Comparing Conceptualizations of Narcissism in Predicting Negative Thinking Styles

Courtney K. Mason[1] · Hilary L. DeShong[1]

Abstract
Research suggests that a dimensional three-factor model of agentic extraversion, narcissistic neuroticism, and self-centered antagonism is the most parsimonious model for describing the personality characteristics of narcissism. Currently, however, pathological narcissism is still often defined utilizing a single-factor model based on the diagnostic criteria for narcissistic personality disorder (NPD), leading to mixed results in understanding the link between narcissism and negative thinking styles. Thus, the current study sought to compare the three-factor and one-factor models in predicting specific forms of maladaptive thinking styles within a college student sample ($n = 362$) utilizing path analysis. The results provided evidence for specific trait domains of narcissism being linked to specific forms of repetitive negative thoughts, with narcissistic neuroticism being the most consistent and strongly associated trait domain with anger rumination, general rumination, worry, and catastrophizing. Self-centered antagonism was strongly associated with anger rumination and catastrophizing and appears to be a protective factor against worry. Thus, this study provided evidence that a dimensional 3-factor model of narcissism provides a better, more nuanced understanding of how narcissism and NPD are related to cognitive dysfunction. Future research is needed to compare other models of narcissism and to better understand the transdiagnostic nature of the different forms of repetitive negative thoughts. Identifying negative thoughts and how they occur within certain personality pathology may inform better clinical practices for impaired thinking styles.

Keywords Narcissism · Narcissistic personality disorder · Repetitive negative thoughts · Five factor model · Anger rumination

Narcissism is a complex personality construct that can be conceptualized as pathological and nonpathological. Pathological narcissism is often described as including emotional instability and reactivity (Miller & Campbell, 2008) and often results in strained interpersonal relationships and occupational difficulties (American Psychiatric association [APA], 2022; Miller et al., 2007). Narcissism is often described using underlying personality traits, such as through the lens of the Five Factor Model (FFM; Costa & McCrae, 1988). The FFM describes general personality using five broad domains (i.e., neuroticism, extraversion, conscientiousness, agreeableness, and openness to experience). Each domain can be described by six facet traits

(i.e., the facet traits for agreeableness are trust, straightforwardness, altruism, compliance, modesty, and tendermindedness). Evidence suggests that the FFM domains of high extraversion, low neuroticism (emotional stability), and low agreeableness (antagonism) positively predict narcissism (e.g., Foster & Trimm, 2008; Ghaed & Gallo, 2006; Lynam & Widiger, 2001; Samuel & Widiger, 2004). In fact, recent research suggests that a three-factor model of agentic extraversion, narcissistic neuroticism, and self-centered antagonism is the most parsimonious model for describing the personality characteristics of narcissism. (Crowe et al., 2019).

Beyond the FFM, narcissism has also been conceptualized as a two-factor model that includes vulnerable and grandiose narcissism (Cain et al., 2008; Miller et al., 2011; Wink, 1991). Within this model, grandiose narcissism includes traits such as exploitativeness, exhibitionism, a lack of empathy, and overt expressions of superiority and entitlement. Meanwhile, vulnerable narcissism includes

✉ Hilary L. DeShong
hld166@msstate.edu

1 Department of Psychology, Mississippi State University, P.O. Box 6161, Starkville, Mississippi State, MS 39762, USA

feelings of shame, insecurity, and low self-esteem. Though distinct components of narcissism, they share a common developmental foundation and are both observed as fluctuating patterns within individuals (Jauk et al., 2017; Miller et al., 2011; Pincus & Roche, 2011). Both vulnerable and grandiose narcissism have also been described using the FFM, such that vulnerable narcissism is positively related to the neuroticism facets of angry hostility, self-consciousness, and vulnerability while grandiose narcissism is highly related to the extraversion facets of excitement seeking, gregariousness, and assertiveness (Lynam & Widiger, 2001; Miller et al., 2011; Samuel & Widiger, 2004). Meanwhile, both grandiose and vulnerable narcissism are strongly related to antagonism (low agreeableness), but there are facet-level differences between the two domains. Specifically, the facets of immodesty, noncompliance, dishonesty, and low altruism are related to grandiose narcissism and the facet of distrustfulness is related to vulnerable narcissism (Glover et al., 2012; Miller et al., 2011, 2017). Therefore, grandiose narcissism is positively associated with agentic extraversion and interpersonal antagonism, while vulnerable narcissism is positively associated with neuroticism and interpersonal antagonism (Miller et al., 2016b).

The underlying trait similarity of antagonism may explain some of the overlapping maladaptive coping strategies which occur within both grandiose and vulnerable narcissism. For instance, individuals exhibiting symptoms of both grandiose and vulnerable narcissism viewed social environments as negative overall (Lamkin et al., 2014). Despite increased efforts of researchers (e.g., Miller et al., 2017), there is limited examination of antagonism with other domains of narcissism, as exhibited in a recent review (Lynam & Miller, 2019). In fact, there has been a recent call to evaluate and expand on how antagonism exhibits itself within the construct of narcissism (Weiss et al., 2019).

Besides the trait perspective of narcissism, the most extreme and maladjusted version of narcissism has been included within the *Diagnostic and Statistical Manual for Disorders Fifth Version Text Revision* (DSM-5-TR; APA, 2022) as a personality disorder. Specifically, narcissistic personality disorder (NPD) is characterized by extreme positive views of oneself that cause impairment in their life. Notably, the NPD description includes many aspects of grandiose narcissism but seems to be missing several elements of vulnerable narcissism that also lead to impairment (Miller et al., 2016a; Russ et al., 2008). Thus, it may be that the NPD construct is missing important impairments that may be resulting from this component of narcissism. Furthermore, the NPD conceptualization may fail to capture specific forms of impairment because it is not assessing all aspects of narcissism. In sum,

people with maladaptive personality traits such as heightened neuroticism are prone to engaging in maladaptive thoughts patterns, which is often targeted in mental health treatment modalities, such as cognitive behavioral therapy (Spinhoven, 2018). As such, narcissism may also be linked to these sort of maladaptive thinking patterns. This has implications for potential treatments for NPD and is thus worth considering next.

Repetitive Negative Thoughts

Repetitive Negative Thinking (RNT) styles are specific forms of cognitive impairment that are often considered transdiagnostic in nature given that they occur within a variety of mental health concerns. Specifically, RNT refers to when an individual engages in excessive and repetitive thinking about their current concerns and problems, past problems and experiences, and/or worries related to the future. Thus, there are several different forms of RNT within the literature that are worth considering in relation to narcissism.

Rumination

The RNT most associated with narcissism is rumination (e.g., Atlas & Them, 2008; Grove et al., 2019; Krizan & Johar, 2015), which is described as a way of responding to distress and the possible causes and consequences of this distress, in a repetitive and passive manner (Nolen-Hoeksema et al., 2008). Rumination is often investigated broadly regarding many different negative emotions, though it can be further broken down into specific emotional valences and experiences (e.g., anger rumination, sadness rumination, interpersonal rumination). There are few studies that have investigated broad rumination in relation to narcissism. For example, research has suggested that narcissistic rivalry has a higher correlation with general rumination than narcissistic admiration (Grove et al., 2019).

Beyond general rumination, narcissism has strong links to anger rumination (e.g., Krizan & Johar, 2015; Martino et al., 2015), which is when an individual is repetitively thinking about an anger experience and the causes of that anger (Sukhodolsky et al., 2001). In fact, it has previously been suggested that anger rumination is a primary factor in conceptualizing vulnerable narcissism (Krizan & Johar, 2015). However, evidence is mixed, as recent research found narcissism to not be related to anger rumination at all (Yang et al., 2019). Within this study (Yang et al., 2019), narcissism was measured with the Narcissistic Personality Inventory – Brief Version

(NPI-16; Ames et al., 2006), which does not differentiate domains of narcissism and instead uses a sum score for a unitary single-factor. Therefore, it may not be specific enough to pick up on the nuanced relationships between the underlying components of narcissism and anger rumination. Notably, research has yet to assess anger rumination in relation to the FFM narcissism domains of agentic extraversion, narcissistic neuroticism, and self-centered antagonism, thus highlighting a significant gap in the literature.

Worry and Catastrophizing

Beyond rumination (which focuses on the past), negative thinking styles can also be future oriented. For instance, worry is a future oriented RNT that also leads to distress and is closely related to the emotion of fear (Borkovec et al., 1983; Watkins et al., 2005). Previous research suggests that narcissism is positively correlated with worry (Kelly, 2014). This is supported through other research suggesting pre-adolescent girls that have heightened narcissistic traits have increased worry after performing poorly at a coded behavioral lab task when in the presence of another person (Ragbeer, 2015). Additionally, a case study was presented in which a patient appeared to demonstrate Generalized Anxiety Disorder initially, but over the course of treatment, was endorsing significant symptoms of NPD, indicating worry could coincide with NPD (Daudelin-Peltier & Dugas, 2016). However, there is some evidence to suggest a lack of relation between narcissism and worry. Specifically, a recent study suggests that narcissism was not significantly related to general worry about the COVID-19 pandemic in 2020 (Monteiro et al., 2022). However, this may have been due to the specificity of worry regarding the pandemic instead of the broad construct of worry. Therefore, additional research is required to better understand how narcissism may be linked to general worry. Utilizing a three-factor model of narcissism may provide additional insights and explain the previously mixed findings.

Research has also investigated catastrophizing, which is an extreme form of worry characterized by a focus on worst-case scenarios as likely outcomes to future events (Garnefski et al., 2001). To date, only one study has investigated narcissism directly with catastrophizing. Specifically, Reis and colleagues (2015) demonstrated that narcissism was not related to catastrophizing within a group of women athletes when presented with a prompt of their team losing an athletic game. Given that this was a very particular research protocol with a specific population, additional research is needed to explore whether narcissism may be linked to catastrophizing more broadly.

Current Study

In sum, when considering potential negative thinking styles, previous studies have only included one conceptualization of narcissism (e.g., vulnerable/grandiose narcissism, NPD) and/or have assessed for a limited number of thinking styles. Thus, research has yet to investigate cognitive impairment differences across the conceptualizations of narcissism. Elucidating these relationships may provide more insight into how to personalize treatment for individuals with elevated narcissistic traits. Therefore, the current study examines the relationship of the three-factor model (i.e., agentic extraversion, narcissistic neuroticism, and self-centered antagonism) and the single factor model of narcissism (i.e., NPD) with four types of negative thinking (i.e., general rumination, anger rumination, worry, catastrophizing). Path analysis was chosen to analyze the data as a parsimonious way of simultaneously estimating several regression models as well as evaluating competing models in predicting four types of RNT (i.e., worry, anger rumination, general rumination, catastrophizing). The current study had four specific hypotheses. First, general rumination, anger rumination, worry, and catastrophizing would be significantly positively correlated with narcissistic neuroticism and self-centered antagonism. Second, general rumination, anger rumination, worry, and catastrophizing would be significantly positively correlated with NPD. Third, the three-factor FFM model of narcissism would provide a better fit to the data in predicting the four types of RNT. Finally, it was expected that the model with the best fit would be one in which narcissistic neuroticism and self-centered antagonism significantly predict general rumination, anger rumination, worry, and catastrophizing.

Method

Participants and Procedure

Undergraduate students ($n = 362$) at a southeastern university self-selected to participate in an online study provided through the university psychology research recruitment system (i.e., SONA). Participants were directed to a Qualtrics survey to complete self-report measures which were presented in a randomized order. Participants were compensated with one SONA course credit for their participation, which took approximately one hour. Descriptive data of the sample demographics are presented in Table 1. The mean age of the sample was 19.65 (SD = 1.56). When asked to select their biological sex, 66.60% selected woman and 32.30% selected man, with four that chose "prefer not to respond" (1.10%). When asked about gender, 66.30% selected female while 32% selected male and 0.80% selected other, with

Table 1 Sociodemographic Characteristics of Participants

Demographics	Student Sample	
	N	%
Sex		
Men	117	32.30
Women	241	66.60
Prefer not to respond	4	1.10
Gender		
Male	116	32.00
Female	240	66.30
Other	3	0.80
Prefer not to respond	3	0.80
Racial/Ethnic Background		
White/Caucasian	292	80.70
Black/African American	42	11.60
Asian/Pacific Islander	5	1.40
Hispanic	7	1.90
Multi-Racial	10	2.80
Native American/Alaska Native	1	0.30
Other	1	0.30
Prefer not to respond	4	1.10
Current Mental Health Treatment	58	16.00
Current Medication for Disorder	55	15.20

Note. Student Sample ($n=362$) had an average age of 19.65 (SD = 1.56).

three that chose "prefer not to respond" (0.80%). Most of the sample identified as White/Caucasian (80.70%), with 11.60% identifying as Black/African American, 2.80% as multi-Racial, 1.90% as Hispanic, 1.40% as Asian/Pacific Islander, 0.30% as Native American/ Alaska Native, 0.30% as other, and 1.10% who chose "prefer not to respond. Approximately 16% of participants responded "yes" to currently seeking mental health treatment and 15.20% of participants responded "yes" to currently taking medication for a psychological disorder.

The initial sample at the end of data collection included 455 participants. Data were cleaned and a participant was dropped if they chose "prefer not to respond" for 20% or more of their responses or if they endorsed 50% or greater of the Infrequent validity questions assessed via the Elemental Psychopathy Assessment (EPA; Lynam et al., 2011). As such 56 participants were removed due to their responses on the EPA and 24 were removed for having 20% or more of missing data for selecting "prefer not to respond". Additionally, at the end of the study, participants were asked, "Is there any reason we should not use your answers in our research? You will still receive credit regardless of your answer." Each of these participants also described their reasonings for stating "yes" and those responses were evaluated and determined to be confounds to their responses (i.e., did not pay attention, tiredness). The 13 participants that reported "yes" were excluded. Thus, the final sample size was 362.

Measures

Anger Rumination Scale (ARS)

The ARS (Sukhodolsky et al., 2001) consists of 19 items measuring the tendency to think about current or past anger-provoking situations. The ARS uses a four-point Likert scale ranging from one (almost never) to four (almost always, with higher scores on the measure indicating higher levels of anger rumination. Internal consistency in the current study was $\alpha = 0.93$.

Cognitive Emotion Regulation Questionnaire (CERQ)

The CERQ (Garnefski et al., 2001) consists of 36 items with 9 subscales, which measure cognitive coping strategies. This measure is scored with a Likert scale, ranging from one (almost never) to five (almost always). In the current study, the catastrophizing and general rumination subscales were utilized. In the current study, the internal consistency for catastrophizing was $\alpha = 0.76$ and for general rumination it was $\alpha = 0.75$.

Elemental Psychopathy Assessment (EPA)

This self-report measure consists of 178 items that assess psychopathy using basic trait elements from the Five Factor Model that are most consistently and strongly related to the construct of psychopathy (Lynam et al., 2011). The Infrequent and Virtue subscales (eight items total) were utilized to identify participants randomly responding and faking good, respectively.

Five Factor Narcissism Inventory- Short Form (FFNI-SF)

This self-report measure (Sherman et al., 2015) is a shortened version of the Five Factor Narcissism Inventory (FFNI; Glover et al., 2012). This scale consists of 60 questions that assess the underlying Five Factor Model traits of narcissism. The narcissism personality domains of agentic extraversion, narcissistic neuroticism, and self-centered antagonism can be measured with the FFNI (Glover et al., 2012), and this was replicated with the short form (Sherman et al., 2015). The measure uses the Likert scale ranging from one (disagree strongly) to five (agree strongly). The subscales of agentic extraversion, narcissistic neuroticism, and self-centered antagonism were utilized in the analyses. Internal consistency in the current study was $\alpha = 0.74$ for narcissistic neuroticism, $\alpha = 0.63$ for agentic extraversion, and $\alpha = 0.77$ for self-centered antagonism.

Narcissistic Personality Inventory – 21 (NPI-21)

The NPI-21 (Svindseth et al., 2008) is a dichotomous, 21-item, self-report measure for narcissistic personality disorder symptoms. For each item, participants score a one if they agree to the statement and score a zero if they disagree. All the items are summed, with higher scores indicating higher levels of narcissistic symptoms. Internal consistency was $\alpha = 0.80$ in the current study.

Penn State Worry Questionnaire (PSWQ)

The PSWQ (Meyer et al., 1990) is a 16-item self-report measure that assesses the level of worry utilizing a five-point Likert scale ranging from one (Not at all typical of me) to five (Very typical of me). Higher scores on the PSWQ indicate higher levels of worry. Internal consistency in the current study was $\alpha = 0.95$.

Analytic Strategy

Prior to analyses, all data were evaluated for skewness and kurtosis and were found to be within normal limits. Following this, correlations between all variables were calculated based on Cohen's convention for effect size interpretations (i.e., less than 0.3 is a small correlation; 0.30-0.50 is a medium correlation, and above a 0.50 is considered a large correlation; Cohen, 1988). As such, small correlations are considered relatively weak in magnitude and thus may be considered to have relatively unimportant relationships, moderate correlations are a bit stronger and thus provide evidence for potentially important relationships, and finally, large correlations have a large magnitude and thus more important/stronger relationship.

Finally, Mplus Version 8 (Muthén & Muthén, 2017) was used to estimate path analyses using maximum likelihood estimation to determine the model that offered the best fit to the data. Model fit was examined utilizing the CFI, TLI,

RMSEA, and AIC. CFI and TLI values of 0.95 and higher and RMSEA values under 0.06 indicate a model has good fit with the data (Hu & Bentler, 1999). Furthermore, CFI and TLI values ranging from 0.90 to 0.94 and RMSEA values ranging from 0.10 to 0.07 indicate adequate fit (Browne & Cudeck, 1992). Lastly, the AIC allows for a direct comparison between models with lower values indicating a better model fit (Akaike, 1987). Three path analyses were conducted to assess which of the two personality models was better able to predict worry, catastrophizing, anger rumination, and general rumination. This allowed for a direct comparison between the two models while accounting for shared variance between the constructs.

Regarding power, Kline (2011) recommends having 20 participants for each variable. The model includes eight variables; thus, the analyses are adequately powered. A Full Information Maximum Likelihood (FIML) estimation was utilized using the expectation-maximization (EM) algorithm to address missing data. The model estimated covariances between the exogenous variables. This method was chosen because it has previously shown to produce unbiased parameter estimates and standard errors for random missing values (Enders & Bandalos, 2001). Overall, it was expected that in the final trimmed model, only narcissistic neuroticism and self-centered antagonism would directly predict general rumination, anger rumination, worry, and catastrophizing. Thus, agentic extraversion and the NPI-21 would not significantly predict any form of RNT.

Results

Correlations

Table 2 presents the correlations, means, and standard deviations of the variables. Most variables were significantly correlated with one another. When considering how narcissism relates to RNT, agentic extraversion was negatively correlated with worry, albeit with a small effect size. Narcissistic

Table 2 Correlations, means, and standard deviations of all study variables

Variable	1	2	3	4	5	6	7	8
1. Agentic Extraversion	--							
2. Narcissistic Neuroticism	−0.116**	--						
3. Self-Centered Antagonism	*0.352***	−0.073	--					
4. NPI-21	**0.620***	−0.290***	**0.505***	--				
5. Anger Rumination	0.003	0.272***	*0.367***	0.021	--			
6. General Rumination	−0.048	*0.348***	−0.001	−0.069	0.287***	--		
7. Worry	−0.149**	**0.572***	−0.180**	−0.240***	0.281***	*0.387***	--	
8. Catastrophizing	−0.065	*0.381***	0.127**	−0.003	*0.410***	**0.500***	*0.405***	--
Mean	53.35	37.53	68.69	12.28	34.09	6.25	53.58	4.96
Standard Deviation	10.45	9.14	18.10	4.14	10.87	1.97	15.78	2.15

Note. $n = 362$. *$p < .05$, ** $p < .01$, ***$p < .001$; **Bold = large correlation;** *Italicized = moderate correlation*

Fig. 1 Model using the NPI in predicting four types of RNT *Note.* $n = 362$; ** = $p < .01$; A.E. = Agentic Extraversion; S.A. = Self-Centered Antagonism; N.N. = Narcissistic Neuroticism; ARS = Anger Rumination Scale; PSWQ = Penn State Worry Questionnaire; CERQ_C = Catastrophizing subscale; CERQ_R = Rumination subscale; NPI = Narcissistic Personality Inventory
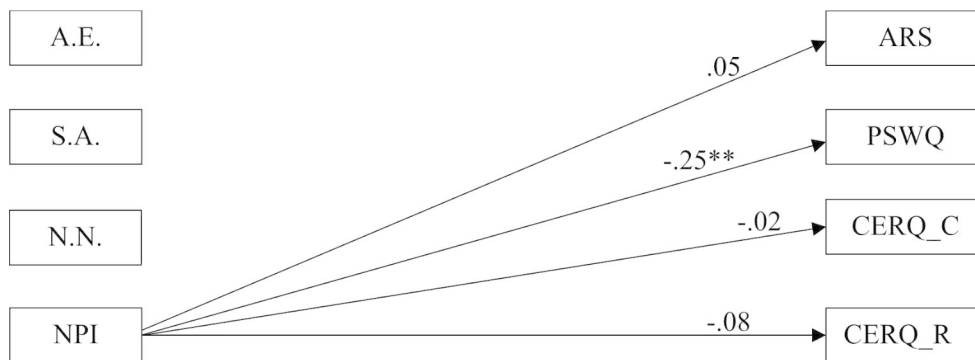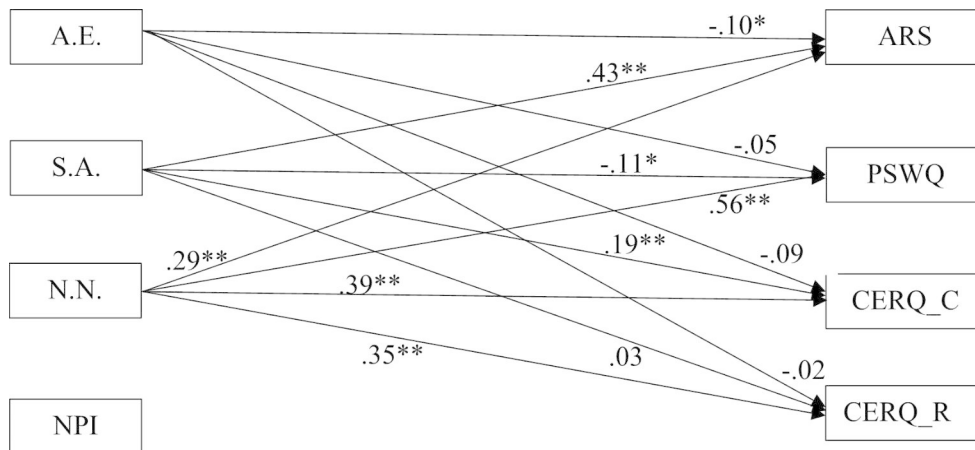
Fig. 2 Model using the three FFM domains of narcissism in predicting four types of RNT *Note.* $n = 362$; ** = $p < .001$; * = $p < .05$; A.E. = Agentic Extraversion; S.A. = Self-Centered Antagonism; N.N. = Narcissistic Neuroticism; ARS = Anger Rumination Scale; PSWQ = Penn State Worry Questionnaire; CERQ_C = Catastrophizing subscale; CERQ_R = Rumination subscale; NPI = Narcissistic Personality Inventory

neuroticism had a large positive correlation with worry, a moderate positive correlation with catastrophizing and general rumination, and a small positive correlation with anger rumination. Self-centered antagonism had a moderate positive correlation with anger rumination, a small positive correlation with catastrophizing, and a small negative correlation with worry. Finally, the NPI total score had a small significant negative correlation with worry.

Path Analyses

When all three domains of narcissism were set to zero and only NPI predicted the four types of RNT, the model did not provide an adequate fit, $x^2(12) = 218.720, p > .001$, CFI = 0.724, TLI = 0.357, RMSEA = 0.218, AIC = 17946.530 (See Fig. 1). The model significantly accounted for 6.4% of the variance in worry but did not account for a significant amount of variance in the other three types of RNT (0.3% for anger rumination, 0.0% for catastrophizing, and 0.7% for general rumination). For the second model, the NPI pathways were set to zero and the three FFM narcissism domains predicted the four types of RNT. This model provided a good fit to the data, $x^2(4) = 4.990, p = .2881$, CFI = 0.999, TLI = 0.991, RMSEA = 0.026, AIC = 17748.800 (See Fig. 2). This model accounted significantly for 23.5% of the variance in anger rumination, 18.3% for catastrophizing, 34.3% for worry,

and 12.3% for general rumination. Additionally, the AIC value was lower when the FFM narcissism domains were predictors, indicating the FFM offers a better fit to the data compared to the NPI.

As suggested by Kline (2011) and Joreskog (1993), the model trimming approach was used next, such that a model in which all sixteen paths free to be estimated were evaluated. This allowed for a comparison of all three traits of narcissism and the total NPD score in predicting four types of RNT, while accounting for the shared variance between the constructs. Specifically, each of the variables were entered into stage one of the model, such that each of the narcissism constructs (i.e., narcissistic neuroticism, self-centered antagonism, agentic extraversion, and NPD) were free to predict each of the negative thinking styles (i.e., worry, general rumination, catastrophizing, anger rumination). Pathways from self-centered antagonism, agentic extraversion, and narcissistic neuroticism to catastrophizing were all significant. Additional, pathways from self-centered antagonism and narcissistic neuroticism to anger rumination and to worry were significant. Finally, the path of narcissistic neuroticism to general rumination was significant. The remaining pathways in the model were not significant. As such, the next step within the model trimming approach is to set all nonsignificant pathways to zero and test the new model.

The next model included the eight identified significant pathways. This model provided a good fit, x^2 (8) = 9.695, $p = .287$, CFI = 0.998, TLI = 0.992, RMSEA = 0.021, AIC = 17745.51, and accounted for 22.0% of the variance in anger rumination, 17.6% in catastrophizing, 34.2% in worry, and 12.2% in general rumination. For this model, only seven of the eight pathways were significant, as agentic extraversion was no longer a significant pathway. This path was set to zero and a third model was tested. In the third model, all pathways remained significant and thus were retained, indicating that this is the most parsimonious model. The results for this final model are presented in Fig. 3. Results indicated an excellent fit, x^2 (9, 362) = 11.26, $p = .26$, CFI = 0.997, TLI = 0.991, RMSEA = 0.026, AIC = 17745.069. The variables in the model accounted for 22.1% of the variance in anger rumination, 17.2% of the variance in catastrophizing, 34.2% of the variance in worry, and 12.2% of the variance in general rumination. Results indicated anger rumination was directly predicted by self-centered antagonism ($\beta = 0.39$, $p < .001$) and narcissistic neuroticism ($\beta = 0.30$, $p < .001$). Catastrophizing was directly predicted by self-centered antagonism ($\beta = 0.15$, $p = .001$) and narcissistic neuroticism ($\beta = 0.40$, $p < .001$). Worry was negatively predicted by self-centered antagonism ($\beta = -0.13$, $p = .003$) and positively predicted by narcissistic neuroticism ($\beta = 0.56$, $p < .001$). Finally, general rumination was directly predicted by narcissistic neuroticism ($\beta = 0.35$, $p < .001$).[1]

Discussion

Research investigating conceptualizations of narcissism with repetitive negative thoughts (RNT) is limited. Thus, the purpose of the current study was to compare two models of narcissism – a one-factor NPD model and a three-factor FFM trait model in predicting four forms of RNT. As expected, each of the four negative thought patterns were positively related to high narcissistic neuroticism. Anger rumination and catastrophizing were also positively related to high self-centered antagonism. This aligns with previous findings of anger rumination being related to FFM conceptualizations of narcissism (e.g., Krizan & Johar, 2015; Martino et al., 2015). However, contrary to hypotheses, worry was negatively related to self-centered antagonism. Thus, the current study suggests that the 3-factor model of narcissism provides a more nuanced context, as the specific RNT form of worry is linked positively to one trait domain of narcissism (i.e., narcissistic neuroticism) and negatively with another domain (i.e., self-centered antagonism). This may also explain the mixed findings in previous research, especially when a single or two-factor model was utilized.

It was unexpected that general rumination would not be significantly related to self-centered antagonism, especially considering that the specific form of anger rumination was positively correlated with self-centered antagonism. This suggests the emotion of anger might have a key role in how individuals with heightened narcissistic antagonism reflect on previous negative events in their life. Thus, narcissism may be linked to specific emotional valences such as anger

Fig. 3 Best-fitting model for narcissism domains predicting four types of RNT
Note. $n = 362$; *$p < .05$, **$p < .01$, ***$p < .001$; A.E. = Agentic Extraversion; S.A. = Self-Centered Antagonism; N.N. = Narcissistic Neuroticism; ARS = Anger Rumination Scale; PSWQ = Penn State Worry Questionnaire; CERQ_C = Catastrophizing subscale; CERQ_R = Rumination subscale; NPI = Narcissistic Personality Inventory

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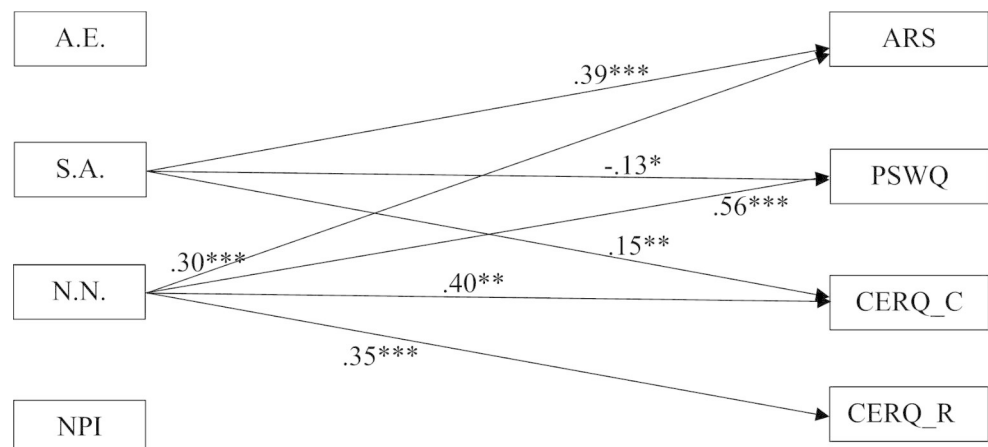
[1] Given that the NPI-21 can also be broken down into four subscales (i.e., leadership/power, exhibitionism/self-admiration, uniqueness/entitlement, and superiority/arrogance), the FFM domains of narcissism were also tested against the NPI broken into its four domains following the same pattern of analyses as presented in the current study. In the final model, the only additional significant pathway was from the NPI exhibitionism/self-admiration subscale to the CERQ general rumination scale. Full results are available upon request from the corresponding author.

and would explain the mixed findings in previous literature which assessed rumination more broadly. Future research may elucidate this question by assessing for multiple forms of rumination (e.g., sadness, interpersonal). However, this finding could also be explained by the overlap between anger rumination and the anger hostility facet within the FFNI-SF

measure. Thus, more research is required to evaluate these relations in more depth. Another unexpected finding was that NPD symptoms, as measured by the NPI-21, was not related significantly to three of the RNT's and was related negatively with worry. Though unexpected, some research has yielded similar results (Yang et al., 2019), which found that the NPI was not related to anger rumination. Evidence, including our study, suggests the NPI is not related to these negative thoughts when accounting for the covariance of FFM traits. Thus, the dimensional three-factor personality domain model of narcissism appears to be better able to tap into these distinctions whereas the single-factor model as assessed by the NPI does not.

The path analysis findings were much in line with what was expected. Firstly, as expected, the three FFM domains of narcissism provided a better fit to the data compared to the single NPD factor. Second, when putting the three-factor model and the one-factor model of narcissism in a single model, only self-centered antagonism and narcissistic neuroticism arise as primary predictors of anger rumination and catastrophizing, which is in line with the expected results. However, only narcissistic neuroticism was a significant predictor of general rumination, thus indicating this domain may be the only one that is related to broad rumination. Interestingly, narcissistic narcissism positively predicted worry while self-centered antagonism negatively predicted worry. These findings highlight the need for continued research to better understand if these two narcissism domains may be key factors in the development of cognitive distress and whether self-centered antagonism may actually be a protective factor against worry.

The findings of the current study provide some insight into the potential impairments that result for NPD. Specifically, individuals with NPD traits are likely engaging in several forms of RNT, such as those included in the current study. Research has linked engagement of these maladaptive thought patterns to impairments also often associated with NPD, such as interpersonal difficulties (Cheek et al., 2018; Takano et al., 2011) and depression (Miller et al., 2007; Nolen-Hoeksema, 2000). Therefore, it is likely that individuals with NPD traits are engaging in these negative thinking styles and as a result, these negative thinking styles are impacting their life across several domains. As such, treatment targeting these thinking styles may help to reduce distress and impairment in interpersonal and intrapersonal functioning.

Strengths, Limitations, and Future Directions

The findings of the current study addressed several gaps in the literature. First, the study provided some clarification on how narcissism is linked to different forms of RNT. Second, the study provided evidence that a one-factor NPD assessment method was not able to tap into the nuanced relationships that the three-factor model was able to provide. Finally, the current study provided insight into how different narcissistic personality domains may increase or decrease risk of engaging in worry, thus explaining the mixed findings in previous research.

A weakness of the current study was the use of only four forms of RNTs. There are several other negative thinking styles not yet evaluated within the context of narcissism, including other forms of rumination (e.g., interpersonal, sadness, stress). Like rumination, catastrophizing can have valences. For example, pain catastrophizing is when an individual thinks about a future instance of potential physical pain, which is related to heightened emotional distress and pain intensity (Sullivan et al., 1995). Previous research has begun to investigate how narcissism is linked with this specific form of catastrophizing. For instance, findings from Brunell and colleagues (2021) suggested that individuals with grandiose narcissism traits had reduced self-reported levels of pain catastrophizing while individuals with vulnerable narcissism traits had heightened levels. Further research is required to better understand these findings, especially given that grandiose and vulnerable narcissism often co-occur within a person. Additionally, the three-factor model may provide further insight into the relations between distorted thinking styles and underlying personality traits.

Future research may also expand upon the current findings by comparing NPD with other forms of psychopathology in order to better understand the transdiagnostic characteristics of different forms of RNT. For instance, past-oriented negative thoughts are related to other personality psychopathology, such as borderline personality disorder (BPD; e.g., Baer & Sauer, 2011; Law & Chapman, 2015; Kelley et al., 2021; Martino et al., 2015, 2018; Peters et al., 2017; Richman et al., 2018; Selby et al., 2009; Upton, 2011). Further, future-oriented negative thoughts (i.e., worry and catastrophizing) are also related to BPD (Kelley et al., 2021; Mason & Mullins-Sweatt, 2021; Selby et al., 2009). Thus, future research should investigate if other past or future negative thoughts are similarly predictive of other personality disorders, including NPD.

Notably, this is the first study to evaluate the FFM domains of narcissism with negative thoughts. While past studies have evaluated rumination with narcissism (e.g., Atlas & Them, 2008; Kanske et al., 2017; Yang et al., 2019), these studies evaluated narcissism as a uniform single-factor construct or using the two-factor model that includes grandiose and vulnerable narcissism (e.g., Pincus et al., 2009). Thus, a strength of the study was the

use of the three-factor model. A limitation of the current study, however, was the inability to also assess and compare the three-factor model with the two-factor model. Future research would benefit from comparing the three different models together.

Importantly, there has already been a shift towards a dimensional trait perspective for personality pathology. Specifically, the Alternative Model for Personality Disorders (AMPD) in Section III of the DSM-5-TR (APA, 2022) provides the ability to highlight specific maladaptive traits, including those within NPD. Future studies should continue to investigate if the AMPD would be a more suitable approach for representing aspects of pathological narcissism, as well as the maladaptive coping strategies and impairments that arise from each. By further understanding how specific traits are linked to different forms of RNT, we can begin developing individualized care for individuals presenting with traits that underlie pathological narcissism.

There are a few other limitations that needs to be addressed in future research. First, this sample consisted of undergraduate college students from a university. Future studies should include more diverse samples, as this would provide information on the replicability and generalizability of the current findings. Second, the study utilized self-report measures only. While there is considerable evidence of self-reports being valid in research (Widiger & Boyd, 2009), future research should employ experimental approaches or semi-structured interviews to differentiate overlapping cognitive mechanisms and distinguish narcissistic traits (e.g., Gunderson & Ronningstam, 2001; Wahl et al., 2019; Westen & Muderrisoglu, 2003; Widiger & Coker, 2002). For example, utilizing experimental methods, such as having individuals engage in mood induction tasks (Westermann et al., 1996) in an experimental design and writing their thoughts, could be useful in identifying common cognitive coping styles for individuals exhibiting pathological narcissism traits. Further, interviews could be conducted in an experimental design to further evaluate their personality traits and psychopathology. Finally, the current study was cross-sectional and administered once to the participants. To further evaluate possible casual effects, future research should implement longitudinal designs to assess these traits and cognitive mechanisms over time. Other methods to evaluate these cognitive mechanisms and personality could include ecological momentary assessment, which allows for the measure of emotions and thoughts in real-time in a person's daily life. For instance, assessing for rumination immediately after a stressful life event would be a unique way of investigating how these constructs (i.e., personality, cognitive, behavioral) may be interacting and influencing one another.

Conclusion

Overall, this study provides evidence for specific trait domains of narcissism being linked to several forms of RNT, with narcissistic neuroticism being the most strongly associated trait domain with anger rumination, general rumination, worry, and catastrophizing. Additionally, self-centered antagonism is strongly associated with anger rumination and catastrophizing and appears to be a protective factor against worry. Lastly, this study provides evidence that a dimensional 3-factor model of narcissism provides a better, more nuanced understanding of how narcissism is related to cognitive dysfunction. Future research is needed to compare other models of narcissism and to better understand the transdiagnostic nature of the different forms of RNT. Identifying negative thoughts and how they occur within certain personality pathology may inform better clinical practices for impaired thinking styles.

Declarations

Open Access Data The data that support the findings of this study are openly available in Open Science Framework at https://doi.org/10.17605/OSF.IO/QVTU3.

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