Untangling the relationship between narcissistic traits and behavioral aggression using a FFM framework

Colin Edward Vize
Purdue University

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By Colin Edward Vize

Entitled Untangling the Relationship Between Narcissistic Traits and Behavioral Aggression Using a FFM Framework

For the degree of Master of Science

Is approved by the final examining committee:

Donald R. Lynam  
Chair

Christopher I. Eckhardt

Douglas Samuel

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Head of the Departmental Graduate Program  Date
UNTANGLING THE RELATIONSHIP BETWEEN NARCISSISTIC TRAITS AND BEHAVIORAL AGGRESSION USING A FFM FRAMEWORK

A Thesis
Submitted to the Faculty of Purdue University by Colin Edward Vize

In Partial Fulfillment of the Requirements for the Degree of Master of Science

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West Lafayette, Indiana
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>iv</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>v</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iv</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Grandiose and Vulnerable Subtypes of Narcissism</td>
<td>2</td>
</tr>
<tr>
<td>Assessment of Grandiose and Vulnerable Narcissism</td>
<td>4</td>
</tr>
<tr>
<td>Narcissism, Aggression, and the Present Study</td>
<td>9</td>
</tr>
<tr>
<td>METHOD</td>
<td>13</td>
</tr>
<tr>
<td>Participants</td>
<td>13</td>
</tr>
<tr>
<td>Procedure</td>
<td>13</td>
</tr>
<tr>
<td>Ego Threat</td>
<td>15</td>
</tr>
<tr>
<td>MEASURES</td>
<td>18</td>
</tr>
<tr>
<td>Demographics Questionnaire</td>
<td>18</td>
</tr>
<tr>
<td>Manipulation Check</td>
<td>18</td>
</tr>
<tr>
<td>Positive and Negative Affect Schedule-Expanded Form (PANAS-X)</td>
<td>18</td>
</tr>
<tr>
<td>Narcissism Measures</td>
<td>19</td>
</tr>
<tr>
<td>Narcissistic Personality Inventory (NPI)</td>
<td>19</td>
</tr>
<tr>
<td>Hypersensitive Narcissism Scale (HSNS)</td>
<td>19</td>
</tr>
<tr>
<td>Pathological Narcissism Inventory (PNI)</td>
<td>19</td>
</tr>
<tr>
<td>Five Factor Narcissism Inventory-Short Form (FFNI-SF)</td>
<td>20</td>
</tr>
<tr>
<td>Other Personality Measures</td>
<td>20</td>
</tr>
<tr>
<td>Five Factor Model Rating Form (FFMRF)</td>
<td>20</td>
</tr>
<tr>
<td>Interpersonal Adjectives Scale-Revised (IAS-R)</td>
<td>20</td>
</tr>
<tr>
<td>Elemental Psychopathy Assessment-Short Form (EPA-SF)</td>
<td>21</td>
</tr>
<tr>
<td>Rosenberg Self-Esteem Scale (RSE Scale)</td>
<td>21</td>
</tr>
</tbody>
</table>
Self-Report Aggression Measures and Measures of Behavioral Aggression

- Crime and Analogous Behavior Scale (CAB)  
- Reactive/Proactive Aggression Questionnaire (RPQ)
- Self-Report of Aggression and Social Behavior Measure (SRASBM)
- Situational Triggers of Aggressive Responses Scale (STAR)
- Behavioral Aggression

Measures Not Used in the Present Manuscript
- Multi-Group Ethnic Identity Measure (MEIM)
- Language Proficiency Measure

Planned Analyses
- NPI

RESULTS

- Manipulation Checks
- Factor Analysis of Narcissism Measures
- Primary Analyses
- Exploring Moderating Effects of Gender
- Aggression and Personality Self-Report Results

DISCUSSION

- Relations Between Narcissism Subtypes and Self-Report Measures

LIMITATIONS

FUTURE DIRECTIONS

LIST OF REFERENCES

APPENDICES

- Appendix A
- Appendix B
LIST OF TABLES

Appendix Table                                   Page
1. Rotated Factor Solution for Grandiose and Vulnerable Scales   58
2. Zero-Order Relations Between Study Variables and Narcissism Factors 59
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Appendix Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Plotted interaction between gender and vulnerable narcissism in ego-threat condition . . . . . . . . . . . . . . . . . .</td>
<td>61</td>
</tr>
<tr>
<td>2. Plotted interaction between gender and vulnerable narcissism in non-threat condition . . . . . . . . . . . . . . . . . .</td>
<td>62</td>
</tr>
</tbody>
</table>
ABSTRACT

Vize, Colin Edward. M.S., Purdue University, May 2016. Untangling the Relationship Between Narcissistic Traits and Behavioral Aggression Using a FFM Framework. Major Professor: Donald R. Lynam.

Recent work on the construct of narcissism has identified two distinct subtypes: grandiose and vulnerable narcissism. The two variants share an antagonistic core, but differ from one another in traits related to neuroticism and extraversion. We sought to explore how the differences between the subtypes may manifest in relation to behavioral aggression in the laboratory following provocation as well as in relation to a variety of self-report measures of aggression. In the case of behavioral aggression following provocation, our results showed a three-way interaction between gender, threat condition, and vulnerable narcissism such that males who reported higher levels of vulnerable narcissism were more aggressive after being insulted. No significant effects were observed in relation to grandiose narcissism, contrary to our hypotheses. Important areas of convergence and divergence were observed among the self-report measures. The results are discussed in the context of previous work on narcissism and provocation. The findings suggest that neuroticism related traits relevant to vulnerable narcissism may play an important role in aggression after individuals are provoked.
INTRODUCTION

The construct of narcissism has long captured the interest of researchers and popular culture alike and the empirical study of narcissism has seen a strong resurgence over the last few decades (Kenneth, Ellison, & Reynoso, 2012). There have been numerous attempts over the years to describe what lies at the core of narcissism (e.g. Freud, 1914) and what types of factors may contribute to the development of a narcissistic personality such as individualistic cultural values (Foster, Campbell, & Twenge, 2003; Twenge & Foster, 2008), a pathological need to maintain one’s self-esteem (Baumeister, Bushman, & Campbell, 2000; Baumeister & Vohs, 2001), and a unique blend of antagonistic and grandiose personality traits (Miller et al., 2011). The inclusion of Narcissistic Personality Disorder (NPD) in the third edition of the DSM in 1980 (DSM-III; American Psychiatric Association) aided the growth of such research yet the field has been faced with numerous difficulties regarding the construct. Difficulties include how to best operationalize and measure narcissistic traits, issues with the DSM’s (DSM-5; American Psychiatric Association, 2013) conceptualization of NPD, and identifying and differentiating distinct subtypes of narcissism (Pincus & Lukowitsky, 2010). The last of these concerns regarding different narcissistic phenotypes is the primary focus of the present research. Specifically, research on narcissism has identified two subtypes: grandiose and vulnerable narcissism. Our goal
is to examine how similar or dissimilar vulnerable and grandiose narcissism are from one another in regards to behavioral aggression following a perceived insult.

A growing number of studies have explored the relations of the two subtypes to a variety of outcomes (e.g. FFM traits, DSM defined psychopathology, etc.) but little work has examined the two subtypes relations with behavioral aggression following provocation—a theoretically meaningful correlate of narcissistic traits since it was first discussed by Bushman and Baumesiter (1998). The aim of the present study is to examine how behavioral aggression following an insult may differentiate between grandiose and vulnerable narcissism. Furthermore, we hope to extend the basic research on narcissism and aggression through the application of an FFM framework that will allow for a more fine-grained analysis of which elemental traits may drive the relationship between aggression and narcissism.

**Grandiose and Vulnerable Subtypes of Narcissism**

Research on vulnerable and grandiose narcissism has suggested that grandiose narcissists can be characterized by exhibitionism, lack of humility/modesty, and interpersonal dominance, whereas vulnerable narcissists are characterized by negative affect, coldness, selfishness, and a need for attention and recognition (Dickinson & Pincus, 2003; Miller et al., 2012). Although vulnerable and grandiose narcissists can both be seen as highly antagonistic (i.e. high levels of antagonism underlie both phenotypes), work that has examined their respective nomological networks has revealed important areas of divergence between the two subtypes (Miller et al., 2011). In their exploration of the differential correlates of grandiose and vulnerable narcissism, Miller and colleagues first conducted an exploratory factor analysis of three
commonly used measures of narcissism: the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988), the Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997), and the Pathological Narcissism Inventory (PNI; Pincus et al., 2009). A two-factor structure was found with the two factors made up of items representative of vulnerable and grandiose narcissistic subtypes.

Using the grandiose and vulnerable factors derived from the factor analysis, the authors found that the two factors diverged in their relations with a variety of FFM domains and facets as measured by the NEO-PI-R (Costa & McCrae, 1992). At the domain level, vulnerable narcissism showed a large positive relation with Neuroticism ($r = .65$) while grandiose narcissism showed a small negative relation ($r = -.13$). For Extraversion, grandiose narcissism showed a large, positive relation ($r = .46$) while vulnerable narcissism had a small, negative relation ($r = -.18$). Both subtypes showed moderate to large negative relations with Agreeableness with grandiose narcissism being more negatively related ($r = -.57$) to Agreeableness compared to vulnerable narcissism ($r = -.24$). Both subtypes were weakly related to Openness and vulnerable narcissism had a small, negative relation with Conscientiousness ($r = -.16$) while grandiose narcissism had a weak, positive relation ($r = .05$).

The relations between the domains and facets of the NEO-PI-R and the narcissism subtypes highlight the heterogeneity within the broader construct of narcissism, but it is important to note the areas of convergence as well. Both grandiose and vulnerable narcissistic traits showed moderate to large negative relations with the Agreeableness, and significant positive relations with the Angry Hostility facet of Neuroticism (grandiose = .27, vulnerable = .48). Thus, the correlational profiles found
by Miller and colleagues underscore the potential utility of differentiating between the subtypes but also highlight what unites the two subtypes of narcissism at the trait level—most notably a harsh, antagonistic interpersonal style. Similar trait profiles of the two subtypes have been found by other researchers (Dickinson & Pincus, 2003; Lobbestael et al., 2014; Miller et al., 2010, 2012; Pincus & Lukowitsky, 2010; Schoenleber, Sadeh, & Verona, 2011).

**Assessment of Grandiose and Vulnerable Narcissism**

Multiple measures have been developed over the past decades that were designed to best capture the traits and behaviors of the narcissistic individual. However, only recently have researchers explicitly focused on measuring both subtypes of narcissism. Prominent measures of narcissism that have been used in research are the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1981), the Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997), the Pathological Narcissism Inventory (PNI; Pincus et al., 2009), and the DSM-5’s conceptualization of NPD (American Psychiatric Association, 2013). More recently, the Five-Factor Narcissism Inventory (FFNI; Glover et al., 2012) was developed to assess narcissism using an FFM framework. Each of these measures highlights important features of narcissism with some focusing specifically on one narcissism subtype (i.e. NPI, HSNS, DSM-5) while others have attempted to include content relevant to both subtypes (i.e. PNI, FFNI).

Both the DSM-5 and the NPI emphasize grandiose aspects of narcissism. In regards to the DSM-5, the manual states that NPD is exemplified by, “A pervasive pattern of grandiosity (in fantasy or behavior), need for admiration, and lack of
empathy, beginning by early adulthood and present in a variety of contexts” (p. 659). The DSM-5 NPD criteria include the presence of grandiose fantasies, behavior that is commonly interpersonally exploitative, and arrogance or haughtiness. The description of NPD in the DSM-5, as well as in previous iterations of the manual, have been criticized for not taking into account the research that has shown narcissism to be composed of vulnerable traits as well (e.g. Miller, Gentile, Wilson, & Campbell, 2013).

In regards to the NPI, it was originally developed to capture the NPD criteria as put forth in the DSM-III. It is unsurprising then that the NPI has been found to focus primarily on grandiose aspects of narcissism (e.g. Maxwell, Donnellan, Hopwood, & Ackerman, 2011). Work that has examined the NPI and its correlates has found that narcissism as conceptualized by the NPI is linked to emotional resiliency and extraversion (Miller & Campbell, 2008) and does not include many items that assess the vulnerable subtype. Some have argued that the NPI can be better understood as a measure of adaptive narcissism or non-pathological narcissism (Pincus & Lukowitsky, 2010). Whether or not the NPI assesses adaptive or maladaptive traits is still being debated, but research has consistently shown that the NPI is primarily a measure of grandiose narcissism.

In comparison, the Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997) was designed to measure vulnerable narcissism. The HSNS was developed using items initially created by Murray (1938) who considered narcissism to be made up of two components which he called covert and overt narcissism which largely reflect the modern constructs of vulnerable and grandiose narcissism, respectively. As such, the HSNS focuses on the covert manifestation of narcissism and the authors highlight that
the HSNS assesses only one “face” of narcissism. Indeed, the authors found the HSNS manifested a correlation of .02 with the NPI, highlighting that the HSNS and the NPI are assessing two distinct manifestations of narcissism.

More recent measures have attempted to incorporate simultaneous coverage of both narcissistic subtypes. The Pathological Narcissism Inventory (PNI; Pincus et al., 2009) was created to measure pathological traits related to narcissism and incorporate scales that tap both grandiose and vulnerable subtypes. Pincus and colleagues, using exploratory and confirmatory factor analyses, found that a seven factor structure best described the PNI. Based on the seven factors, subscales were created that were designed to assess content related to grandiose (3 subscales) and vulnerable (4 subscales) narcissism. The respective vulnerable and grandiose subscales showed the expected divergent relations with the NPI and the HSNS. Subscales more aligned with grandiose narcissism (e.g. Exploitative, Grandiose Fantasy) correlated positively with the NPI while factors more in line with vulnerable narcissism (e.g. Contingent Self-esteem, Hiding the Self, Devaluing) correlated negatively with the NPI and positively with the HSNS. However, some concerns have been raised that the grandiose factor of the PNI does not adequately assess aspects of grandiose narcissism.

Specifically, work has shown that the grandiose factor of the PNI has shown little convergence with expert ratings of traits considered to reflect grandiose narcissism (Miller, Lynam, & Campbell, 2016; Miller et al., 2014). Miller, Lynam, and Campbell argue that the grandiose scales of the PNI are laden with content related to negative affect which in turn leads the PNI grandiose scales to manifest significant relations with measures of both grandiose and vulnerable narcissism. Other work
seems to support this notion—Thomas et al. (2012) found that PNI Grandiosity was moderately positively related to Neuroticism, unrelated to extraversion, and had a small, negative relation with Agreeableness. Thus, it may be the case that as the PNI has sought to measure more maladaptive aspects of narcissism, it has inadvertently sacrificed adequate coverage of grandiose traits.

The Five-Factor Narcissism Inventory (Glover et al., 2012) is a recent measure of narcissism which, like the PNI, is designed to assess both grandiose and vulnerable traits of narcissism. The FFNI measures narcissism using maladaptive variants of general personality traits as conceptualized by the five-factor model of personality (FFM). The FFNI was designed with the goal of capturing the heterogeneity within narcissism using the facets of the FFM as represented in the NEO-PI-R (Costa & McCrae, 1992). The FFNI is composed of 15 trait scales that capture both vulnerable (e.g. Shame and Distrust scales) and grandiose narcissism (e.g. Exhibitionism and Arrogance scales). The 15 scales are underlain by three factors: agentic extraversion, antagonism, and neuroticism. While the antagonism factor is common to both subtypes, agentic extraversion is unique to grandiose narcissism while neuroticism is unique to vulnerable narcissism. FFNI scales that measure grandiose aspects of narcissism have demonstrated convergent relationships with NEO-PI-R Extraversion facets while scales that measure vulnerable narcissism have demonstrated convergence with the NEO-PI-R Neuroticism domain (Glover et al., 2012; Miller et al., 2013). Low Agreeableness was found to underlie both subtypes. Importantly, the FFNI provided incremental validity above and beyond other measures of narcissism including DSM defined NPD, the NPI, the HSNS, and the PNI. Thus, using a multifaceted approach to
measuring narcissism, the FFNI allows for a nuanced understanding of the variety of traits that contribute to narcissistic personalities.

In addition to the FFNI’s multidimensional approach, the FFNI possesses unique strengths not shared by other measures of narcissism. Specifically, the FFNI allows for research on narcissism to be incorporated into the larger body of literature that uses maladaptive variants of FFM traits to understand personality psychopathology. The use of a common framework (the FFM) for understanding maladaptive personality allows for disorders like narcissism to be understood and investigated from the ground up, trait by trait (Lynam & Miller, 2015) and in turn allows for connections to a now robust body of research on maladaptive personality that has used the same approach (Samuel & Widiger, 2008; Saulsman & Page, 2004). In other words, the FFNI allows for analysis at the subtype level, domain level, and then the subscale level. Researchers may be able to use a common framework to understand why disorders like narcissism and psychopathy converge in their relations with certain outcomes while still being distinct from one another.

In summary, measures of narcissism are derived from particular theoretical understandings of the construct that are not completely overlapping with one another. As such, the relations these measures bear with outcomes relevant to the construct are influenced by each measure’s theoretical underpinnings. In relation to behavioral aggression, one may expect to find differential relations depending on which measure is used. The large majority of studies examining narcissistic aggression following provocation have utilized the NPI (Rasmussen, 2015). We hope to expand upon this work by including a larger number of narcissism measures that incorporate differing
conceptualizations of the construct in addition to explicitly measuring both narcissistic subtypes.

**Narcissism, Aggression, and the Present Study**

The primary goal of the present paper is to utilize multiple measures of narcissism in addition to an FFM framework in hopes of understanding how grandiose and vulnerable narcissism may resemble or differ from one another in relation to behavioral aggression. The work of Bushman and Baumeister (1998) was the impetus for the growing literature on narcissistic traits and their role in aggressive behaviors following an insult. In their seminal paper, the authors found that when a threat to participants’ ego was introduced via a harsh critique of an essay participants had written, individuals who were more narcissistic (i.e. those who had higher NPI scores) had the highest levels of aggressive responding using a modified version of the Taylor Aggression Paradigm (TAP; Taylor, 1967) in which participants can elect to give an ostensible opponent blasts of white noise. The authors found that individuals with greater grandiose self-views responded more aggressively when their ego was threatened.

Research using comparable ego-threat and behavioral aggression paradigms have produced similar results to Bushman and Baumeister’s initial study (e.g. Barry, Chaplin, & Grafeman, 2006; Konrath, Bushman, & Campbell, 2006; Jones & Paulhus, 2010; Thomaes, Bushman, Stegge, & Olthof, 2008; Twenge & Campbell, 2003). Much of the early work on narcissism and aggression was focused primarily on grandiose narcissism and did not attempt to incorporate measures of both grandiose and
vulnerable narcissism. Recent work has attempted to examine if there are differential relations between the two narcissism subtypes and aggression.

Initial results seem to demonstrate further evidence of heterogeneity between the two narcissism subtypes. Besser and Beatriz (2010) required participants to think of scenarios that either represented a high level of interpersonal threat (walking in on a cheating romantic partner) or a high level of achievement failure (walking in to your boss’ office to see that your boss has given the promotion to someone else). The authors found that state anger and state negative affect were increased for grandiose narcissists when thinking about high achievement failure but not interpersonal threat while vulnerable narcissists experienced increases in state anger and state negative affect in the high interpersonal threat condition but not the high achievement failure condition.

Using a self-report measure of proactive and reactive aggression, other research has found that grandiose narcissism was related to both reactive and proactive aggression while vulnerable narcissism was related only to reactive aggression (Fossati, Borroni, Eisenberg, & Maffei, 2010). Work that has used laboratory-based aggression measures has found that grandiose narcissism is related to increases in behavioral aggression (using the modified TAP, but without an ego threat manipulation) while vulnerable narcissism was not (Lobbestael et al., 2014). However, the authors did find that both grandiose and vulnerable narcissism were related to self-reported proactive and reactive aggression.

The current study seeks to expand upon the initial work that has examined the relation between aggression and narcissism subtypes. The FFM framework may be
particularly useful for elucidating similarities as well as differences between the narcissistic subtypes as they relate to aggression. It may be the case that there are personality traits unique to grandiose narcissism that predict aggression (e.g. high extraversion coupled with very low agreeableness), traits that are common to both subtypes that may best predict aggression (e.g. very low agreeableness), or traits related specifically to vulnerable narcissism that best predict aggression (e.g. high neuroticism and very low agreeableness). The FFM framework will allow for one to test each of these questions and the results may also have implications for other forms of personality psychopathology with ties to aggression (e.g. psychopathy).

Unlike most work that has examined aggressive behavior in narcissistic individuals following an insult, we will utilize a broader array of measures of both grandiose and vulnerable narcissism. Six scales were administered—3 related to grandiose narcissism and 3 related to vulnerable narcissism. The inclusion of the different scales reflecting theoretical and conceptual differences in the measurement of narcissism will allow for comprehensive coverage of the two subtypes and allow for meaningful comparisons of the two subtypes’ relations to measures of aggression.

As outlined by Baumeister and colleagues in their ego-threat theory of aggression (Baumeister et al., 2000; Bushman et al., 1998), aggression becomes more likely after a perceived insult only for those who have an overly inflated view of themselves. When insulted, such individuals first take the insult as a threat against their above average self-concept, which he or she has a vested interest in maintaining. In turn, the individuals seek to defend their view of themselves through aggressive means. Whether we can expect to see increases in behavioral aggression for individuals who
report elevations on scales related to vulnerable narcissism remains unclear. Much of
the early research on narcissism and aggression has focused on grandiose narcissism.
Furthermore, recent work that did assess vulnerable narcissism did not find a
relationship between vulnerable narcissism and laboratory aggression (Lobbestael et
al., 2014), but this research did not utilize an ego threat manipulation. The over-
sensitivity to rebuke or criticism that is typical of vulnerable narcissism may play an
important role in triggering aggressive responding.

It is likely that both vulnerable and grandiose narcissism will be related to self-
reported reactive and proactive aggression as well as relational aggression. This
relationship will be driven largely by the core antagonistic traits that underlie both
subtypes of narcissism (i.e. high antagonism) as high antagonism has been shown to be
a reliable predictor of antisocial behaviors (Miller & Lynam, 2001).
METHOD

Participants

Participants were 135 undergraduate college students at a large Midwestern university who participated in the study in exchange for course credit. The average age of participants was 19.41 (SD = 2.91) and 44.4% of the sample was male. The majority of the sample identified as Euro American (67.4%), 15.6% identified as East Asian, 3.7% identified as South Asian, 3% as African American, and 5.9% as Hispanic. 3% identified their ethnicity as “Other” and 1.5% chose not to list their ethnicity.

Procedure

Informed consent was obtained after participants reviewed what they would be doing over the course of the experiment. The consent form described that participants would complete a series of questionnaires, write an essay, grade an essay, and compete in a reaction time task. All participants completed the protocol individually. After signing the informed consent, participants were taken from the waiting room to a separate room where they completed the experimental protocol. Excluding times when the experimenter was giving participants instructions, the participants completed the experiment independently. Once participants completed all self-report questionnaires, the experimenter explained that the participant would now write an argumentative essay on abortion. Participants were given approximately 20 minutes to complete their
essay before it was taken to be “graded” and the experimenter returned with an essay for the participant to grade themselves (whether the essay participants graded was pro-choice or pro-life was randomly determined). Participants were given approximately 5 minutes to read and grade the ostensible partner’s essay. The experimenter then returned the participant’s own essay with either negative or positive feedback depending on the condition the participant had been randomly assigned to. Participants were then instructed to continue to the next portion of the experiment in which they would fill out another brief questionnaire (the PANAS-X) and then compete in a reaction time task against the participant who graded their essay. After participants completed the reaction time task, they once again complete the PANAS-X before debriefing with the experimenter.

During the exit interview, the experimenter asked all participants if at any point they had thought that there was not another participant. For any participant that expressed doubt that there was another participant, their behavioral aggression data were excluded from analyses ($N = 41$). A subset of participants stated that they had become doubtful that there was another participant, but only after they had completed at least a few trials of the reaction time task ($N = 40$). Because we were most interested in participants’ choice of noise blast on the first reaction time trial, their data were included in our analyses. An additional 6 participants’ data were not included due to the participants not following instructions during the experiment$^1$. Participants who believed there was another participant were compared to those who did not believe

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$^1$ In total, 65% of the total sample ($N = 88$) had behavioral aggression data available for analysis.
there was another participant in order to examine if there were systematic differences between groups. The results showed that across the study variables, there were significant differences in mean levels for EPA total score, $t(127) = -2.05, p < .05$, and in mean levels on the Love dimension of the IAS-R, $t(127) = 2.27, p < .05$. Individuals who believed the experimental manipulation had lower mean scores on the EPA and higher mean scores on the Love dimension IAS-R. These mean differences do not suggest that any problematic biases in our sample used for our primary analyses. All participants’ data was included in our exploration of zero-order relations among study measures ($N = 135$), as participants’ skepticism of the existence of another participant is unlikely to have any influence on how participants answered self-report questionnaires.

All self-report questionnaires were completed on the computer. The reaction time task was administered through MediaLab, but utilized DirectRT Software (Version 2012.4.0.160) to create and run the reaction time task. Sound blasts were administered over Sony MDR-NC7 headphones which were plugged into the desktop computer. The white noise blasts participants received ranged in intensity from 80-100 dBs, and in duration from 3-5 seconds.

**Ego Threat**

In order to manipulate perceived insult, we used the same ego threat manipulation utilized by Bushman and Baumesiter in their original 1998 study. Specifically, participants were asked to write an argumentative essay on the topic of abortion (defending either a pro-life or pro-choice position) and participants were told the essay would then be graded by another participant (who did not actually exist).
Participants were given approximately 20 minutes to write their essay at which point their completed essay was taken to be “graded” by the ostensible participant. Participants were also given an essay purportedly written by the other “participant” and participants were asked to grade the essay using a provided evaluation sheet. The evaluation sheet had 6 categories for rating the essay (organization, originality, writing style, clarity of expression, persuasiveness of arguments, and overall quality) and the rating scale ranged from -10 (“unacceptable”) to +10 (“excellent”). There was also room to leave written comments on the evaluation sheet. The essay given to participants to grade was randomly chosen to be either pro-life or pro-choice. Additionally, handwriting was controlled for by having both male and female hand-written versions of the standard pro-life and pro-choice essays.

Participants were randomly assigned to either the ego-threat condition or the non-threat condition. In both conditions, participants were given back their own written essay after the ostensible participant had graded it using the evaluation sheet described above. In the ego-threat condition, participants received scores ranging between -8 and -10 on all 6 categories and a written comment stating “One of the worst essays I’ve read!” In the non-threat condition, participants received scores ranging between +8 and +10 on all categories and a written comment stating “Great essay!”. After receiving their essay feedback participants completed the PANAS-X as a way to measure the effectiveness of the manipulation, and were then told they would be competing against the participant who had graded their essay in a reaction time task. Before completing any trials, participants were allowed to select the duration and intensity of the sound blast their “partner” would receive if the participant won the first
trial. Thus, only the first trial of our behavioral aggression measure serves as a measure of aggression following ego-threat, as following trials are influenced by the blasts participants receive from the computer.
MEASURES

Demographics Questionnaire

All participants completed a demographics questionnaire that asked about age, gender, and ethnicity. In addition, the questionnaire contained items that assessed participants’ position on abortion (pro-life, pro-choice, or neutral) as well as how strongly participants felt about their beliefs on abortion using a 1-5 Likert scale (1 = not strongly at all, 5 = very strongly). The items assessing participants’ beliefs on abortion were included to ensure that both participant’s behavioral aggression and degree of anger following insult was not a function of their position on abortion or strength of opinion on abortion.

Manipulation Check

Positive and Negative Affect Schedule-Expanded Form (PANAS-X)

The PANAS-X (Watson & Clark, 1999) is a 60-item self-report measure that assess emotional states which contains two higher-order scales of positive and negative affect. Participants completed the PANAS-X at three time points: before experiencing an ego-threat, immediately following the ego-threat, and immediately following their completion of a reaction time task. The PANAS-X was administered at three time points in order to serve as a validation check for the ego-threat manipulation.
Narcissism Measures

Narcissistic Personality Inventory (NPI)

The NPI (Raskin & Hall, 1979) is a 40-item self-report questionnaire in which participants are presented with forced-choice (i.e. True/False) questions. The NPI is designed to capture narcissism based on the DSM’s conceptualization of the disorder. As a result, it is geared towards features of grandiose narcissism. The reliability of the total NPI scores in the complete sample, $N = 135$, and the subsample of individuals whose behavioral aggression data were used for analyses, $N = 88$, were both .82.

Hypersensitive Narcissism Scale (HSNS)

The HSNS (Hendin & Cheek, 1997) is a 10 item self-report measure that assesses characteristics related to vulnerable narcissism and hypersensitivity. The HSNS contains items like “My feelings are easily hurt by ridicule or the slighting remarks of others”. The reliability of the HSNS in the total sample was .69 and .68 in the subsample.

Pathological Narcissism Inventory (PNI)

The PNI (Pincus et al., 2009) is a 52-item self-report measure composed of 7 subscales that assesses pathological traits related to grandiose and vulnerable narcissism. Participants respond to items using a 1-6 Likert scale. Grandiose and vulnerable narcissism scales were used for analyses. In the total sample, the reliability of the PNI vulnerable scale was .94 and the reliability for the grandiose scale was .83. In the subsample, the reliabilities for the scales were .93 (vulnerable) and .82 (grandiose).
Five Factor Narcissism Inventory-Short Form (FFNI-SF)

The short form FFNI (Sherman et al., 2015) is a measure of narcissism composed of 60 items (15 scales) that are made up of maladaptive variants from the Five Factor Model (FFM). Participants rate their responses to each of the items on a range from 1 “strongly disagree” to 5 “strongly agree”. The FFNI-SF contains scales that assess both vulnerable and grandiose subtypes of narcissism. The reliabilities of the grandiose and vulnerable FFNI scales in the total sample were .88 and .86 respectively. In the subsample, the reliabilities were .88 for the grandiose scale and .87 for the vulnerable scale.

Other Personality Measures

Five Factor Model Rating Form (FFMRF)

The FFMRF (Mullins-Sweatt, Jamerson, Samuel, Olson, & Widiger, 2006) is a 30-item self-report measure that assesses the domains and facets of the FFM as represented in the NEO-PI-R (Costa & McCrae, 1992). Each facet is assessed by a single item and domain scores are computed by adding each of the facet scores. Thus the FFM domains of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness are assessed by 6 items each. Reliabilities were calculated for each domain and ranged from .69 (Openness) to .85 (Conscientiousness) in the total sample. In the subsample, the reliabilities ranged from .68 (Neuroticism) to .86 (Conscientiousness).

Interpersonal Adjectives Scale-Revised (IAS-R)

The IAS-R (Wiggins, Trapnell, & Phillips, 1988) is a 64-item self-report measure based upon a two-dimensional interpersonal circumplex of warmth and
dominance. Items from the 8 octants were combined to form two composite scales representing warmth and dominance. Reliabilities for each of the 8 octant scales were computed and ranged from .65 to .86

**Elemental Psychopathy Assessment-Short Form (EPA-SF)**

The EPA-SF (Lynam et al., 2013) is a 72-item measure that is derived from the FFM trait description of psychopathy. The measure is designed to capture, in a bottom-up approach, the essential elements of psychopathy. The EPA-SF possesses the same four-factor structure as its parent form: Antagonism, Emotional Stability, Narcissism, and Disinhibition. Both the total score can be used as well as specific subscale scores to assess the separate components of psychopathy. The reliability of the total EPA score was .87 in both the total sample and the subsample.

**Rosenberg Self-Esteem Scale (RSE Scale)**

The RSE Scale (Rosenberg, 1965) is a widely used 10-item self-report measure of self-esteem. Example items include “I feel that I am a person of worth, at least on an equal plane with others” and “At times I think I am no good at all” (reverse coded). The reliability of the RSE Scale was .86 in the total sample.

**Self-Report Aggression Measures and Measures of Behavioral Aggression**

**Crime and Analogous Behavior Scale (CAB)**

The CAB (Evans, Cullen, Dunaway, & Benson, 1997) is a 35 item self-report measure that asks respondents whether or not they have engaged in a range of criminal and antisocial activities over the past year and the frequency of such activities. Items assess a variety of behaviors including substance use, physical aggression, stealing, and
gambling. The reliabilities of the CAB count variables were poor, ranging from .39 to .68.

**Reactive/Proactive Aggression Questionnaire (RPQ)**

The RPQ (Raine et al., 2006) is a 23-item self-report measure which includes items measuring both reactive and proactive aggression. The RPQ is made up of 23 items and participants endorse items by choosing either 0 (*never*), 1 (*sometimes*), or 2 (*always*). The reliability of the total RPQ score was .85.

**Self-Report of Aggression and Social Behavior Measure (SRASBM)**

The SRASBM (Morales & Crick, 1998) is a measure of relational aggression that contains 16 items rated on a 7-point Likert scale. Of the 16 relational aggression items, 11 items measure peer directed relational aggression and 5 items measure romantic relational aggression. Previous work has shown that a total relational aggression score is psychometrically reliable (e.g. Murray-Close & Ostrov, 2010) and in our sample the total scale score showed good reliability ($\alpha = .85$).

**Situational Triggers of Aggressive Responses Scale (STAR)**

The STAR scale (Lawrence, 2006) is a 22-item self-report measure that asks respondents to indicate situations in which they are likely to feel more aggressive. The STAR contains two subscales—a subscale that assesses an individual’s propensity to become aggressive in response to interpersonal provocations and a subscale that assesses the propensity to feel aggressive in response to environmental or situational frustrations. Participants rated items using a 1-5 Likert scale. The reliability of the STAR total score was .91.
Behavioral Aggression

Behavioral aggression was measured through the use of a modified version of Taylor’s (1967) aggression paradigm (TAP). While the original TAP uses the administration of electric shocks to operationalize aggression, the modified TAP uses the duration and intensity of white noise blasts that participants choose to give to an ostensible opponent as a way to operationalize aggressive behavior. Participants were led to believe they would be competing against another participant in a reaction time task and the individual with the quicker reaction time would be allowed to give their opponent a blast of white noise. In reality, wins and losses were predetermined with participants “winning” 12 trials and “losing” 12 trials for a total of 24 trials. Before participants completed each reaction time trial, participants were allowed to choose a value ranging from 0-10 for both sound blast intensity and sound blast duration, with a choice of 0 resulting in no sound blast. Thus, participants selected the duration and intensity of the white noise blast the other “participant” would receive should participants win the reaction time trial. Scores on noise blast duration and intensity were standardized and then combined to create a measure of overall behavioral aggression.

Measures Not Used in the Present Manuscript

Multi-Group Ethnic Identity Measure (MEIM)

The MEIM (Phinney, 1992) is a 20-item self-report measure designed to measure three interrelated components of ethnic identity: ethnic identity achievement, belongingness and affirmation, and ethnic behaviors. Additionally, the MEIM has a subscale that measures an individual’s other group orientation which is considered
separate from the other items that are more directly related to the construct of ethnic identity. Although all participants completed the MEIM, it was not the focus of the present analyses.

**Language Proficiency Measure**

The Vocabulary portion of the Shipley Institute of Living Scale-1st edition (Zachary & Shipley, 1986) will be used to assess participants overall vocabulary abilities. The vocabulary tests is a 40-item measure that gives participants a vocabulary word and participants are required to select one of four choices that is a synonym for the target vocabulary word. The SILS was used to ensure that participants demonstrated adequate vocabulary abilities for reading and understanding the assessment measures used in our study.

**Planned Analyses**

First, we examine whether the interaction of narcissistic personality traits and ego-threat result in elevated levels of behavioral aggression. We aim to reproduce the findings of Bushman and Baumeister (1998) using the NPI. In order to replicate their previous findings, a multiple linear regression analysis will be conducted by regressing behavioral aggression (as measured by participants’ combined noise blast intensity and duration scores on the first trial) onto centered NPI scores, a dummy coded condition variable (0 = non-threat, 1 = ego-threat), and their product term (Centered NPI x dummy coded condition). We expect that individuals will behave more aggressively following negative feedback on their essay compared to individuals who do not receive negative feedback on their essay and aggressive behavior following insult will be even higher for individuals with higher scores on the NPI.
In order to expand upon previous work, we will incorporate a greater variety of narcissism measures into our analyses. Participants completed a variety of narcissism measures which in turn will allow for examination of 3 scales related to grandiose narcissism (FFNI Grandiose, PNI Grandiose, NPI) and 3 scales related to vulnerable narcissism (FFNI Vulnerable, PNI Vulnerable, HSNS). In order to utilize all narcissism measures completed by participants, we will use an exploratory factor analysis (EFA) to extract two factors using principal axis factoring. Factor scores will then be saved and used as measures of grandiose and vulnerable narcissism. Because grandiose and vulnerable narcissism are subtypes of a larger construct, we will use an oblique rotation which allows the two factors to correlate with one another.

We will then repeat our initial regression analysis, substituting the grandiose and vulnerable factor scores as measures of narcissism in separate models. This allows us to examine if the statistical interaction between narcissism score and condition exists for both narcissism subtypes following ego threat. In the first regression analysis, behavioral aggression (as measured by participants’ combined noise blast intensity and duration selection on the first trial) will be regressed onto the grandiose factor score, dummy coded condition (0 = non-threat, 1 = threat), and their product term (grandiose factor score x dummy coded condition). In the second regression analysis, behavioral aggression will be regressed onto the vulnerable factor score, dummy coded condition (0 = non-threat, 1 = threat), and their product term (vulnerable factor score x dummy coded condition).

Following these initial analyses, we will then explore which traits may be accounting for the interaction between narcissism and condition type. This will be done
through the use of hierarchical linear regression. A total of six separate hierarchical analyses will be conducted—two for each of the original IVs used in the previous regression analyses (NPI score, grandiose narcissism factor score, and vulnerable narcissism factor score). Behavioral aggression at trial 1 will serve as the dependent variable for all hierarchical regressions. The details of these analyses will be given using the NPI as an example in the following paragraph. The same analysis will then be repeated, substituting different measures of narcissism into the model.

**NPI**

At step 1, the centered NPI score, dummy coded condition, and the product term (centered NPI score x dummy coded condition) will be entered into the model to account for the total amount of variance in trial 1 aggression explained by NPI scores and condition effects, as well as their interaction. At step 2, the centered Agreeableness factor from the FFMRF and the Agreeableness x condition product term will be entered into the model. Any reductions in the amount of variance accounted for by the NPI x Condition effect will be tracked and examined for statistical significance in order to explore whether (low) Agreeableness accounted for a significant amount of variance in the relationship between behavioral aggression and NPI scores. A separate 2-step hierarchical regression will then be conducted with centered NPI score, dummy-coded condition, and their product term entered at step 1. At step 2, centered Extraversion from the FFMRF will be entered along with an Extraversion x condition product term. The purpose of doing two separate hierarchical analyses as opposed to one 3-step regression is to avoid privileging whichever personality domain is entered at step 2—there is not a compelling reason to enter Agreeableness first before Extraversion or
vice versa. Thus, following step 1, step 2 will show whether specific FFM domains account for unique variance in the relationship between NPI scores and aggression. We will also examine whether the amount of variance accounted for in behavioral aggression increases following step 1. Such a scenario would indicate that the FFM traits are assessing important content relevant to behavioral aggression that is not assessed by the NPI.

In keeping with current conceptualizations of narcissism, Neuroticism will only be entered into the model when we substitute a measure of vulnerable narcissism into the model. Thus, our vulnerable narcissism hierarchical models will include Agreeableness and Neuroticism entered while the NPI and grandiose narcissism regression models will include Agreeableness and Extraversion.

We will also calculate the zero-order relations between the narcissism factor scores and other study variables which include measures of normative and maladaptive personality (FFMRF, IAS-R, and EPA), self-esteem (Rosenberg Self-esteem scale), and measures of self-reported aggression and antisocial behavior (CAB, RPQ, SRASBM, and STAR).
RESULTS

Manipulation Checks

A series of t-tests were first conducted in order to examine whether participants’ stance on abortion (either pro-choice or pro-life) or the type of essay participants rated had any influence on participants becoming more angry/hostile or behaving more aggressively. The results showed that neither abortion stance, \( t(54) = -.331, p = .742 \), nor the type of essay reviewed, \( t(86) = .132, p = .895 \), affected mean levels of anger or hostility after receiving feedback on their essay.\(^2\) In addition, abortion stance, \( t(54) = -.254, p = .801 \), and the type of essay reviewed, \( t(86) = -.612, p = .542 \), did not have a significant effect on aggressive responding. Last, we examined if the strength of an individual’s position on abortion had any influence on anger/hostility and aggressive responding. The correlations between stance strength and both anger/hostility \( (r = .12) \) and aggressive behavior \( (r = .06) \) were small and non-significant.

Next, we used a one-way between subjects ANOVA in order to test whether there were significant increases in anger and hostility following essay feedback. The results showed that the groups did not differ from one another in anger and hostility

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\(^2\) T-tests for abortion stance only included participants who indicated that they were either pro-choice or pro-life. Participants who indicated that they had a neutral stance on abortion were not included as there is little reason to suspect that a neutral stance would make it more likely that participants would become more aggressive or angry/hostile.
before receiving feedback, $F(1, 86) = 1.16, p = .285$, but after receiving feedback the groups significantly differed from one another, $F(1, 86) = 7.70, p < .01$, with individuals in the threat condition reporting higher mean levels of anger and hostility. These results indicate that our manipulation was successful in provoking participants in the threat condition.

**Factor Analysis of Narcissism Measures**

In order to utilize all narcissism measures completed by participants, we conducted an exploratory factor analysis (EFA) using SPSS Version 23 in both the total sample ($N = 135$) and the subset of the total sample that had available behavioral aggression data ($N = 88$). We subjected 6 scales, 3 representing grandiose narcissism (FFNI-G, PNI-G, NPI) and 3 representing vulnerable narcissism (FFNI-V, PNI-V, and HSNS) to an EFA and requested two factors be extracted using principal axis factoring with a promax rotation. The results were comparable across the two samples—in both samples, two factors with eigenvalues greater than 1.0 accounting for approximately 74% of the total variance among the narcissism scales were extracted. As expected, factor 1 was comprised of the three vulnerable narcissism scales while factor 2 was comprised of the three grandiose narcissism scales. Each of the scales loaded onto their respective factor with minimal cross-loadings. The pattern matrix for both samples can be seen in Table 2. The factor scores generated from the EFA were saved and used as grandiose and vulnerable narcissism scores for our analyses.

**Primary Analyses**

We conducted three separate regression analyses to examine our primary questions of interest—do narcissism subtypes interact with condition to predict
aggressive responding on trial 1. In the first regression model, contrary to our hypothesis, we found no significant interaction between condition and NPI scores, $\beta = .003$, $t(84) = .095$, $p = .925$. We also found no effect for NPI scores, $\beta = .021$, $t(84) = .170$, $p = .866$. There was a conditional effect for condition, $\beta = .420$, $t(84) = 4.24$, $p < .01$, such that individuals in the ego-threat condition responded significantly more aggressively compared to those in the non-threat condition at average levels of the NPI.

In our second regression analysis, we tested whether a broader measure of grandiose narcissism, represented by our grandiose factor score, would result in the predicted interaction between grandiose narcissism and condition. We did not find a significant interaction between grandiose narcissism and condition, $\beta = .152$, $t(84) = .1.22$, $p = .225$, nor was there an effect for grandiose narcissism, $\beta = .024$, $t(84) = .176$, $p = .860$. The threat condition still showed a significant conditional effect in the second regression equation, $\beta = .416$, $t(84) = 4.27$, $p < .01$.

Third, we tested whether vulnerable narcissism, as measured by our vulnerable narcissism factor score, would interact with experimental condition to predict aggressive behavior. Again, we found no significant interaction between condition and vulnerable narcissism, $\beta = .028$, $t(84) = .229$, $p = .819$, but there was a conditional effect for vulnerable narcissism, $\beta = .267$, $t(84) = 2.22$, $p < .05$, such that for a one unit increase on the vulnerable factor score, there was a corresponding .267 standard deviation increase in behavioral aggression for individuals in the non-threat condition. The effect of condition was also significant for the third model, $\beta = .452$, $t(84) = 4.77$, $p < .01$. 
Because we were unable to find significant interactions or conditional effects for our regression models that used the NPI and the grandiose factor scores, we did not conduct our planned analyses involving Extraversion and Agreeableness. Though we did not find a significant interaction in our model using vulnerable narcissism, we did conduct an additional hierarchical regression to explore if (low) Agreeableness and/or Neuroticism may account for the effect between vulnerable narcissism and behavioral aggression. Two separate hierarchical regression were conducted with the vulnerable narcissism factor score and dummy coded condition entered at step 1 for both models. Agreeableness from the FFMRF was centered and entered at step 2 in the first hierarchical regression. Centered Neuroticism from the FFMRF was entered at step 2 in the second hierarchical regression. The results of the two hierarchical analyses show that neither Agreeableness nor Neuroticism significantly mediated the relationship between vulnerable narcissism and behavioral aggression and thus, did not account for the effect of vulnerable narcissism on aggression.

**Exploring Moderating Effects of Gender**

In order to probe whether gender may moderate the effect of narcissism on aggressive responding following ego-threat, we conducted two more additional regression analyses after creating a dummy coded gender variable (1 = male, 0 = female). Although these additional analyses were unplanned, we hoped to explore whether the hypothesized interactions would be produced for grandiose and vulnerable narcissism after including the effects of gender. For the first regression, we examined whether there was a three-way interaction between grandiose narcissism, condition, and gender. Thus, we included the grandiose factor score, dummy coded condition, and
dummy coded gender as well as all higher-order product terms (grandiose x condition, grandiose x gender, gender x condition, and grandiose x condition x gender). The results showed no significant three-way interaction and no significant conditional effects for the model.

We ran the same analysis in the second regression model but substituted the vulnerable narcissism factor score for the grandiose narcissism factor score. The same number of product terms were entered into the model (vulnerable x condition, vulnerable x gender, gender x condition, and vulnerable x condition x gender). The results showed a significant three way interaction between vulnerable narcissism, condition, and gender, $\beta = .430$, $t(80) = 2.83$, $p < .01$. In order to probe the nature of the three-way interaction, simple slope analyses were conducted. The results showed that the simple slope of vulnerable narcissism was significant for men in the threat condition, $\beta = .953$, $t(80) = 4.41$, $p < .01$, but not when men were in the non-threat condition, $\beta = .235$, $t(80) = 1.19$, $p = .237$. The simple slope of vulnerable narcissism was not significant for women in the threat condition but was significant in the non-threat condition, $\beta = .288$, $t(80) = 2.13$, $p < .05$. Thus, the simple slope analyses showed that males high in vulnerable narcissism who were in ego-threat condition responded more aggressively while females high in vulnerable narcissism responded more aggressively in the non-threat condition. Figure 1 shows the plotted simple slopes for males and females in the threat condition. Figure 2 shows the plotted simple slopes for males and females in the non-threat condition.
**Aggression and Personality Self-Report Results**

We also examined the zero-order relations between the two narcissism factors and a variety of self-report measures that assess content related to general personality, aggression, and antisocial behavior. The examination of the zero-order relations was conducted using the main sample \(N = 135\), with the exception of the correlations between the narcissism measures and the narcissism factor scores, and trial 1 aggression and the narcissism factors, both of which were examined in the subsample \(N = 88\). Steiger’s (1980) test of dependent correlations was used to examine whether the relations between the narcissism factors and the various outcomes were significantly different from one another. The zero-order relations can be seen in Table 2.

Excluding the different measures of narcissism used to create the narcissism factors, the two narcissism factors differ from one another in their zero-order relations for 10 out of the 24 possible correlations. The largest differences between the two factors are seen in their relations with self-esteem, the Dominance scale from the IAS-R, and the total score of the EPA. Vulnerable narcissism showed a large negative relationship with self-esteem and Dominance and a moderate positive relation with the EPA while grandiose narcissism showed a moderate positive relationship with Dominance, a weak negative relation with self-esteem, and a strong positive correlation with the EPA. It is important to note that there is criterion-predictor overlap for the EPA, as two scales from the EPA are also used in the FFNI-Grandiose scale which contributed to the grandiose factor score. The relations between the two narcissism factors and the FFM domains are similar to results seen for the Dominance and Love
scales, though of a lesser magnitude—both subtypes showed negative relations with Agreeableness though the grandiose factor more so than the vulnerable factor. The grandiose factor showed a small positive relationship with Extraversion while the vulnerable factor showed a small negative relation.

The narcissism factors showed consistent relations with measures of self-reported aggression—all relations are positive and range in size from moderate to large. The only exceptions are the grandiose factor’s relations with the STAR total score and the STAR Interpersonal subscale which were small in magnitude. The grandiose and vulnerable factors were significantly different from one another for all three STAR scales. For the other measures of self-reported aggression, the two narcissism factors did not differ significantly from one another. In relation to antisocial behavior, the grandiose factor showed small positive relations with drug use variety and violent antisocial behavior, and a moderate positive correlation with gambling behavior. Vulnerable narcissism showed a small, non-significant relation with drug use variety but otherwise was unrelated to these outcomes. In the case of gambling and violent antisocial behavior, the grandiose factor’s relations were significantly different compared to the vulnerable factor’s relations.
DISCUSSION

The primary goal of the present project was to examine how grandiose and vulnerable narcissism compared to one another in relation to behavioral aggression following an insult. We aimed to replicate previous work that found an interaction between grandiose narcissism and threat condition, such that individuals higher in grandiose narcissism respond more aggressively after a perceived insult. We extended upon previous work by incorporating measures of vulnerable narcissism, as vulnerable narcissism has typically not been included in studies of aggressive behavior following insult. In addition, we explored the zero-order relations between the two subtypes and a variety of outcomes related to aggressive behavior to further understand how grandiose and vulnerable narcissism may diverge from one another in relation to theoretically meaningful outcomes.

Contrary to our hypotheses, we did not replicate previous findings using the NPI as our measure of narcissism; although individuals who received negative essay feedback were more aggressive, NPI narcissism was not related to aggression in the task and did not interact with condition. Results were the same when we used a broader, factor-analytically derived grandiose index of narcissism. Similar results were obtained for vulnerable narcissism—we did not find an interaction between vulnerable narcissism and condition that resulted in greater levels of aggression. However, when
we conducted additional analyses to test whether gender moderated the effect of narcissism and condition, we found a significant three-way interaction involving vulnerable narcissism. The interaction was such that males who rated themselves higher in vulnerable narcissism were significantly more aggressive after they had been insulted while females high in vulnerable narcissism were more aggressive in the non-threat condition.

We also examined the zero-order relations between grandiose and vulnerable narcissism and a variety of self-report measures related to personality and aggression. There was evidence of divergence between the two subtypes in addition to important areas of overlap.

The three-way interaction found for vulnerable narcissism, condition, and gender is noteworthy for a few reasons. First, it suggests that vulnerable narcissism may be a useful construct for better understanding why certain individuals respond aggressively when provoked. In a recent meta-analysis of the relationship between narcissism and aggression following provocation, Rasmussen (2015) reported effects from 84 independent samples. Of the 84 samples included, only two had used measures of vulnerable narcissism and neither of the two samples completed behavioral aggression measures. It is clear that the majority of research has primarily focused on grandiose narcissism’s relationship with provocation and aggression. As a result, the role of neuroticism related traits in narcissistic aggression following provocation may have gone understudied—grandiose narcissism is typically unrelated or negatively related to such traits. Specifically, the role of strong subjective feelings of anger and
hostility and how easily one becomes distressed may be particularly important to aggressive behavior after an insult.

Though such feelings of anger, rage, and hostility are typically discussed in the context of both narcissism subtypes they are more strongly emphasized in vulnerable narcissism. For example, in the vulnerable narcissism measures used in the present study, the content of specific vulnerable narcissism scales is described by titles such as “Entitlement Rage” (PNI) and “Reactive Anger” (FFNI). If traits like anger and hostility are what may drive the relationship between narcissism and aggression following an insult, then one might expect to see positive relations between both grandiose and vulnerable narcissism. However, the relations between vulnerable narcissism and aggression should be stronger as these traits are more prominent in the vulnerable subtype. Furthermore, vulnerable narcissism also includes content related to hypersensitivity and shame, both of which are likely important to behavior following an insult. Though antagonistic traits are important to behavioral aggression following an insult, if an individual is also high on neuroticism they may be even more aggressive than individuals who are antagonistic but less neurotic.

Our current findings suggest that the nature of the provocation in our experiment may have had a stronger impact on individuals higher in vulnerable narcissism compared to those high in grandiose narcissism. Interpreted through the lens of ego-threat theory, our results would indicate that males who reported higher levels of vulnerable narcissism felt most threatened by negative feedback on their essays and in turn responded most aggressively. Yet the process put forth by the ego-threat theory of aggression is inconsistent with the observed relation vulnerable narcissism showed
with self-reported self-esteem ($r = -.63$) such that individuals high on vulnerable narcissism reported particularly low views of themselves. A more parsimonious explanation for why males high in vulnerable narcissism were more aggressive after insult may be that individuals who are more susceptible to feelings of anger and hostility are easier to provoke and in turn are more likely to become aggressive. The same explanation can be applied to grandiose narcissists but we would expect less aggressive behavior compared to vulnerable narcissists as measures of grandiose narcissism are less related to negative affect and hypersensitivity. As such, grandiose narcissists were less susceptible to the insult used in our study. This explanation is consistent with results that have highlighted the importance of Neuroticism in aggression following provocation (Bettencourt, Talley, Benjamin, & Valentine, 2006; Krizan & Johar, 2015).

We did not explicitly hypothesize that the interaction between vulnerable narcissism and condition would be moderated by gender. Although previous work has found a gender effect using similar protocols, with men being more aggressive than women (e.g. Bushman & Baumeister, 1998), we did not expect gender to influence how narcissism related to aggression following ego-threat. The ego-threat theory of aggression does not implicate gender differences in aggressive responding. Research that has examined provoked aggression more generally, not specifically focusing on narcissism, has found that provocation tends to attenuate the commonly found gender differences in aggressive responding (i.e. that men are more aggressive than women) but this finding depends on the nature of the provocation (Bettencourt & Miller, 1996). Specifically, Bettencourt and Miller found in their meta-analysis that women tend to
report less provocation compared to men when experiments give negative feedback related to aspects of intelligence. Other work has found that women tend to become sad or feel disappointed following such a provocation (van Goozen, Frijda, Kindt, & Van Poll, 1994).

Extending these results to the present study may help explain the observed gender differences in aggression. The insult used in our experiment critiqued an individual’s ability to write an argumentative essay through fake written feedback as well as harsh grades on academic grading criteria. Thus, if females became less angry and hostile after a perceived insult related to intelligence compared to males, we would expect that males would report greater feelings of provocation compared to females. A post-hoc examination of the mean level of change in anger and hostility following the essay feedback does confirm that men became significantly more angry and hostile, \( t(38) = 4.64, p < .01 \), while women did not, \( t(46) = 1.18, p = .241 \). Thus, the differing affective responses to criticism between men and women may explain why we found that only males high in vulnerable narcissism responded aggressively following insult.

**Relations Between Narcissism Subtypes and Self-Report Measures**

The relations among study variables were consistent with previous work and showed important areas of convergence and divergence between grandiose and vulnerable narcissism. Of the 24 possible number of relations on which the subtypes could differ from one another (excluding the individual measures of narcissism), they showed significantly different relations for 10 of the outcomes. Both subtypes showed consistent positive relations with measures of aggressive behavior. The two subtypes diverged from one another in the strength of their respective relations with the STAR,
which assesses dimensions of reactive anger and frustration which tend to make someone more likely to become aggressive. While vulnerable narcissism showed strong relations with all of the STAR subscales, grandiose narcissism showed weak to moderate relations with the STAR. Grandiose narcissism showed more consistent relations with proactive forms of aggression. In regards to measures of aggression and antisocial behavior, the relations grandiose narcissism demonstrated are in line with conceptualizations of grandiose narcissism that view the construct as sharing a high degree of overlap with psychopathy (Miller, Lynam, & Campbell, 2015). In other words, grandiose narcissism was more consistently related to proactive aggression as well as more severe forms of aggression (e.g. violent antisocial behavior) compared to vulnerable narcissism. Vulnerable narcissism was more aligned with measures of reactive aggression and forms of aggression more closely tied to negative affect (i.e. the STAR).

In relation to measures of personality, both were negatively related to agreeableness, though grandiose narcissism showed a stronger negative relation. Consistent with other findings, vulnerable narcissism was most strongly related to Neuroticism out of the FFM domains. Grandiose narcissism on the other hand was most strongly (negatively) related to Agreeableness. In general, the magnitude of the relations between the narcissism subtypes and the FFM domains were smaller than reported in other studies (e.g. Glover et al., 2012; Wright et al., 2013). It is likely that the relations the grandiose and vulnerable factors showed with the FFM outcomes were attenuated due to only a single item being used to assess each facet within the domains. The relations both subtypes showed with the Dominance and Love axes of the
interpersonal circumplex, as measured by the IAS-R, highlight the distinct interpersonal manifestations of grandiose and vulnerable narcissism. Both subtypes can be characterized as being primarily cold. However, grandiose individuals can be best described as cold and dominant while vulnerable individuals can be described as cold and submissive.
LIMITATIONS

Our inability to replicate previous work that has utilized measures of grandiose narcissism is likely due to our lack of statistical power. The power analysis conducted before participants were recruited for the study found that 173 participants were required in order to ensure adequate power (i.e. 80% power) to detect a small to moderate interaction (i.e. an additional 4% of the variance accounted for above main effects). Our final sample of 88 was well below this suggested sample size. Indeed, additional post-hoc regression models using the individual grandiose scales found that the FFNI Grandiose scale, when used as a standalone measure of grandiose narcissism, produced a marginally significant interaction between condition and narcissism, $\beta = .228, t(84) = 1.88, p = .064$. It is plausible that grandiose narcissism would function as we hypothesized given adequate power. As it stands, additional participants will continue to be recruited in order to ensure the study is adequately powered to detect hypothesized effects.

The lack of statistical power is due primarily to the high number of participants who did not believe the experimental manipulation. Roughly 35% of the total sample was not deceived. If participants stated that they became skeptical or did not believe the manipulation, the experimenter inquired as to why the participant doubted the manipulation. The most common explanation given was that the participant had heard
about similar studies in a psychology course and/or the participant had taken part in a separate study that used a similar deception (i.e. studies that told participants they would be competing/interacting with a non-existent participant). The second most common explanation was that the participant believed his or her reaction time (i.e. how quickly they pressed the spacebar) was too fast for the participant to have lost on a trial.

Participants’ previous experience with similar experimental manipulations may be addressed by the use of a confederate. Although a confederate may be unlikely to persuade particularly skeptical participants, it may reduce skepticism for most participants who have completed other research studies. A confederate would provide direct evidence of a co-participant as opposed to our current tactic of the experimenter informing participants that someone else is participating with them and in turn make it more likely that participants will believe they are completing the experiment at the same time as another participant.
FUTURE DIRECTIONS

Our results suggest that the nature of the provocation used in experimental studies may be particularly important when examining how narcissistic traits are related to aggression following provocation. For example, one important question that remains unanswered is whether vulnerable narcissism will consistently be related to greater feelings of distress following provocation across different forms of provocation. This is plausible given the affective reactivity that is central to the construct of vulnerable narcissism, but it may be that specific provocations related to challenging one’s dominance or social standing relative to others will be more salient for grandiose individuals and in turn increase behavioral aggression in the laboratory. Whether grandiose narcissists are more strongly provoked compared to vulnerable individuals in relation to such provocations remains to be seen.

Additionally, important questions can be explored involving the mechanisms through which negative affect like anger and hostility leads to aggression in vulnerable narcissism. One potential explanation is that urgency, the tendency to act rashly when experiencing strong affect, may mediate the relationship between feelings of anger and hostility and aggressive behavior. However, in order for urgency to become an important link in the relationship between affect and aggressive behavior, one must first experience strong affect. If this mediational hypothesis were to be true, one may
expect vulnerable narcissists to respond more aggressively when provoked, as the negative affect needed for urgency to become relevant is more likely to be elicited in vulnerable narcissists compared to grandiose narcissists. Direct tests of such questions may prove useful as researchers continue to explore important areas of convergence and divergence between grandiose and vulnerable narcissism.
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esteeem, and direct and displaced aggression: Does self-love or self-hate lead to
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### Appendix A

Table 1

*Rotated Factor Solution for Grandiose and Vulnerable Scales*

<table>
<thead>
<tr>
<th></th>
<th>Main Sample (N = 135)</th>
<th>Subset of Main Sample (N = 88)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor 1 (Vulnerable)</td>
<td>Factor 2 (Grandiose)</td>
</tr>
<tr>
<td>PNI Vulnerable</td>
<td><strong>.922</strong></td>
<td>-.154</td>
</tr>
<tr>
<td>FFNI Vulnerable</td>
<td><strong>.854</strong></td>
<td>.137</td>
</tr>
<tr>
<td>HSNS</td>
<td><strong>.735</strong></td>
<td>.026</td>
</tr>
<tr>
<td>FFNI Grandiose</td>
<td>.059</td>
<td><strong>.813</strong></td>
</tr>
<tr>
<td>NPI</td>
<td>-.175</td>
<td><strong>.783</strong></td>
</tr>
<tr>
<td>PNI Grandiose</td>
<td>.188</td>
<td><strong>.535</strong></td>
</tr>
<tr>
<td>Correlation between Factors</td>
<td>—</td>
<td>.43**</td>
</tr>
</tbody>
</table>

*Note.* Primary factor loadings are in bold; ** = p < .01; PNI = Pathological Narcissism Inventory, FFNI = Five Factor Narcissism Inventory, HSNS = Hypersensitive Narcissism Scale, NPI = Narcissistic Personality Inventory
Table 2
Zero-Order Relations Between Study Variables and Narcissism Factors

<table>
<thead>
<tr>
<th></th>
<th>Vulnerable Factor</th>
<th>Grandiose Factor</th>
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<tbody>
<tr>
<td>Narcissism Measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFNI Grandiose</td>
<td>.88</td>
<td>.28&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>FFNI Vulnerable</td>
<td>.87</td>
<td>.91&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>PNI Grandiose</td>
<td>.82</td>
<td>.36&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>PNI Vulnerable</td>
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<td>.93&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>NPI</td>
<td>.82</td>
<td>.17&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>HSNS</td>
<td>.68</td>
<td>.74&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Self-Esteem</td>
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<td></td>
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<tr>
<td>Rosenberg SE Scale</td>
<td>.86</td>
<td>-.63&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Personality Measures</td>
<td></td>
<td></td>
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<tr>
<td>IAS-R Dominance</td>
<td>—</td>
<td>-.27&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>IAS-R Love</td>
<td>—</td>
<td>-.23&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Agreeableness</td>
<td>.71</td>
<td>-.14&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Extraversion</td>
<td>.74</td>
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<td>Neuroticism</td>
<td>.70</td>
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<tr>
<td>Openness</td>
<td>.69</td>
<td>.04&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Conscientiousness</td>
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<tr>
<td>EPA Total</td>
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<td>.31&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Self-Report Aggression Measures</td>
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<tr>
<td>RPQ Total</td>
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<tr>
<td>RPQ Proactive Aggression</td>
<td>.77</td>
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<tr>
<td>RPQ Reactive Aggression</td>
<td>.77</td>
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<td>SRASBM Total</td>
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<td>SRASBM Proactive Peer Directed Aggression</td>
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<tr>
<td>SRASBM Reactive Peer Directed Aggression</td>
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<td>SRASBM Romantic Aggression</td>
<td>.69</td>
<td>.33&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>STAR Total</td>
<td>.91</td>
<td>.52&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>STAR Interpersonal</td>
<td>.87</td>
<td>.42&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>STAR Frustrations</td>
<td>.85</td>
<td>.54&lt;sup&gt;a&lt;/sup&gt;</td>
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*(table continues)*
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<th>α</th>
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<tr>
<td>Behavioral Aggression</td>
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<td>Antisocial Behavior</td>
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<td>-.06&lt;sub&gt;a&lt;/sub&gt;</td>
<td>.27&lt;sub&gt;b&lt;/sub&gt;</td>
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<tr>
<td>Non-violent Antisocial Behavior</td>
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<td>.07&lt;sub&gt;a&lt;/sub&gt;</td>
<td>.14&lt;sub&gt;a&lt;/sub&gt;</td>
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<tr>
<td>Violent Antisocial Behavior</td>
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<td>.01&lt;sub&gt;a&lt;/sub&gt;</td>
<td>.17&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

*Note. Bolded r's indicate the correlation is significant at p < .05; coefficients with different subscripts indicate that the coefficients are significantly different from one another; IAS-R = Interpersonal Adjectives Scale-Revised, EPA = Elemental Psychopathy Assessment, RPQ = Reactive/Proactive Questionnaire, SRASBM = Self-report of Aggressive and Social Behaviors Measure, STAR = Situational Triggers of Aggressive Responding, FFNI = Five Factor Narcissism Inventory, PNI = Pathological Narcissism Inventory, NPI = Narcissistic Personality Inventory, HSNS = Hypersensitive Narcissism Scale.*
Appendix B

Note. Trial 1 Aggression is a z-score of the sum of duration and intensity of noise blast delivered on the first trial; Low Vulnerable Narcissism = 1 SD below the mean, High Vulnerable Narcissism = 1 $SD$ above the mean.

Figure 1. Plotted interaction between gender and vulnerable narcissism in ego-threat condition.
Note. Trial 1 Aggression is a z-score of the sum of duration and intensity of noise blast delivered; Low Vulnerable Narcissism = 1 SD below the mean, High Vulnerable Narcissism = 1 SD above the mean

Figure 2. Plotted interaction between gender and vulnerable narcissism in non-threat condition.