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Narcissism dimensions differentially moderate selective attention to evaluative stimuli in incarcerated offenders

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Abstract

Narcissistic personality disorder is associated with distinguishing traits including self-enhancement, arrogance and intense reactivity to ego threat. Theoretical accounts of narcissism suggest these heterogeneous behaviors reflect a defensive motivational style that functions to both uphold and protect the self-concept. However, the notion that narcissism can be characterized by grandiose and vulnerable dimensions raises the possibility that these diverse behaviors represent distinct expressions of narcissistic defensiveness. The present study examined whether both dimensions exhibit a general defensive style marked by selective attention to evaluative stimuli or are differentially associated with selective attention to positive and negative information, respectively. Using a dot probe task consisting of valenced and neutral trait adjectives, we evaluated these hypotheses in a group of male offenders. Results indicated that vulnerable narcissism was associated with attention biases for both positive and negative stimuli, though the dimension was further distinguished by disengagement difficulties and a greater recognition memory bias in response to negative words. Conversely, grandiose narcissism was associated with increased accuracy when attending to positive stimuli and directing attention away from negative stimuli. Overall, these findings suggest narcissistic individuals share motivated selective attention in response to evaluative stimuli, while simultaneously highlighting important phenotypic differences between grandiose and vulnerable dimensions.

Keywords

Narcissism; grandiose; vulnerable; attention; dot probe task

Narcissistic personality disorder is characterized by an assortment of distinguishing traits and behaviors that include arrogance, excessive need for admiration, and idealistic fantasies. In addition to the well-known traits that exemplify a positive, yet exaggerated self-concept, narcissism is also associated with fluctuations in affect and self-esteem in response to ego threats (Rhodewalt, Madrian, & Cheney, 1998; Emmons, 1987). The association between narcissism and reactivity to ego threat is also consistent with the notion that narcissistic individuals may be masking internal feelings of worthlessness or self-doubt (Kernberg, 1975; Akhtar & Thompson, 1982; Kohut, 1977); suggesting narcissism involves defensive strategies that operate concurrently to enhance and protect the self-concept. However,

considering the heterogeneous expressions of narcissistic defensiveness, it is possible these divergent strategies reflect the distinct, but potentially coexisting dimensions of grandiose and vulnerable narcissism and different underlying mechanisms. Despite the wealth of research highlighting diverse narcissistic behavioral manifestations, much less is known about their underlying processes or how these processes may differ between grandiose and vulnerable dimensions of narcissism.

Although the pattern of pervasive grandiose and arrogant behaviors that characterize narcissistic personality disorder (NPD) doesn't necessarily connote a disorder on its own, it is undeniably indicative of a distorted and inflated positive self-concept (Westen, 1990). Accordingly, narcissistic individuals endorse more positive than negative traits as self-descriptive, see themselves as more intelligent and attractive than others (Gabriel, Criteli & Ee, 1994), and report lower self-ideal discrepancies (Emmons, 1984). In addition, narcissistic individuals make self-serving attributions that ascribe the source of their successes to their own capabilities (Campbell, Rudich & Sedikides, 2002; Farwell & Wohlwend-Lloyd, 1998; John & Robins, 1994). Although these findings highlight positively biased self-perceptions among narcissistic individuals, there is also evidence that narcissism is associated with intense reactivity to negative events. For example, evidence that narcissism is related to greater mood fluctuations in response to daily events (Emmons, 1987) and aggression in response to ego-threats (Bushman & Baumeister, 1998) suggests that narcissism involves a form of fragility that may conflict with positive self-views.

In order to account for the apparent conflict between grandiose self-enhancement on the one hand and strong reactivity to ego-threat on the other, some researchers associate narcissism with a general defensiveness that serves to mask personal sensitivity to negative evaluation by promoting both self-enhancement and self-protection (Bosson et al., 2008; Wink, 1991). More specifically, 'mask' models of narcissism contend that dominance, exhibitionism, and exploitativeness (Raskin & Terry, 1988) constitute an arsenal of grandiose behaviors strategically used to conceal feelings of inadequacy (Morf & Rhodewalt, 2001). Reflecting a related strategy, narcissistic individuals also deflect negative information by derogating others who give them negative feedback (Kernis & Sun, 1994). Along with this, recent work indicates that narcissistic individuals exhibit vigilance for self-threatening information, but later avoid it (Horvath & Morf, 2009), suggesting that narcissism may be associated with a focus on (and later avoidance of) negative evaluation. Although this vigilance-avoidance pattern is suggestive of defensiveness, it does not provide unequivocal support for the mask model prediction that narcissism is related to deep-rooted feelings of inadequacy.

An alternative means for conceptualizing the heterogeneous expressions of narcissistic personality is to consider narcissism as reflecting distinct grandiose and vulnerable dimensions rather than a unitary construct. Notably, grandiose traits reflect an arrogant, socially dominant and aggressive personality style, whereas vulnerable traits reflect underlying feelings of superiority, social inhibition, hypersensitivity to criticism, and negative affect (Ronningstam, 2009). To address the heterogeneity of narcissistic traits, investigators have advocated using separate measures to assess grandiose and vulnerable traits (Russ, Shedler, Bradley, & Westen, 2008; Kealy & Rasmussen, 2012; Ronningstam, 2005; Wink, 1991; Rosenthal & Hooley, 2010; Brown, Budzek, & Tamborski, 2009). For

instance, the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988) captures grandiose traits such as exploitativeness, arrogance, and entitlement (Cain, Pincus, & Ansell, 2008). Conversely, measures of vulnerable narcissism focus specifically on distrust, shame, and sensitivity to criticism (Pincus et al., 2009; Hendin & Cheek, 1997). Vulnerable narcissism is also associated with hypervigilance (Pincus & Lukowitsky, 2010; Gabbard, 1989) and negative self-evaluation, perhaps stemming from problematic parenting and abuse (Miller et al., 2010; Otway & Vignoles, 2006).

There is little agreement regarding the origin of narcissistic personality. However, classic theories contend that either parental devaluation or overvaluation disrupts self-concept and self-ideal development to result in grandiosity or fragility (Kernberg, 1975; Kohut, 1977; Millon, 1981). In addition, these distorted self-evaluations result in strong motivational tendencies to maintain and defend distorted self-conceptions. According to some models, the apparently contradictory motives to self-enhance and self-protect either function within all narcissistic individuals, whereas for other models, developmental experience causes individuals over-focus on positive or negative evaluation and develop a specific inclination toward a primary motivational tendency. That is, divergent sensitivities based on developmental experience may reflect distinct motivational tendencies, with grandiose individuals emphasizing self-enhancing strategies and vulnerable individuals emphasizing self-protective strategies. Consistent with this view, research indicates that grandiose and vulnerable narcissism are differentially related to unique maladaptive schemas that arise as a result of early life experience (Zeigler-Hill, Green, Arnau, Sisemore, & Myers, 2011). Although grandiose and vulnerable narcissism appear to display distinct motivational tendencies, it is also possible that both dimensions reflect a more general sensitivity to self-evaluative information (e.g., defensiveness) that applies regardless of affective valence. According to this latter view, both dimensions may involve similar sensitivities to positive and negative evaluative information; yet defensiveness may be expressed by avoiding negative information, directing attention to positive information, or a combination of both strategies.

One way to understand how motivation guides behavior is to examine the manner in which individuals prioritize attention (Derryberry & Reed, 1994). In line with this notion, previous studies demonstrate that information denoting physical threat (MacLeod, Mathews, & Tata, 1986), social threat (Asmundson & Stein, 1994), or personal relevance (MacLeod & Rutherford, 1992) constitutes motivationally salient content that captures attention. Moreover, cognitive accounts of psychopathology contend that both environmental and self-representations exert a profound effect on attention (Pine et al., 2005; Bögels & Mansell, 2004; Beck & Clark, 1997; Ingram, 1990), which, in turn, support cognitive biases that contribute to the etiology and maintenance of disorders such as anxiety and depression. Although measuring attention is new to the study of narcissism, it is well established in studies of anxiety and depression. One of the most commonly utilized tasks for studying attention biases in anxiety and depression is the dot probe task (MacLeod, Mathews, & Tata, 1986). During the dot probe task, two words are presented at spatially opposing locations on a computer screen (e.g., one salient and one neutral word), which are followed by a dot 'probe' appearing at one of these locations. Individuals respond to indicate the location of the probe, and response times to probes indicate whether attention is allocated toward or

away from salient cues. Faster responses to threat-congruent probes indicate that attention is directed toward the salient stimulus (orienting), while slower responses to probes presented at incongruent locations indicate difficulty allocating attention away from salient cues (disengagement). Just as attention biases may underlie cognitive distortions in anxiety and depression (Koster, De Raedt, Goeleven, Franck, & Crombez, 2005; Mathews & MacLeod, 2005; Derryberry & Reed, 1994; Posner, Walker, Friedrich, & Rafal, 1984), attention biases associated with self-relevant positive or negative information may serve to highlight distorted self-views and distinguish motivational sensitivities among narcissism dimensions.

In the present study, we used an adaptation of the dot probe task to examine the attentional profiles associated with grandiose and vulnerable narcissism as well as NPD symptoms in a sample of male offenders. Using positive, negative and neutral trait adjectives as stimuli, we examined two competing hypotheses. First, if grandiose and vulnerable individuals preferentially attend to information that is consistent with their primary motivational focus, then the narcissism dimensions should be associated with distinct attentional biases associated with positive and negative information, respectively. As grandiose narcissism is associated with exaggerated positive self-views and self-enhancing behaviors, we predicted these individuals would exhibit selective attention to positive stimuli. Given the association of vulnerable narcissism with hypersensitivity and negative affect, we expected that vulnerable narcissism would be associated with selective attention to negative stimuli. Although it is logical to relate sensitivity to faster orienting, slower disengagement may also reflect a more pathological form of over-focusing, which could be especially problematic for vulnerable individuals. Alternatively, to the extent that narcissism dimensions involve a defensive motivational focus that underlies a concomitant pattern of self-enhancing and self-protective behavior, both dimensions may be associated with attentional biases to evaluative stimuli more generally (i.e., both positive and negative stimuli). Notably, defensiveness may be represented as vigilance or avoidance of negative evaluative information (which may be apparent as faster orienting toward or faster disengagement from potentially ego-threatening negative words) combined with vigilance for potentially ego-enhancing positive information. Furthermore, the degree to which evaluative cues capture attention may also facilitate or interfere with goal-directed attention and influence accuracy. For example, vigilance toward evaluative stimuli may increase accuracy when probes appear following evaluative stimuli, whereas avoidance may increase accuracy when probes appear following neutral stimuli. On the other hand, prolonged disengagement from evaluative words could also undermine accuracy. Therefore, the extent to which evaluative stimuli facilitate or interfere with task performance may indicate the degree to which individuals are sensitive to evaluative content. Accordingly, the dimension-based model predicts that accuracy will be influenced by dimension-relevant words (positive for grandiose, negative for vulnerable) while the defensiveness model predicts a pattern of accuracy that is similar for each dimension, involving an increased focus on positive words, and a decreased focus on (e.g., avoiding) negative words.

To the extent that positive or negative self-descriptive words are particularly salient and correspond to attention biases in narcissistic individuals, they may also be more memorable. Thus, as another means of evaluating the salience of evaluative stimuli during the dot probe task, we asked participants to complete a word recognition task containing positive, negative

and neutral ‘test’ words from the dot probe task as well as novel ‘filler’ words. To the extent that narcissism involves stronger encoding of evaluative stimuli during the dot probe task, individuals may exhibit enhanced recognition of evaluative ‘test’ words. Additionally, by comparing test word recognition to filler word recognition, the recognition task allows us to distinguish a more global responsivity to evaluative information from a dimension-specific, memory-based sensitivity (e.g., preferential positive word recognition in grandiose and negative word recognition for vulnerable narcissism).

Method

Participants

Participants were 88 male inmates (6.8% African American, 92% European American, 1% Native American) from a medium security prison facility in Southern Wisconsin (mean age: 32 years, $SD=6.75$). Individuals were invited to participate if they were 18 to 45 years old, had no history of psychosis or bipolar disorder, were not currently taking psychotropic medication, and scored ≥ 70 on the Wechsler Adult Intelligence Scale-Revised (WAIS-R; Wechsler, 1997). Participants with outlying accuracy (nine) and response times (two) on the dot probe task were excluded from further analyses, leaving a final sample of 77. All participants provided informed consent to take part in the study, which was approved by the University of Wisconsin Institutional Review Board. Inmates were informed that participating or refusing to participate would have no impact on their status in the correctional institution. Table 1 presents descriptive information and intercorrelations for the three narcissism measures employed in this study.

Narcissism Measures

Narcissistic Personality Inventory-Brief Version (NPI-13)—The Narcissistic Personality Inventory-13 (NPI-13; Gentile et al., 2013) is a brief version of the original 40-item self-report measure (NPI; Raskin & Terry, 1988). We chose the NPI-13 as our primary index of grandiose narcissism because it shows positive correlations with grandiosity and NPD (Gentile et al., 2013). Inmates were paid \$3 for completing a packet of questionnaires that included the self-reported narcissism measures.

Hypersensitive Narcissism Scale (HSNS)—The Hypersensitive Narcissism Scale is a 10-item self report measure that indexes hypersensitivity to criticism, vulnerability and entitlement (Hendin & Cheek, 1997). Given its correlations with emotion-regulation difficulties, neuroticism, and disagreeableness (Miller et al., 2010), we chose this as our primary measure of vulnerable narcissism.

Narcissistic Personality Disorder Symptoms (NPD)—Participants were assessed for NPD symptoms during a semi-structured interview (Structured Clinical Interview for Diagnostic and Statistical Manual Disorders-IV; SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997) conducted by trained research assistants. Following DSM-IV criteria, NPD symptom counts were calculated by summing the number of NPD symptoms (of a possible 9 symptoms) for each participant.

Laboratory Measure of Selective Attention

Word Stimuli—Stimuli consisted of positive, negative and neutral words adapted from Reed and Derryberry (1995). Positive and negative word groups each consisted of 30 trait adjectives, while the neutral group consisted of 360 words to create neutral/valence pairs and neutral filler word pairs (see Table 2 for a sample of words used in the task). Word groups were matched on lexical frequency using a validated measure for English words (SUBTLEX; Brysbaert & New, 2009). A repeated-measures analysis of variance determined that word groups did not differ on lexical frequency ($p=.84$) or word length ($p=.18$).

Dot Probe Task—Participants completed the dot probe task on a computer in a quiet office. Task presentation and recording were controlled by E Prime software (Psychology Software Tools, Pittsburgh, PA). Participants were tested by one of three male experimenters. Each trial began with a central fixation cross presented for 500 milliseconds (ms). Next, words appeared above and below fixation for 500 ms approximately 3.8 cm apart (subtending approximately 2 degrees visual angle from center), consistent with previous task parameters (Salemink, van den Hout, & Kindt, 2007; MacLeod et al., 1986). During critical trials, dot probes appeared in the upper or lower position for 750 ms or until participants responded. Participants were instructed to hold down the “middle” 5 key throughout the task, and respond to indicate the location of the dot by pressing either the “top” 8 key or the “bottom” 2 key. Participants initially practiced an abbreviated version of the task to become familiar with the timing and response requirements.

The dot probe task consisted of 720 trials, with 240 critical trials and 480 neutral filler trials. Critical trials either contained a valenced (positive or negative) and a neutral word or two neutral words. Word pairs were matched on word length, with each pair presented twice. Valenced and neutral words occurred with equal probability at each location. Neutral word pairs appeared five times during filler trials without a subsequent dot probe. Dot probes appeared in either location with equal probability during critical trials, yielding five possible conditions (neutral-probe trials, positive and negative *congruent* trials (in which probes appeared at the same location as valenced words), and positive and negative *incongruent* trials (where probes appeared at the opposite location as valenced words)).

Data Analysis—Prior to analyses, we eliminated RTs from incorrect trials and RTs beyond 2 SDs from each individual’s mean RT. As noted above, participants with outlying accuracy were also excluded from the sample. In addition, we used repeated measures analyses of variance (ANOVA) with position (upper or lower) and valence (neutral, negative, or positive) as within-subjects variables to determine whether location exhibited any influence on performance. Given these analyses did not yield any significant main effects of position or interactions with valence on RT or accuracy ($p's > .34$), further analyses collapsed across upper and lower position.

In order to examine attention biases, we conducted our primary analyses on the orienting and disengagement indices derived from RTs during valenced compared to neutral trials. The orienting index was calculated as (mean RT for neutral trials - mean RT for valenced congruent trials) and the disengagement index as (mean RT for incongruent valenced trials -

mean RT for neutral trials). Larger orienting scores corresponded to faster responses to probes following valenced relative to neutral words on congruent trials, while larger disengagement scores indicated slower responses to probes for valenced incongruent than neutral trials. The raw RT data used in these calculations are presented in Tables 3A and 3B. We used a repeated measures ANOVA with congruency (congruent vs. incongruent) and valence (negative vs. positive) as within-subjects categorical factors and (standardized) narcissism scores and age as continuous covariates to determine whether narcissism was associated with orienting or disengagement biases. Bias indices for accuracy were computed in a similar manner: accuracy for congruent trials was calculated as (% correct valenced congruent trials - neutral trials), and accuracy for incongruent trials as (% correct neutral - valenced incongruent trials)¹. Last, we conducted a repeated-measures ANOVA on accuracy using the same factors as above.

Word Recognition Task—After completing the dot probe task, participants completed a word recognition task consisting of thirty positive, negative, and neutral words (15 trials using words from the dot probe task, and 15 filler trials with novel words). Each word was presented for 2000 ms, and participants indicated whether the word was present during the dot probe task by pressing the up (present) or down (absent) arrow keys. Word recognition performance was analyzed using non-parametric signal detection indices (Zhang & Mueller, 2005). Based on this method, the mean hit rate (*HR*) and false alarm rate (*FAR*) are used to calculate an index of sensitivity to detect a signal (*A*). We used this non-parametric method because it enabled us to include all *HR* and *FAR* values, including those of 0 or 1. Higher hit rates on the recognition task reflect greater recognition of evaluative test words, while higher false alarm rates reflect inaccurate recognition of evaluative filler words. We analyzed signal detection indices in separate univariate analyses for positive, negative and neutral words using (standardized) narcissism scores and age as continuous covariates.

Results

Dot Probe Task

Selective Attention to Evaluative Stimuli: Response Time—Examination of orienting and disengagement revealed significant attention biases for vulnerable narcissism, demonstrated by a significant three-way interaction involving vulnerable narcissism, congruency, and valence ($F(1,74)=12.81, p=.001, \eta_p^2=.15$). To unpack this three-way interaction, we examined the effects of vulnerable narcissism and congruency on RT indices for positive and negative trials, respectively. For positive trials, there was a significant vulnerable narcissism by congruency interaction ($F(1,74)=4.14, p<.05, \eta_p^2=.05$), indicating that vulnerable individuals oriented to positive words faster on congruent trials ($B=5.61, p=.001$, Figure 1A), but did not show disengagement effects on incongruent trials ($p=.77$). For negative trials, there was also a significant vulnerable narcissism by congruency interaction ($F(1,74)=5.43, p=.02, \eta_p^2=.07$), indicating that vulnerable individuals disengaged more slowly from negative words ($B=3.91, p<.05$, Figure 1B) and tended to orient more slowly

¹Although RTs are primarily used to index attentional biases in the dot probe task, we also chose to examine accuracy as an indicator of the degree to which selective attention and reactivity (Prinzmetal, MacCool, & Park, 2005) to evaluative words would undermine ongoing, goal-directed behavior.

toward negative words ($B = -3.32, p = .09$). There were no significant effects for grandiose narcissism ($p's > .27$) or NPD symptoms ($p's > .11$) related to orienting or disengagement.

Selective Attention to Evaluative Stimuli: Accuracy—Analyses of accuracy indices revealed a significant interaction involving grandiose narcissism and valence ($F(1,74) = 7.84, p < .01, \eta_p^2 = .10$). Examination of simple effects indicated that grandiose narcissism was associated with better accuracy on positive congruent ($B = .02, p = .005$, Figure 2A) but not negative congruent trials ($B = .004, p = .61$). In addition, grandiose narcissism was related to better accuracy on negative incongruent trials (e.g., when dots followed neutral compared to negative words) ($B = -.02, p < .05$, Figure 2B) but not on positive incongruent trials ($p = .32$). There were no significant effects of vulnerable narcissism on accuracy ($p's > .25$).

Analyses also revealed a significant interaction involving NPD symptoms and valence ($F(1,74) = 4.29, p < .05, \eta_p^2 = .06$). Examination of simple effects revealed that NPD symptoms were related to better accuracy on neutral compared to positive incongruent trials ($B = .02, p = .01$, Figure 3) but not on negative incongruent trials ($p > .73$). However, NPD symptoms were not significantly related to accuracy for positive or negative congruent trials ($p's > .30$).

Word Recognition Task

Analyses of recognition task performance revealed that only vulnerable narcissism was associated with differential word recognition performance, displaying significantly higher sensitivity (A) to negative words ($F(1,74) = 4.57, p = .04, \eta_p^2 = .06$). More specifically, vulnerable narcissism was related to more accurate recognition of negative words that were presented during the dot probe task (HR) ($F(1,74) = 3.76, p = .05, \eta_p^2 = .05$). Grandiose narcissism was not significantly related to better recognition for positive or negative words (A or HR : $p's > .28$). However, a trend-level effect indicated that grandiose individuals tended to correctly identify positive filler words as 'new' words (e.g., fewer false alarms; $F(1,74) = 2.93, p = .09, \eta_p^2 = .04$). NPD symptoms were not significantly related to recognition sensitivity ($p's > .44$).

Discussion

The primary goal of this study was to determine whether grandiose and vulnerable dimensions of narcissism were associated with distinct attention biases involving positive and negative evaluative stimuli respectively, or were associated with comparable attentional profiles involving a more general sensitivity to evaluative stimuli. We addressed these questions by first examining the nature of selective attention in grandiose and vulnerable narcissism using the dot probe task and next by examining whether narcissism dimensions were differentially related to evaluative word recognition.

In partial support of our prediction that grandiose and vulnerable dimensions would exhibit distinct attention biases during the dot probe task, we found that the attentional profiles associated with each dimension corresponded to their unique characterizations. However, these distinct expressions were specific to RT in the case of vulnerable narcissism and specific to accuracy for grandiose narcissism. In particular, vulnerable narcissism was specifically associated with prolonged disengagement from negative stimuli. This attentional

profile fits the common characterization of vulnerable narcissism: vulnerable individuals are hypersensitive to negative evaluation (Gabbard, 1989), which in turn, makes it difficult for them to direct attention away from potentially ego-threatening content. We also found partial support for the prediction that grandiose narcissism would be associated with sensitivity to positive stimuli. More specifically, grandiose narcissism was related to increased accuracy on positive congruent trials, indicating enhanced attention to positive cues, which facilitated their performance. These findings are consistent with other evidence that grandiose narcissists exhibit strong approach orientation (Foster & Trimm, 2008) and perform better when given opportunities to self-enhance (Wallace & Baumeister, 2002). Combined, our findings reveal unique attention biases and associated performance differences for the grandiose and vulnerable dimensions.

Evidence from the word recognition task also provided support for our prediction that grandiose and vulnerable narcissism would exhibit unique sensitivities to evaluative information. Specifically, vulnerable narcissism was associated with enhanced recognition of previously viewed negative stimuli (e.g., higher hit rates for negative ‘test’ words from the dot probe task). Since vulnerable narcissism was also related to slower disengagement from negative words during the dot probe task, it is probable that these words remained salient in memory (Mathews, Mogg, May, & Eysenck, 1989). This unique behavioral profile (e.g., slower disengagement and enhanced recognition for negative words) for vulnerable narcissism may reflect a mood-congruent memory bias that is similar to previous findings for depression (Bradley, Mogg & Williams, 1995). Additionally, grandiose narcissism was related to better recognition of positive filler words, which indicates better discrimination between previously versus recently encountered positive words. However, this finding should be interpreted with caution as the effect was only significant at the trend level. Nonetheless, the finding aligns with the notion that grandiose individuals are prone to seek out self-affirming information (Morf, Torchetti, & Schürch, 2011; Morf & Rhodewalt, 2001). Given that grandiose narcissism was related to enhanced recognition memory for novel positive information while vulnerable narcissism was associated with enhanced recognition memory for negative information, these findings provide additional support for the contention that grandiose and vulnerable individuals are associated with unique sensitivities to evaluative information. Thus, the evidence from the word recognition and dot probe tasks combine to provide moderate support for dimension-specific sensitivities to evaluative stimuli. However, because the results were not completely consistent with the valence-specific predictions outlined for the two dimensions (i.e., negative for vulnerable and positive for grandiose), we discuss additional results in relation to our alternative hypothesis concerning a more general sensitivity to evaluative stimuli.

In contrast to the above evidence, which provided preliminary support for our dimension-specific prediction, there was also evidence that grandiose and vulnerable dimensions were both associated with a general defensive style. For instance, both dimensions exhibited sensitivity to both positive and negative stimuli, but the manner in which they responded to each valence was distinct between narcissism dimensions. First, grandiose individuals were not only more accurate on positive congruent trials (as discussed above); they were also more accurate on negative incongruent (vs. neutral) trials. This latter effect is consistent with evidence that grandiose individuals are prone to utilize defensive strategies to deflect

negative information (i.e., ignore, disengage from, or discount negative feedback; Horvath & Morf, 2009; Kernis & Sun, 1994). Similarly, vulnerable narcissism was associated with sensitivity to both positive and negative information. In particular, vulnerable individuals exhibited faster orienting to positive stimuli and slower disengagement from negative stimuli. Such findings are consistent with characterizations of covert narcissism that involve internally harbored grandiose self-views and a sensitivity to criticism (Hendin & Cheek, 1997; Wink, 1991). Thus, our results also provided partial support for the second hypothesis that both dimensions would exhibit general sensitivities to evaluative stimuli. However, in light of the fact that each dimension exhibited distinct rather than comparable responses to evaluative words, it may be necessary to develop a more nuanced model in order to integrate these effects.

Taking into account that both predictions received partial support, a more comprehensive perspective is needed to understand the cognitive-attentional correlates of grandiose and vulnerable narcissism. Overall, grandiose and vulnerable narcissism were associated with a general sensitivity to evaluative stimuli (e.g., positive and negative stimuli) that was nonetheless associated with distinct behavioral reactions. Thus, it is relevant to examine the extent to which these reactions reflect unique manifestations of narcissistic defensiveness. Consistent with previous reports of defensive behaviors in grandiose narcissism (e.g., discounting negative feedback, overestimating and exaggerating positive traits; Morf & Rhodewalt, 2001; Rhodewalt & Morf, 1998; Kernis & Sun, 1994), grandiose narcissists were adept at deflecting negative information (i.e., on the dot probe task) and were more receptive to positive information (i.e., on the dot probe and word recognition tasks). This characterization appears to reflect a form of defensive resilience that is commonly associated with the grandiose dimension (Miller et al., 2011; Cain et al., 2008; Gabbard, 1989). The performance of vulnerable narcissists may also reflect a form of defensive vigilance that functions to maintain positive self-views by focusing on positive evaluative stimuli. However, their tendency to dwell on negative information may undermine their ability to regulate responses to negative feedback. Greater susceptibility to attentional disruption from negative evaluation is consistent with accounts of diminished psychological well-being (Wink, 1991), and previously reported findings of greater negative emotionality and internalizing psychopathology in vulnerable narcissism (Miller et al., 2011; Schoenleber et al., 2001). Moreover, trouble disengaging from negative content may represent a maladaptive tendency that serves to reinforce negatively biased self-views, as postulated by the mask model. Overall, the evidence from our study illustrates general evaluative sensitivities for both dimensions, while highlighting the fact that their defensive behavioral styles differ. Moreover, our results indicate that the reactivity of grandiose individuals reflects defensive strategies that are more effective than those of vulnerable individuals. Conceivably, a core feature of narcissism may involve a defensive style that functions to concurrently uphold and protect the self, with the distinctive self-regulatory styles of grandiose and vulnerable narcissism influencing which motivational strategy prevails.

Our analysis of NPD symptoms revealed effects that were largely independent of those associated with the grandiose and vulnerable dimensions. Specifically, number of NPD symptoms was related to lower accuracy on positive incongruent trials, suggesting that this information interfered with the ability to shift attention away from positive content. While

this effect did not completely overlap with the behavioral profiles for either grandiose or vulnerable narcissism², the fact that NPD and grandiose narcissism were both associated with greater reactivity to positive stimuli may support the notion that NPD is more closely tied to grandiose than vulnerable traits (Cain et al., 2008). Furthermore, although this was the only effect to show a link between narcissism and decreased accuracy during the dot probe task, the fact that NPD symptoms, like vulnerable narcissism, were associated with a behavioral cost may be worthy of note. Even though the behavioral cost associated with NPD symptoms involved diminished accuracy on positive incongruent trials whereas the behavioral cost associated with vulnerable narcissism involved slower disengagement from negative information, both findings reflect poorer performance and, thus, a type of dysregulation. To the extent that salient evaluative content attracts and holds attention, it appears to disrupt the goal-directed behavior of individuals with elevated levels of NPD symptoms and vulnerable narcissism, but does not pose similar problems for grandiose individuals. Such disruptions may represent a valuable behavioral marker of pathological sensitivity to evaluation in narcissism (Roche, Pincus, Lukowitsky, Ménard, & Conroy, 2013).

Before concluding, we consider limitations of the current study. First, the measures of grandiose and vulnerable narcissism were based on self-report assessments, which may be subject to biased responding. Second, despite the importance of identifying similarities and differences between dimensional constructs and diagnostic categorizations, any conclusions regarding the implications of our findings for the NPD diagnosis must be limited because very few participants met diagnostic criteria for NPD. Additionally, given that evaluative words may have represented ego-enhancing or ego-threatening content for narcissistic individuals, we expected words to be self-relevant. However, it is possible that attention biases observed in the current study reflected reactivity to valenced information rather than self-relevance. Future studies incorporating stimulus ratings or idiographic stimuli are needed to garner more concrete interpretations of these effects. Despite this interpretational ambiguity, the attention biases observed here are consistent with previous studies demonstrating attention biases in response to self-relevant information in anxiety and depression (Koster et al., 2005; Hope, Rapee, Heimberg, & Dombeck, 1990). While some research has begun to examine the neurobiological correlates of narcissism (Schulze et al., 2013), future research utilizing neurophysiological methods to examine cognitive and affective processes in narcissism may strengthen and extend the current findings. In addition, further work is needed to extend and replicate these effects in larger clinical and nonclinical samples. Finally, although our use of an incarcerated sample provided an opportunity to examine relationships between narcissism dimensions and attentional biases in a unique sample of adult males, meaningful differences related to incarceration or gender may limit the generalizability of these findings.

In sum, narcissism has long been associated with a variety of behaviors including unabashed self-enhancement and reactivity to ego threat. To date, theoretical and experimental

²Although it is important to consider the phenotypic overlap between the NPD diagnosis and narcissism dimensions, the nature of our sample precludes these comparisons. Although roughly 46% of these participants met criteria for NPD assessment, only 1 participant met criteria for an NPD diagnosis. For this reason, we examined the number of NPD symptoms in the current study.

examinations have reconciled this behavioral heterogeneity by characterizing narcissism as defensive, involving strategies that simultaneously function to enhance and protect the self. However, many studies of narcissistic defensiveness employ measures that primarily tap grandiose narcissism rather than the combination of grandiose and vulnerable traits. In order to better understand this behavioral heterogeneity, the present study investigated whether dimensions of grandiose and vulnerable narcissism were both associated with general evaluative sensitivities reflecting defensiveness, or whether dimensions were characterized by unique sensitivities corresponding to positive or negative information, respectively. Results from the dot probe task provided evidence that both dimensions of narcissism exhibited general sensitivities to evaluative information. However, results from both the dot probe and recognition tasks also provided evidence that these dimensions are associated with unique responses to evaluative information. Grandiose individuals showed behavioral facilitation from positive information in combination with avoidance of negative information that may serve to maintain positive self-views, whereas vulnerable individuals exhibited attention to positive information coupled with attentional and memory biases that reflect difficulties regulating attention away from negative information. Overall, unique attentional profiles suggest that grandiose and vulnerable traits reflect at least partially distinct phenotypic expressions of narcissism. Further specification of the underlying mechanisms related to the dissociable dimensions of narcissism may provide a more precise understanding of the unique expressions of this disorder and aid in future therapeutic interventions.

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Figure 1.

Vulnerable Narcissism and RT Bias. (A) Vulnerable narcissism was associated with faster orienting to positive (vs. neutral) words. (B) Vulnerable narcissism was also related to slower disengagement and slower orienting for negative (vs. neutral) words. Using point estimates generated from the general linear model, the RT bias index means for the interaction in congruent (orienting) and incongruent (disengagement) trials were calculated at 1 SD above and below the sample mean for vulnerable narcissism scores. Error bars represent the standard error for the point estimates. (* $p < .05$; + $p < .10$).

Figure 2. Grandiose narcissism and Accuracy. (A) Grandiose narcissism was related to better accuracy on congruent trials with positive words and (B) on incongruent trials with negative words.

Figure 3.
NPD symptoms were associated with better accuracy on neutral trials in comparison to incongruent trials with positive words.

Table 1

Descriptive information and bivariate correlations.

Variable	M (SD)	Range (Minimum-Maximum)	Alpha	NPD Symptoms	NPI-13	HSNS
Age	31.62 (6.59)	20 – 44		.19 [†]	-.20 [†]	.23 [*]
NPD Symptoms	0.44 (1.04)	0 – 6	.91 ^a	---	.31 ^{**}	.24 [*]
NPI-13	3.22 (2.81)	0 – 11	.77		---	-.08
HSNS	25.45 (5.61)	13 – 42	.72			---

p<.01,
*
p<.05,
†
p<.10.

Scores based on final sample N=77. NPI-13: Grandiose narcissism; HSNS: Vulnerable narcissism. Reliability indices for were based Cronbach's alpha for the NPI-13 and HSNS.

^aReliability indices for NPD symptoms were based on IntraClass correlations (ICCs) computed on an independent sample of male inmates at the same facility.

Table 2

Descriptive Words from the Experimental tasks.

Negative	Positive	Neutral
Annoying	Ambitious	Affordable
Boring	Bright	Former
Cruel	Clever	Central
Foolish	Ethical	Compact
Gloomy	Brilliant	Diagonal
Ignorant	Patient	Internal
Selfish	Sincere	Specific
Stupid	Mature	Spiral
Weak	Wise	Tall
Vulgar	Polite	Visual

* Note: This is a random sample of words used in the dot probe and recognition task.

Table 3

A. Mean and Standard deviations of RT and Accuracy by Valence and Congruency conditions for the Dot Probe Task.

	Neutral		Positive		Negative	
	<i>Congruent</i>		<i>Congruent</i>		<i>Congruent</i>	
RT (ms)	563.94 (49.77)		560.97(51.26)		564.91(50.65)	
Accuracy	0.93 (.05)		0.93 (.06)		0.93 (.08)	
					0.92 (.07)	

B. Behavioral indices for the dot probe task.

Congruency					
Response Time	Congruent		Incongruent		
	Orienting:		Disengagement:		
Valence	Negative	(Neutral - Negative Congruent)	(Negative Incongruent - Neutral)		
	Positive	(Neutral - Positive Congruent)	(Positive Incongruent - Neutral)		
Accuracy	Congruent		Incongruent		
Valence	Facilitation:		Interference:		
	Negative	(Negative Congruent - Neutral)	(Neutral - Negative Incongruent)		
	Positive	(Positive Congruent - Neutral)	(Neutral - Positive Incongruent)		

Note: The Orienting index represents the difference between RTs during neutral versus (positive or negative) congruent conditions. The Disengagement index reflects the difference between incongruent (positive or negative) and neutral conditions (longer RT on incongruent versus neutral trials denotes slower disengagement). Accuracy indices included Facilitation and Interference indices. The Facilitation index represents the difference between congruent and neutral accuracy (e.g., a positive value denotes a facilitation effect for evaluative words on congruent trials). Conversely, the Interference index reflects the difference between neutral and incongruent accuracy (e.g., a positive value indicating greater interference from evaluative words on incongruent trial accuracy).

Table 4

Mean and Standard deviations of Detection sensitivity variables from the Word Recognition Task.

	Neutral	Positive	Negative
<i>Hit Rate (HR)</i>	0.59 (0.29)	0.56 (0.28)	0.49 (0.26)
<i>False Alarm Rate (FAR)</i>	0.43 (0.28)	0.52 (0.26)	0.31 (0.24)
<i>Sensitivity Index (A)</i>	0.53 (0.34)	0.46 (0.31)	0.60 (0.26)