariance (e.g., Ang & Raine, 2009; Chen et al., 2005; Rast et al., 2009; South et al., 2009), this may be the appropriate conclusion. However, using the traditional criterion of nonsignificant $\Delta\chi^2$, a slightly more nuanced picture emerges. Although overall measurement invariance is achieved in configural, factorial, and second-order variance covariance, the failure to achieve measurement equivalence in the disturbances offer a glimpse of the substantive features of the constructs measured by these scales in men and women. Specifically, there is significantly more variance in EXP in men than women after accounting for Narcissistic Grandiosity, suggesting that for men there are other constructs that would account for this remaining variance, whereas the opposite is true for HS. Additionally, a minority of items demonstrate gender differences in mean endorsement that roughly conform to

patterns of higher endorsement of vulnerable themes in women and grandiose themes in men. It is important to note, however, that this is not absolute. The latent mean differences across gender were similarly of modest size and exhibited the same pattern as the PNI scale scores. However, at the latent level, HS, GF, and Narcissistic Grandiosity do not show mean differences as they do in the scale scores. Finally, the correlations of the factor scores with scale scores indicate that the easily computed mean-based scale scores are suitable measures for applied assessment settings.

General Discussion

The PNI was recently developed to address an important gap in the available instruments assessing pathological narcissism by creating a reliable and valid multidimensional measure encompassing aspects of both narcissistic grandiosity and narcissistic vulnerability (Pincus et al., 2009). In Study 1, we sought to determine whether the lower order scales of the PNI load on two higher order factors, consistent with the clinical, psychiatric, and social/personality psychology literature (Cain et al., 2008). Study 2 followed by examining the psychometric robustness of the PNI vis-à-vis gender, given that past literature has discussed the potential for gender differences in the expression of narcissism. Taken together, the results of these two studies suggest that (a) the PNI is a broad measure of pathological narcissism that conforms to the hypothesized two-dimensional higher order factor structure reflecting narcissistic grandiosity and vulnerability, (b) the seven lower order factors effectively map the overt and covert expression of pathological narcissism, and (c) this structure is invariant across gender.

Detailed consideration of the results reveals a more comprehensive picture of narcissism in its various manifestations. First, an examination of the content of the items and scales that form the higher order constructs contrasts the dysfunction associated with narcissistic grandiosity (assessed by EXP, GF, SSSE) and narcissistic vulnerability (assessed by CSE, DEV, HS, ER). The dysfunction of narcissistic grandiosity is characterized by pathological beliefs and self-enhancement strategies such as self-aggrandizing fantasy and exploitation of others. In contrast, narcissistic vulnerability at its core is associated with self and affective dysregulation marked by shame, rage, or deflation associated with the awareness of, and the frustration of, intense needs for recognition and admiration. Across both studies, all first-order factors emerged as strong markers for the second-order factors with the exception of EXP, which had a moderate loading on narcissistic grandiosity. This is likely because of both measurement and construct issues. As it pertains to measurement, the EXP scale is unique among the grandiosity factor in that its content is “other” focused

as opposed to the “self-” focused content of SSSE and GF. More important, as it pertains to the construct, interpersonal exploitation as a process is not specific to pathological narcissism, being a feature of other pathologies as well (e.g., psychopathy, borderline personality disorder). Therefore, although EXP serves as a marker for narcissism, the variance in this scale is also likely to be accounted for by strong contributions from other related but distinct constructs. Finally, the strong correlation between the higher order PNI factors suggests narcissistic grandiosity and narcissistic vulnerability are separable but keenly interrelated to each other. This further supports calls for more comprehensive clinical description, diagnostic criteria, and assessment of phenotypic variations in pathological narcissism (e.g., Cain et al., 2008; Pincus & Lukowitsky, 2010; Ronningstam, 2009; Russ et al., 2008).

Building on these results, Study 2 established the measurement invariance of the PNI across genders. Currently there exists no measure of pathological narcissism for adults for which this has been demonstrated. A short measure of narcissism in children, the Narcissistic Personality Questionnaire for Children–Revised (Ang & Raine, 2009; Ang & Yusof, 2006) does appear to possess gender equivalence but is not intended for use with adults. Taking the most conservative interpretation of these results, covariance- and correlation-based research that aims to compare the construct of pathological narcissism across genders can confidently use the PNI by applying and evaluating the appropriate across-gender model constraints. The factorial invariance at the first- and second-order levels along with equivalence in higher order variances and covariance supports this type of research. However, means-based research should proceed more cautiously as measurement invariance was not found for the intercepts of a subset of items, leaving open the question of whether mean differences at the latent level are the result of true differences in narcissism or bias in measurement. Given the attention to differences in expression of pathological narcissism across gender in the theoretical literature (e.g., O’Leary & Wright, 1986), these intercept differences may indeed reflect true differences in narcissistic expression within the population or gendered socialization. Importantly, these are a minority of items, and the effect sizes of the mean differences of unit-weighted scale scores are small with the exception of CSE and EXP.

Going beyond strictly measurement issues, Study 2 revealed interesting aspects of the constructs measured by EXP and HS. Specifically, EXP and HS did not have equivalent disturbances across men and women. EXP retained more variance in men than in women after accounting for Narcissistic Grandiosity, suggesting this construct may be broader in men than in women, with the opposite being true for HS with more variance remaining for women after accounting for Narcissistic Vulnerability. It is likely that

each conforms to more stereotypical gendered expression of behavior, and thus each retains more variance to be explained by other constructs in men and women respectively. For example, EXP is associated with interpersonal dominance, a style more associated with males (Gurtman & Lee, 2009), whereas the content of HS is closely related to experiences of shame, an emotion that is more ascendant in the phenomenology of women (Ferguson & Crowley, 1997; Ferguson & Eyre, 2000; Lewis, 1971). Nevertheless, each serve as adequate (EXP) or very good (HS) indicators for their respective higher order scales and are well placed within the broader construct of pathological narcissism.

The PNI maintains as one of its strengths the necessary breadth of narcissistic content within one measure requiring no complex scoring strategies or algorithms. Indeed, based on the ancillary results of Study 2, deriving scores for narcissistic grandiosity and narcissistic vulnerability merely requires the calculation of means. Future research should focus on further construct validation of the PNI by firmly ensconcing it within the nomological net of personality and psychopathology. Given the strong association between the two higher order factors, their discriminant validity will be important to establish. Recent studies have demonstrated meaningful differential associations with external constructs (e.g., Marino et al., 2009; Miller et al., 2010; Pincus et al., 2009; Tritt et al., 2010) providing further evidence for their construct validity and supporting the retention of Model 3 in Study 1. Additionally, more research is warranted within clinical and community samples. Future research with the PNI ideally should involve experimental psychopathology paradigms (e.g., behavioral challenge tasks), ecological momentary assessment of behaviors associated with pathological narcissism (e.g., intensive repeated measurement of emotions and interpersonal behavior), and an evaluation of the sensitivity and specificity of the measure to diagnose clinical levels of narcissism in patient samples. The majority of the current research on narcissism rests on the widespread use of the NPI, which is limited in its psychometric attributes and breadth of content related to pathological narcissism. Thus, despite the wealth of literature using the measure, the construct of narcissism and its assessment via the NPI rests on a limited definition that only captures a portion of the universe of narcissistic phenomenology and expression. It is our view that the PNI can serve as the basis for self-report assessment of narcissism that moves beyond the existing measures' current limitations in content coverage and facilitates the synthesis of empirical study and clinical identification of narcissistic pathology.

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Note

1. Given the large size of the 52 × 52 covariance matrix and mean vectors, these are not provided here but are instead available from the first author on request.

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