



# The role of grandiose and vulnerable narcissism in self-reported and laboratory aggression and testosterone reactivity



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## ABSTRACT

This experiment aimed to identify narcissistic risk factors for aggression. Grandiose narcissism, the more familiar form of narcissism involving overt assertion of personal superiority, was differentiated from vulnerable narcissism, which is found in people who present themselves as shy and humble. Aggression was measured in multiple ways, including laboratory behavior, self-report measures (reaction to provocation and proactive, instrumental aggression were measured separately), and hormonal reactivity (testosterone). Grandiose narcissism predicted behavioral, reactive, and proactive aggression and testosterone response. Vulnerable narcissism predicted self-reported aggression but was irrelevant to behavior and testosterone. Thus, testosterone responses in aggression depend on both situational context and trait, and grandiose narcissism may contribute more than vulnerable narcissism to externalizing aggression.

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## 1. Introduction

Reactive aggression refers to uncontrolled or impulsive outbursts of anger that serve as a defensive reaction to provocation or frustration. In contrast, proactive aggression is relatively non-emotional, often premeditated or planned, and is typically used to gain extrinsic benefits such as money and power (Dodge & Coie, 1987). Individuals can engage in both types of aggression, which should be considered as separate dimensions (Poulin & Boivin, 2000). While situational factors like emotional states (Baumeister & Lobbetael, 2011) have proven valuable in explaining aggression, Anderson and Bushman's (2002) General Aggression Model highlights the role of dispositional factors. Accordingly, the current study focused on narcissism as a predictor of reactive and proactive aggression.

Two types of narcissism have been distinguished: grandiose and vulnerable. Both share a cognitive-affective preoccupation with the self, a tendency to give into one's own needs, and disregard for others. Grandiose narcissists are self-assured extraverts who are preoccupied with receiving attention and admiration from others. In contrast, feelings of grandeur remain largely unconscious in vulnerable narcissists, who present themselves as timid and insecure

and as lacking in self-confidence (Wink, 1991). Factor and cluster analyses denoted grandiose and vulnerable narcissism as separate constructs (e.g., Lapsley & Aalsma, 2006). Furthermore, grandiose narcissism is correlated with high self-esteem, high life-satisfaction, Cluster B personality disorder traits, and domineering interpersonal problems. In comparison, vulnerable narcissism is correlated with avoidant and depressive personality disorders and depression (Dickinson & Pincus, 2003; Miller et al., 2010; Rose, 2002; Watson, Taylor, & Morris, 1987).

Narcissism has long been linked to aggression (Kernberg, 1975). Grandiose narcissists are generally described as bossy, aggressive, and cruel (Wink, 1991). Grandiose narcissism has been linked to reactive aggression through the concept of threatened egotism, where aggression is designated as a defensive response when the highly favorable self-view is challenged by less favorable external appraisals (Baumeister & Boden, 1998). This view was supported by studies linking grandiose narcissism to aggression after provocation (e.g., Bushman & Baumeister, 1998; Bushman et al., 2009), although others could not replicate these findings (Cale & Lilienfeld, 2006; Martinez, Zeichner, Reidy, & Miller, 2008). Yet other studies have found a relationship between grandiose narcissism and both reactive and proactive aggression (e.g., Fossati, Borroni, Eisenberg, & Maffei, 2010; Reidy, Foster, & Zeichner, 2010; Seah & Ang, 2008). Theoretically, vulnerable narcissists are also described as defensive, hostile, and insisting upon having their own way (Wink, 1991). The only experimental study that has been

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conducted found a unique relationship between vulnerable narcissism and reactive aggression (Fossati et al., 2010). Taken together, these findings suggest that both grandiose and vulnerable narcissism could motivate reactive aggression in order to defend a positive self-view, while the instrumental, proactive use of aggression seems linked to grandiose narcissism only. The present study investigated all links between the two narcissism types and the two aggression types.

An additional goal of the current study was to assess hormonal correlates (i.e. testosterone) of narcissism and aggression. Testosterone is a steroid hormone involved in the reproductive and immune systems. It forms the end-product of the hypothalamic–pituitary–gonadal axis (Johnson, Kamilaris, Chrousos, & Gold, 1992). While empirical findings on the relationship between testosterone and self-reported aggression in human adults can be considered controversial (see Archer, 2006), some findings suggest a more consistent relationship between testosterone and dominance-related attributes like toughness, personalized power, and over-ranking oneself relative to peers (see Archer, 2006). Given the close relationship between dominance and grandiose narcissism (Raskin, Novacek, & Hogan, 1991a, 1991b) we expected grandiose narcissism to be related to increased testosterone in response to provocation. Because testosterone has been shown to fluctuate in reaction to environmental cues such as challenge and competition (see Archer, 2006), we hypothesized that grandiose narcissism may be related to increased testosterone levels while engaging in aggressive behavior.

The current study examined how narcissism contributes to aggression and to hormonal testosterone changes while engaging in aggressive behavior. We measured both grandiose and vulnerable narcissism, and both reactive and proactive aggression, with self-report scales. We also used a behavioral aggression measure and collected testosterone data before and after the behavioral manipulation. The unique aspects of this study are that aggression was assessed with both self-report and direct behavioral observation, and that hormonal changes in testosterone were assessed while participants were engaging in an aggressive task. Our predictions were that both grandiose and vulnerable narcissism would be related to higher levels of aggression, and grandiose narcissism in particular would be associated with greater increases in testosterone while engaging in aggressive behavior.

## 2. Method

### 2.1. Participants

Because men generally exhibit higher levels of aggression (Zeichner, Parrott, & Frey, 2003) and narcissism (American Psychiatric Association, 2000) than women, only male participants were recruited for the study. This allowed us to avoid confounding gender effects as well as possible floor effects from low aggression among females. Participants were recruited by advertising flyers. Exclusion criteria were severe problems with sight or hearing.

The final sample comprised 100 male undergraduate students of Florida State University, Tallahassee, USA. The average age was 19.47 years,  $SD = 2.16$ . Seventy-three percent identified themselves as Caucasian, 12% as Hispanic, 7% as Asian, 6% as African American, and 2% as Arab.

### 2.2. Measures

#### 2.2.1. Narcissism

Grandiose narcissism was measured with the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979). We used the 37-item version (see also e.g., Brown & Zeigler-Hill, 2004), for which only

those items with adequate factor loadings (Emmons, 1987) were selected. Items were rated on a Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). An item example is: 'I am an extraordinary person'. The NPI has been found to have good construct validity and internal consistency (Brown & Zeigler-Hill, 2004). Vulnerable narcissism was measured with the Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997), a 10-item questionnaire that required rating on a 1–5 Likert scale. An item example is: 'I easily become wrapped up in my own interests and forget the existence of others.' The HSNS has been found to have good test–retest reliability and construct and criterion related validity (Fossati et al., 2009).

#### 2.2.2. Aggression

**2.2.2.1. Self-reported aggression.** To measure reactive and proactive aggression the Reactive-Proactive Aggression Questionnaire was used (RPQ; Raine et al., 2006). Twenty-three statements were rated on a 3-point Likert-type scale. Prior studies reported good test–retest reliability and construct and criterion validity (Fossati et al., 2009; Raine et al., 2006).

**2.2.2.2. Behavioral aggression.** To measure behavioral aggression, participants performed an adapted Taylor Aggression Paradigm (TAP; Taylor, 1967). Participants were told that they would be playing a competitive reaction time game against an opponent. In fact, no real opponent was present, and the opponent's ostensible responses were computer generated. The game was set up so that whichever person responded faster by clicking the mouse upon seeing a red square on the computer screen was the winner. All participants 'lost' 16 trials, and 'won' 14 trials. Prior to each of the 30 trials, participants selected the volume and duration of a white noise blast by moving two digital sliders ranging from zero to 10. Participants were told that the loser of each trial would receive the noise blast in headphones. In fact, the outcome of each trial was predetermined. Participants could also refrain from administering noise blasts. The duration of noise blasts ranged between zero and five seconds, and volume of white noise blasts between zero and 100 dB which well below the pain threshold of 125 dB (Ferguson, Smith, Miller-Stratton, Fritz, & Heinrich, 2008). During the first six trials participants did not receive any noise blasts. In the remaining 24 trials, participants received noise blasts of various intensity and duration levels as outlined above and administered in a set order. Several studies have verified the construct (e.g. Giancola & Parrott, 2008) and external validity (Anderson & Bushman, 1997) of this manipulation.

#### 2.2.3. Salivary hormone assessment and radioimmunoassay (RIA) procedure

Participants deposited approximately 6 ml of saliva via passive drool into collection vials at 5 time points; upon arriving for the experiment (to get acquainted with the saliva collection procedure), immediately after watching a neutral movie fragment (baseline), directly after the behavioral aggression paradigm (post 1), 8 min after post 1 (post 2), and 15 min after post 1 (post 3). Saliva samples were frozen until assayed at  $-20^{\circ}\text{C}$ . To measure the amount of testosterone (pg/mL) in the saliva, commercial solid-phase RIA kits from Diagnostics Products Corporation (Coat-A-Count<sup>®</sup> kits) were used. A high throughput, automatic gamma counter (Apex 41600, Titertek Instruments, Huntsville AL) was used to process the average level from duplicate samples.

### 2.3. Manipulation check

A questionnaire was designed to assess whether participants doubted the opponent's existence during the TAP and whether they guessed the study hypothesis. Two independent raters coded

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