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Confident but Clueless?: The Nature and Boundaries of the Link Between Personality Disorder Features and Self-enhancement

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Abstract

Confident but Clueless?: The Nature and Boundaries of the Link Between Personality Disorder Features and Self-enhancement

By Ashley L. Watts

Although it is well-established that people tend to view themselves through rose-colored glasses, efforts to identify robust individual differences in this tendency have generally left researchers empty-handed. Narcissistic individuals have long been observed to overestimate their attributes and accomplishments, however, suggesting that narcissistic traits might be one risk factor for engaging in self-enhancing and overconfident behaviors. The goal of the present study was to investigate the link between personality and self-enhancement broadly construed. Atlanta community members (N = 138; M_{age} = 25 years; 62% female; 30% African American, 26% Caucasian; 19% Asian) reported on their own personality and completed a series of laboratory tasks evaluating their tendencies toward self-enhancement and overconfidence. Although many participants tended towards self-enhancement, there were substantial individual differences in this tendency. Certain features of narcissism, namely those associated with leadership and authority, were consistently positively associated with the broad swath of self-enhancement and overconfidence indicators. Other traits, such as extraversion, antagonism, disinhibition, and self-esteem were also related to self-enhancement, although less consistently. In contrast, neuroticism and internalizing symptomology were negatively associated with overconfidence and self-enhancement. Together, the current study has aided in targeting replicable personality traits implicated in self-enhancement and overconfidence, with narcissism being the most salient risk factor for viewing oneself overly positively.

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Confident but Clueless?: The Nature and Boundaries of the Link Between Personality Disorder Features and Self-enhancement

How well do people know themselves? Socrates coined the aphorism "Know Thyself," to argue that understanding one's self is requisite for a fulfilling life, and purportedly stated that the "unexamined life is not worth living." Of course, Socrates' proclamations hinged on the idea that all humans are capable of self-awareness and introspection. The extent to which individuals possess insight into themselves has captivated scholars since the dawn of philosophy. Although the many potential answers to this opening question have long preoccupied clinicians, laypersons, and scholars (e.g., Stone et al., 2000), psychologists have yet to come to consensus on the bounds of our ability to understand ourselves.

Although the debate is far from settled, the literature converges on one well-established truth: Many humans tend to see themselves through rose-colored glasses. Often referred to as the better-than-average effect (Alicke & Govorun, 2005), there several important caveats to this truism. In particular, and the role of individual differences in this better-than-average effect is the subject of ongoing debate (Moore & Dev, in press). Drawing on a community sample at elevated risk for narcissistic and psychopathic traits, the current study aimed to better understand the individual differences features associated with two aspects of the better-than-average effect, self-enhancement and overconfidence.

Self-knowledge

According to personality psychologist Gordon Allport (1941), if you want to understand people's personalities, you should just ask them. Clearly, this perspective is intuitive to many people as it is exemplified in common expressions like "no one knows me better than I know myself." Others hold considerably less sanguine perspectives. Starting with Freud and continuing into the late 20th century, prominent thinkers have questioned the extent to which we understand

ourselves (Nisbett & Wilson, 1977). Perhaps Freud's greatest contributions to psychology and psychiatry were his descriptions of the unconscious, through which he demonstrated the limits of our knowledge about our own states.

Converging evidence points to a grain of truth in both perspectives. To a limited extent, people possess insight into their abilities. A recent meta-synthesis – that is, a meta-analysis of 22 meta-analyses – demonstrated only moderate correspondence between self-evaluated and objective measures of abilities (r = .29) across a number of domains, including but not limited to academic, intellectual, athletic, and vocational abilities (Zell & Krizan, 2014). Dunning and Helzer (2014) pointed out, however, that a correlation between one's expected and objective performance does not tell the whole story. To date, large bodies of data demonstrate that many peoples' evaluations of themselves are not only largely inaccurate, they are biased toward flattery (see also Dunning, Health, & Suls, 2004).

In a now classic example, 70 percent of 1 million high school seniors placed themselves above the median in leadership ability, 60 percent above the median in athletic ability, and 85 percent above the median in agreeableness. Remarkably, 25 percent estimated themselves as falling in the top 1 percent of agreeableness, and only 2 percent felt that they were "below average" in leadership (College Board, 1976-1977; see Gilovich, 1991, for a discussion). Although often accused of narcissism, high school students are not alone in their self-enhancement. Zenger (1992) found that 42 percent of engineers from a single company believed their performance fell in the top 5 percent relative to their co-workers and Cross (1977) found that 94 percent of college professors categorized their work as "above average."

Conjecture surrounding the statistically unlikely beliefs people hold about themselves formed the beginnings of what is now a well-demonstrated phenomenon in the social

psychological literature: the better-than-average effect (Alicke, 1985; Alicke & Govurun, 2005; Sedikides & Gregg, 2003). After all, it is statistically impossible for the overwhelming majority of people to be better than average, and yet people tend to think they are better than others *and* that they do better than others. This tendency to view oneself overly positively has come to be regarded as "one of social psychology's most influential theoretical assumptions" (Kwang & Swann, 2010, p. 264; see also Allport, 1937; Leary, 2007; Taylor & Brown, 1988), as well as one of its most replicable findings, extending to a variety of judgment and decision-making domains, including personality descriptions, risk perceptions, and performance expectations (Kruger, 1999; Krueger & Mueller, 2002).

Self-enhancement and Overconfidence as Universal Phenomena

Several psychological domains have focused on the better-than-average effect but have framed and termed the construct differently. The bulk of clinical, personality, and social psychological research tends to conceptualize this construct in terms of "self-enhancement" (Alicke & Sedikides, 2011), whereas the cognitive and industrial-organizational literatures tend to conceptualize it in terms of "overconfidence" (Larrick, Burson, & Soll, 2007; Moore & Healy, 2008). The former literatures tend to emphasize the implications of the broad construct for interpersonal functioning and psychopathology, whereas the latter tend to emphasize the implications for judgment and decision-making and occupational performance, respectively.

Although self-enhancement and overconfidence have much in the way of commonalities, their empirical relations are poorly understood because these have been studied largely in intellectual silos. In fact, the distinction between self-enhancement and overconfidence may be arbitrary to some extent, as these conceptual bedfellows likely lie in some form under the umbrella of lack of self-knowledge (see Moore & Healy, 2008, for a similar take).

Self-enhancement.

The study of self-enhancement, or the propensity to see oneself through rose-colored glasses, has evolved over the years and has been parsed into narrower constructs, social comparison and self-insight (see Kwan, John, Kenny, Bond, & Robins, 2004). The first method of assessing self-enhancement was born out of Festinger's (1954) social-comparison theory and contrasts people's self-perception with their perceptions of others. In this way, a self-enhancer perceives oneself more positively than one perceives others, which maps directly onto the better-than-average effect. For instance, this approach might ask the following question: "*Compared with the average person, how intelligent are you?*" Alternatively, one might ask "*How intelligent are you?*" which is then followed by "*How intelligent is the average person?*" Social comparison then reflects the degree to which someone views him- or herself as superior in intellect compared with the average person. This can be done by comparing one's self-rating against the midpoint of the scale or by subtracting one's ratings for the average person from his or her self-ratings (or by regressing ratings for the average person onto self-ratings; see Alicke & Govorun, 2005, for a discussion of the differences between these two approaches).

One important limitation of this approach is that demonstrating bias requires a difference between judgment and reality, and hence an error of some sort (Colvin, Block, & Funder, 1995). The social comparison approach does not necessarily separate those who have an *unrealistically* high self-image from those who have a *realistically* high self-image; some people are indeed more intelligent than others. Critics of the social comparison self-enhancement methodology have noted astutely that assessing accuracy requires a "criterion," some reasonably objective "truth" to compare against self-perception.

The second method of assessing self-enhancement circumvents this aforementioned limitation. Born out of Allport's (1937) self-insight writings, this approach contrasts one's self-perception with an external criterion, usually taking the form of observer reports or an objective performance indicator (see Kwan et al., 2004, for a review). In this way, self-enhancers perceive themselves more positively than they are either perceived by others, or more positively than suggested by reality. In domains such as the study of intelligence where a relatively objective indicator of the construct exists, self-perceptions of intelligence might be compared against a performance-based indicator of the construct. In the absence of an objective "accuracy" indicator, like with personality traits, trait ratings aggregated across observers or nominated informants might be used as a quasi-criterion (e.g., Funder, 1995; Robins & John, 1997).

By comparing self-perception against one or more reasonably impartial external criteria, researchers either (a) calculate difference scores between self-perceived performance and objective performance by subtracting the latter from the former, or (b) regressing objective performance onto self-perceived performance (e.g., John & Robins, 1994; Paulhus & John, 1998; see Grijalva & Zhang, 2016, for a review) whereby the residual term reflects the magnitude of self-perceived performance controlling for objective performance. In either case, difference scores and residual scores can then be correlated with personality traits or any other variable. The first approach has been criticized for poor reliability, especially when self-perceived and objective scores are highly correlated (e.g., Cronbach, 1958; Edwards, 1995; but see Rogosa & Willett, 1983; Tisak & Smith, 1994), and thus has been adopted increasingly less frequently (see Grijalva & Zhang, 2016; but see Krueger & Wright, 2011, for criticisms of both approaches).

Overconfidence. As noted briefly earlier, research on overconfidence has been conducted in tandem with self-enhancement. Broadly construed, overconfidence is an error in

judgment in which people overestimate one or more of their attributes or performance on a given task. In light of the need to establish direct evidence of bias, most overconfidence researchers rely upon a test of some skill (e.g., trivia, vocabulary) because this approach provides an objective performance indicator against which self-estimates of performance can be compared.

Much like self-enhancement, research has revealed that overconfidence can be parsed into narrower constructs that are distinct in psychological origin: *overestimation, overplacement,* and *overprecision* (Larrick et al., 2007; Moore & Healy, 2008). Overestimation reflects excessive confidence in one's abilities, or thinking that one is better than one is. Overplacement reflects the exaggerated belief that one is better than others. Overprecision reflects excessive confidence in one's estimated abilities, or excessive faith that one knows the truth (see Moore & Healy, 2008, for a discussion). Moore and Healy (2008) noted that overestimation and overplacement reflect interchangeable manifestations of self-enhancement, with the former mapping onto self-insight and the latter mapping onto social comparison.

Each type of overconfidence is computed using the following formulas laid out by Moore and Healy (2008):

Overestimation = Individual's estimated score – Individual's actual score.

Overplacement = (Estimate of own score – Estimate of other's score) –

(Actual own score – average accuracy of all scores).

Overprecision = Individual's average confidence – Individual's accuracy.

Caveats to Self-enhancement and Overconfidence as Universal Phenomena

Although people in general tend towards self-enhancement and overconfidence, there are several caveats to this propensity that merit mentioning. First, people are not necessarily indiscriminately biased in their self-perception. Bias in self-perception tends to be exaggerated for socially desirable characteristics, namely, those that tend to be more central to one's self-

concept (Gebauer, Sedikides, Verplanken, & Maio, 2012; Sedikides, Gaertner, & Toguchi, 2003). Others have alternatively characterized this as bias in self-perception for "important" as opposed to "unimportant" domains (e.g., physical attractiveness, intelligence; John & Robins, 1993; Vazire, 2010), or agentic as opposed to communal characteristics (see Gilovich, 1991, and Zell & Krizan, 2014, for reviews).

Second, although typically studied as group phenomenon, not everyone exhibits the better-than-average effect. For example, when Gosling, John, Craik, and Robins (1998) asked participants to self-report the number of times they engaged in certain behaviors (e.g., made a humorous remark, took charge, interrupted someone else, expressed agreement with someone else) during a group exercise simulating a committee meeting at a large organization, 43 percent of participants did *not* self-enhance when their self-reported actions were compared with objective action counts. Using a group discussion task similar to the Gosling and colleagues (1998) methodology, John and Robins (1994) found that 39 percent of participants did not overestimate their task performance; 36 percent of participants underestimated their performance and a mere 3 percent accurately estimated their performance. Together, these findings indicate that although people generally self-enhance, there are considerable individual differences in this tendency.

Narcissism, Self-enhancement, and Overconfidence

In spite of there being obvious individual differences in the better-than-average effect, there is ongoing debate over the utility of personality traits as predictors of overconfidence (Moore & Dev, in press):

> The empirical evidence provides weak evidence of stable individual differences in overconfidence, […] and ample reason to worry about selective reporting and false-

> positive results. […] Given the preponderance of potentially relevant individual difference measures and the preponderance of ways to measure overconfidence, the spotty nature of the empirical record is cause for concern. That is, there are no individual difference measures that have been shown to correlate with all three types of overconfidence, operationalized through a variety of different measures. Instead, the empirical record presents particular individual differences associated with particular measures of overconfidence in particular contexts and settings and studies. (page numbers not yet assigned)

One promising candidate for identifying individual differences in the better-than-average effect is narcissism. Narcissism traces its roots to the Greek myth of Narcissus, a hunter so infatuated with himself that he was doomed to fall in love with his own reflection in a pond. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), narcissistic personality disorder is a pervasive pattern of excessive self-love and grandiose sense of self-worth, interpersonal exploitation, excessive need for admiration, lack of empathy, and preoccupation with success (American Psychiatric Association, 2013). Classical narcissism reflects grandiose sense of self-worth, in both self-perception and presentation, in which one believes oneself worthy of admiration, special treatment, and success.

Self-enhancing qualities are embedded in the fabric of narcissism: narcissism is associated with grandiosity, blame externalization, defensiveness, manipulativeness, and deceitfulness. Although not necessarily corroborated by objective or observer ratings, narcissistic individuals perceive themselves as being highly intelligent (Gabriel, Critelli, & Ee, 1994; Farwell & Wohlwend-Lloyd, 1998), physically attractive (Bleske-Rechek, Remiker, & Baker, 2008; Gabriel et al., 1994; Paulhus, Harms, Bruce, & Lysy, 2003), creative (Goncalo, Flynn, &

Kim, 2010), and charismatic (Grijalva, Harms, Newman, Gaddis, & Fraley, 2015; Judge, LePine, & Rich, 2006). They also view themselves as special and unique (Emmons, 1984), and entitled to more positive outcomes than are others (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004). Much like other individuals, narcissistic individuals tend to exaggerate their agentic characteristics, such as intelligence and extraversion, more than communal ones, such as agreeableness and morality (Campbell, Rudich, & Sedikides, 2002; Carlson, Vazire, & Oltmanns, 2011; see Grijalva & Zhang, 2016, for meta-analytic evidence). Owing to this body of research, some have even termed narcissism the "self-enhancing personality" (Morf, Horvath, & Torchetti, 2011, p. 399).

This biased self-perception arguably gives rise to overconfident behavior, both in laboratory and real-world settings. In one of the first studies on narcissism and overconfidence, John and Robins (1994) asked MBA students to participate in a group discussion and rank all six group members, including themselves, by how well they did on the task. Despite being overwhelmingly in agreement with trained staff raters in their assessments of others, narcissistic individuals were significantly more prone to overestimate their own placements in staff raters' rankings. Using a trivia task methodology, Campbell, Goodie, and Foster (2004) demonstrated that narcissism was unrelated to task performance but positively associated with confidence in task performance (which maps onto Moore and Healy's construct of overprecision). When given the chance to bet points based on their confidence in their performance, narcissistic individuals were more willing to bet that they were right than those with low levels of these traits. Moreover, when participants were asked to complete pretest, posttest, and future estimates of their success on the task, narcissism was associated with higher pretest and posttest ratings of performance, as well as anticipated performance on future tests.

Macenczak and colleagues (2016) adopted Campbell, Goodie, and colleagues' (2004) trivia task methodology but parsed overconfidence into Moore and Healy's (2008) overconfidence subtypes. Across 4 studies of online community members and business students, they demonstrated that narcissism was associated with each form of overconfidence: overestimation, overplacement, and overprecision. There was mixed support for differential relations between narcissism and overconfidence types, although there was some evidence that narcissism was more strongly related to overestimation and overprecision than it was to overplacement. Together, this research suggests that narcissistic individuals are prone to overconfidence across the board: they have excessive confidence in their abilities and their estimates of their performance, and they believe that they are better than others (see also Campbell, Bonacci, et al., 2004; Foster, Reidy, Misra, & Goff, 2011).

Remaining Questions from the Existing Literature

Although the relations between narcissism and self-enhancement are relatively well demonstrated (Grijalva & Zhang, 2016), the literature leaves several important questions unanswered. In this thesis, I attempt to make three theoretical contributions to understanding the narcissism-self-enhancement link based on the following limitations of the existing literature.

Individual differences in bias blind spot. Research over the past several decades has demonstrated that virtually all people are susceptible to certain cognitive biases that predispose them to systematic errors in judgment (Kahneman, 2011). Among them are *confirmation bias*, the tendency to seek out, selectively interpret, or recall evidence consistent with our beliefs and neglect, selectively reinterpret, or forget evidence that is not, and *hindsight bias*, the tendency to perceive known outcomes as more predictable than they would have in advance. Although most people can readily identify biases in others, they are generally oblivious of these biases in

themselves (Lilienfeld, Ammirati, & Landfield, 2009). In general, people even assert that they are less susceptible to bias than are others (Pronin, Gilovich, & Ross, 2004). This phenomenon is termed bias blind spot (Pronin, Lin, & Ross, 2002), or more colloquially, the "not me bias."

Ironically, people's tendency to self-enhance – itself a bias – leads them to deny that they engage in biases (Pronin et al., 2002), which highlights the intertwined nature between self-enhancement and bias blind spot (Alicke & Govorun, 2005). Although they often deny doing so, people engage in self-enhancing behaviors that are essentially definitional of confirmation bias. For instance, they attend selectively to information consistent with their positive self-concept (Ditto & Lopez, 1992); seek out and recall social comparison information that is favorable to themselves (Swann & Read, 1981); and elicit reactions from others that confirm their self-concepts, especially when they suspect that their peers' appraisals might disconfirm their self-concept (Swann & Read, 1981). Surprisingly, and in contrast with the self-enhancement and overconfidence literatures, there have been no efforts to identify individual difference correlates of bias blind spot.

Narcissism as a monolithic construct. Another important limitation of the literature on narcissism and the better-than-average effect is that it almost always treats narcissism as a monolithic construct. The modal approach in this literature is difficult to justify in light of burgeoning evidence that narcissism is multidimensional (see Miller & Campbell, 2008). For instance, factor analyses of the most widely-used narcissism measure in the social-personality literature, the Narcissistic Personality Inventory (Raskin & Terry, 1988), reveal three broad, correlated dimensions that bear distinct relations with external criteria (Ackerman et al., 2011), rendering the use and interpretation of NPI total scores challenging.

The first factor, Leadership/Authority, reflects self-perceived leadership ability, social boldness, and interpersonal dominance. This dimension correlates positively with extraversion, social potency, global self-esteem, goal persistence, and self-control, and correlates negatively with contingent self-esteem and behavioral inhibition (i.e., distress and withdrawal in unfamiliar situations). The second factor, Grandiose Exhibitionism, reflects superiority, vanity, exhibitionistic tendencies, and self-absorption. This dimension correlates with extraversion and social boldness, but also entitlement and rage. The third factor, Entitlement Exploitativeness, reflects interpersonal entitlement, such as expecting respect and a willingness to manipulate others to get what one wants. This dimension correlates positively with antagonism, neuroticism, antisociality, and contingent self-esteem, and negatively with self-control and self-esteem. Compared with Leadership/Authority, which is generally associated with positive adjustment, Entitlement Exploitativeness is associated with social maladjustment and poorer relationship quality (Ackerman et al., 2011).

Because these factors display diverging relations with a broad swath of personality-relevant criteria, it follows that they may also display distinct relations with self-enhancement and overconfidence. To date, the literature has tended to neglect the possibility that some but not all aspects of narcissism are associated with such constructs (e.g., Grijalva & Zhang, 2016). Such findings may clarify the precise nature of the narcissism-self-enhancement link.

Specificity. Another possibility is that there is nothing specific to narcissism that drives its associations with self-enhancement and overconfidence. While focusing on narcissism *per se*, the literature tends to overlook two likely possibilities. First, having long been associated with lack of insight (Grove & Tellegen, 1991; Klonsky & Oltmanns, 2002; Semerari et al., 2014), those with features of certain other personality disorders, such as borderline, histrionic, paranoid,

and psychopathic personalities, might also share a penchant for self-enhancement and overconfidence. That is, self-enhancement and overconfidence may extend to those with features of other personality disorders. Second, given that narcissism is increasingly construed as a constellation and perhaps configuration of general personality traits (e.g., Lilienfeld, Watts, Smith, Berg, & Latzman, 2015), certain traits associated with narcissism (e.g., extraversion) but not others (e.g., impulsivity) may be responsible for narcissism's relations with self-enhancement and overconfidence.

Regarding the first possibility, Cleckley (1941), one of the first to systematically describe psychopathic personality (psychopathy), regarded "specific loss of insight" as a hallmark of psychopathy: "Yet in a very important sense, in the sense of realistic evaluation, the psychopath lacks insight more consistently than some schizophrenic patients. *He has absolutely no capacity to see himself as others see him"* (p. 350, emphasis added). Psychopathic personality is a constellation of interpersonal, affective, and behavioral traits, including but not limited to superficial charm, lack of delusions, lack of anxiety or nervousness, unreliability, insincerity, dishonesty, lack of remorse, unmotivated antisocial behavior, failure to learn from punishment, egocentricity, and lack of empathy.

Like narcissism, psychopathy is associated with grandiosity, lack of insight, blame externalization, and defensiveness (e.g., Cleckley, 1941; Hare, 1991/2003; Sierles, 1984), raising the possibility that it is associated with self-enhancement and overconfidence. In a study of Dark Triad personality traits (i.e., narcissism, psychopathy, and Machiavellianism), Paulhus and Williams (2002) demonstrated that psychopathic traits, in addition to narcissistic traits, were associated with self-insight self-enhancement (*r*s were .14 and .24, respectively), operationalized as the discrepancy between self-estimated and performance-based IQ. In general, despite the

significant overlap between psychopathy and narcissism, the literature at large has tended to overlook the role of psychopathic traits in self-enhancement and overconfidence.

Regarding the second possibility, the literature tends not to address the contribution of normal and abnormal personality traits to self-enhancement and overconfidence. Using the common trivia task methodology, Schaefer, Williams, Goodie, and Campbell (2004) demonstrated that the Big Five personality traits of extraversion, agreeableness, and conscientiousness, but not neuroticism or openness, were moderately positively associated with overconfidence (overprecision, specifically, which computed as the difference between confidence and accuracy; significant *r*s ranged from .18 to .22). Few other studies have examined general personality traits' relations with self-enhancement and overconfidence (but see Olivares, 1993, and Pallier et al., 2002), and, save for narcissism and psychopathy, none have abnormal personality traits' relations with these constructs (i.e., those of the Section III Personality Disorder Trait model; Krueger, Derringer, Markon, Watson, & Skodol, 2012).

Current Study

Taking into account each of the aforementioned limitations of the existing literature, the current study aimed to make theoretical contributions to understanding the narcissism-self-enhancement link by (a) addressing the overlap between self-enhancement and overconfidence and assessing multiple forms of each construct; (b) extending our understanding of the better-than-average effect to bias blind spot, and therefore addressing the extent to which bias in self-evaluation arises from a broader bias in cognitive judgment; (c) parsing narcissism into its component traits; and (d) reconsidering the specificity of narcissism's associations with self-enhancement and overconfidence by examining the relations between general personality traits, personality disorder features, and internalizing symptomology, on the one hand, and self-

enhancement and overconfidence, on the other. Although not addressed here (see Future Research Directions), one other motivation for examining these questions is due to the lack of complete overlap between self- and informant-reported personality and personality disorders (Klonsky & Oltmanns, 2002; Lilienfeld & Fowler, 2006; Miller, Jones, & Lynam, 2011), raising the possibility that the better-than-average effect is one possible mechanism contributing to this lack of perfect correspondence.

Adopting methodologies used in the existing literature, I conducted a broad-brush examination of the individual difference correlates of self-enhancement and overconfidence, examining multiple indices of the former and latter constructs. Specifically, participants (a) rated themselves relative to the average person on various socially desirable adjectives (i.e., physical attractiveness, intelligence; Anusic et al., 2009, Schimmack & Sidhu, 2007); (b) estimated their intelligence, which was then compared against estimates for the average person and their performance-based intelligence quotient (IQ; Paulhus & Williams, 2002); (c) completed a bias blind spot task (Pronin et al., 2002); (d) self-reported on their cognitive insight (e.g., Beck, Baruch, Balter, Steer, & Warman, 2004); and (e) completed three knowledge-based tasks of overconfidence, including verbal, quantitative, and trivia knowledge (e.g., Campbell, Goodie, et al., 2004; Moore & Healy, 2008; Schaefer et al., 2004). The resulting manuscript is organized by three broad aims.

Specific aims and hypotheses.

Aim 1: Self-enhancement and overconfidence as universal phenomena. Using established tasks of self-enhancement, bias blind spot, and overconfidence, I first sought to replicate the existing literature on the better-than-average effect (Alicke & Govorun, 2005).

Hypothesis 1. First, consistent with the existing literature, I predicted that participants would report being better than average on various socially-desirable adjectives (Schimmack & Sidhu, 2007). Second, I predicted that their self-estimated intelligence would exceed estimates for the average person as well as their performance-based intelligence scores (Paulhus & Williams, 2002). Third, I predicted that participants would exhibit a bias blind spot such that they report the average person being more prone to various cognitive biases than they are (Pronin et al., 2002). Fourth, I predicted that participants' confidence ratings would exceed their performance across all three overconfidence tasks (i.e., verbal, quantitative, trivia), reflecting overconfidence (Moore & Healy, 2008).

Aim 2: The implications of narcissistic and psychopathic traits for self-enhancement and overconfidence. I then examined narcissistic and psychopathic traits' relations with self-enhancement, bias-blind spot, self-reported insight, and overconfidence. In light of attenuated observed associations between personality and laboratory-based tasks relative to relations between self-report indices (Block, 1977; Epstein, 1979), I expected that the magnitude of relations between personality and laboratory-based tasks of overconfidence (e.g., verbal, quantitative, and trivia tasks) would be smaller than the relations observed between personality and self-reported self-enhancement and bias proneness (i.e., socially-desirable adjectives, bias blind spot, self-reported insight). Moreover, I advanced no predictions for differential relations between personality and types of overconfidence.

Hypothesis 2a. Based on the existing literature, I predicted that narcissism broadly construed would be moderately positively associated with self-enhancement, operationalized by means of the socially-desirable adjectives composite; the discrepancy between self-reported and performance-based intelligence; bias blind spot; and overconfidence across all three tasks (i.e.,

verbal, quantitative, trivia; see Grijalva & Zhang, 2016 and Macenczak et al., 2016). In addition, I predicted that narcissism would be negatively associated with self-reported insight (see Sleep, Sellbom, Miller, & Campbell, 2017, for related evidence).

Preliminarily, I predicted that the Leadership/Authority and Grandiose Exhibitionism but not Entitlement Exploitativeness factors of narcissism would drive the relations between narcissism and self-enhancement and overconfidence. I predicted this result given that both Leadership/Authority and Grandiose Exhibitionism are moderately positively correlated with extraversion (Ackerman et al., 2011), which I anticipated is the personality trait most associated with self-enhancement and overconfidence (Schaefer et al., 2004).

Hypothesis 2b. Again preliminarily, I predicted that the aspects of psychopathy most associated with Leadership/Authority factor of narcissism, termed Fearless Dominance (Ackerman et al., 2011), would also manifest positive relations with self-enhancement and overconfidence, and negative relations with self-reported insight. I did not advance hypotheses for other psychopathy features.

Aim 3: The role of general and abnormal personality and internalizing symptomology. To examine the specificity of narcissistic and psychopathic traits' relations with self-enhancement and overconfidence, participants also reported on their own (a) HEXACO personality traits (which include Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience), (b) DSM-5 Personality Disorder Traits (which include Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism), and (c) self-esteem, and internalizing symptoms (e.g., anger, anxiety, depression). Again, in light of attenuated observed associations between personality and laboratory-based tasks relative to relations between self-report indices (Block, 1977; Epstein, 1979), I expected that the magnitude

of relations between personality and laboratory-based tasks of overconfidence would be smaller than those between personality and self-reported self-enhancement and bias proneness and again advanced no predictions for differential relations between personality and types of overconfidence.

Hypothesis 3a. Although Schaefer and colleagues (2004) examined Big Five personality traits' relations with overconfidence, I am not relying on their findings for my hypotheses given that (a) they have yet to be replicated and (b) their results do not accord clearly with the following theoretical predictions. I predicted that Extraversion would manifest moderate positive relations with self-enhancement and overconfidence and negative associations with self-reported insight based on the following evidence. In addition to being linked directly to overconfidence, extraversion is associated with narcissism, which is also correlated with self-enhancement (Grijalva & Zhang, 2016) and overconfidence (Campbell et al., 2004). Moreover, extraversion is linked to dispositional optimism (Williams, 1992) and positive affect (Lucas, Le, & Dyrenforth, 2008), both of which are linked conceptually and empirically to overconfidence, respectively (Wolfe & Grosch, 1990).

I predicted provisionally that Neuroticism would bear opposite relations with self-enhancement and overconfidence as does Extraversion (but see Schaefer et al., 2004) given that negative affectivity (emotionality) tends to be negatively associated with confidence and optimism (Williams, 1992; Wolfe & Grosch, 1990). Moreover, dispositional depressive tendencies are part and parcel of neuroticism (Watson, Clark, & Carey, 1988), and depression is associated with underconfidence (Stone, Dodrill, & Johnson, 2001, but see Dunning & Story, 1991). In addition, I predicted that Agreeableness would be negatively associated with overconfidence given that disagreeable individuals tend to derogate others. I predicted that

Conscientiousness and Openness to Experience would be unrelated to self-enhancement and overconfidence.

Hypothesis 3b. Given that DSM-5 personality disorder traits generally reflect the maladaptive poles of Big Five personality traits (Thomas et al., 2013), I predicted that Detachment (reversed Extraversion) and Antagonism (reversed Agreeableness) would be negatively and positively associated with self-enhancement broadly construed, respectively. Negative Affectivity and Neuroticism are largely synonymous, so I advanced the same hypotheses for the former as I did the latter. I predicted that Disinhibition (reversed Conscientiousness) and Psychoticism would be unrelated to self-enhancement and overconfidence.

Hypothesis 3c. Lastly, given the overlap between Neuroticism and lower levels of self-esteem (Judge, Erez, Bono, & Thoresen, 2002), I predicted that self-esteem would be positively associated with self-enhancement and overconfidence. Similarly, given the overlap between internalizing symptomology and Neuroticism (Watson et al., 1988), I predicted that all three aspects of internalizing would be negatively associated with self-enhancement and overconfidence.

Method

Participants and Procedure

Participants. Participants (N = 138) were drawn from a sample of a larger, ongoing data collection effort. The original sample comprised 142 participants but 4 participants were removed from the dataset due to inconsistent responding on the self-report data (see Measures for a description). The final sample comprised Atlanta community members aged 18 to 67 (M_{age} = 25 years, SD = 9). The sample was primarily female (62%) with a racial breakdown as follows:

African American or Black (30%), Caucasian or White (26%), Asian American or Asian (19%), Hispanic or Latino (7%), mixed race (12%), or other (6%). The education level of the sample was as follows: No high school diploma (2%), high school graduate (7%), some college credit (44%), Associate degree (8%), Bachelor's degree (23%), Master's degree (4%), and professional degree (i.e., MD, JD) or doctoral degree (3%).

Procedure. Participants were recruited by means of advertisements posted in the Atlanta metropolitan area and online. The advertisement was designed to oversample for individuals with marked narcissistic and psychopathic traits and was modeled after those used successfully in the literature (i.e., Miller, Rausher, Hyatt, Maples, & Zeichner, 2014; Newman, Widom, & Nathan, 1985; Widom, 1977):

> *The Personality Studies Laboratory at Emory University is interested in studying adventurous, carefree people who've led exciting lives. Wanted are charming, aggressive, carefree people who are impulsively irresponsible but are good at handling people and looking out for number one.*

This advertisement methodology appears to yield psychopathy scores that display substantial levels of variance comparable with those in prison settings (Miller et al., 2014), thereby increasing statistical power to detect effects in regression analysis relative to samples with lower levels of variability in personality traits (i.e., undergraduate samples; Cohen, Cohen, West, & Aiken, 2013). Interested participants contacted the laboratory and completed a phone screening to eliminate individuals with current and marked psychotic symptoms ($N = 4$). Individuals who endorsed the aforementioned psychopathology were provided with referrals for treatment.

Before coming into the laboratory, eligible participants completed an online battery of self-report questionnaires assessing (a) general and pathological personality traits, (b) self-reported insight and self-awareness, and (c) internalizing and externalizing psychopathology. Although these data are not presented in the current thesis, participants also nominated five individuals ("informants") who know them well and provided contact information for them. Informants were contacted (usually emailed) and sent a link to an online battery of questionnaires assessing the target participants' (a) general personality traits, (b) internalizing and externalizing psychopathology, and (c) functional impairment, this time from the informant's perspective. A minimum of two informant reports were desired in light of research that the reliability of observer ratings is maximized when aggregated across raters (Cheek, 1982).

Participants then entered the laboratory in the Psychology and Interdisciplinary Sciences building at Emory University, where they completed a series of laboratory tasks assessing overconfidence, social cognition, and neuropsychological functioning (i.e., working memory, intelligence, executive functioning). All tasks were presented in a fixed order. All testing was conducted by Ashley L. Watts and several advanced undergraduate research assistants, the latter of whom received extensive training by the former. The entire battery, including self-report data and laboratory assessment, took approximately 2 to 3 hours to complete. Participants were compensated $30.00 for their participation. This study was approved by Emory University's Institutional Review Board (#IRB00089218).

Measures

Descriptive statistics for and intercorrelations among all self-report measures are reported in Tables 1 through 7.

Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988). The NPI is a 40-item self-report measure of trait narcissism and is the most-widely used measure of narcissism in the social-personality literature (Cain, Pincus, & Ansell, 2008). The NPI includes items assessing grandiosity, self-centeredness, entitlement (the feeling that one deserves special privileges that others do not deserve), envy, and a proclivity toward assuming authority or leader-like roles. Each item presents a pair of statements to which participants respond in a forced-choice manner, with one response option considered narcissistic and the other non-narcissistic. In the case of one item, for example, participants are asked to choose between the following: "I can usually talk my way out of anything" and "I try to accept the consequences of my behavior" (the former reflects the more narcissistic response). I relied upon the 3-factor solution described earlier (Ackerman et al., 2011; *r*s among subscales ranged from .18 [Leadership/Authority-Entitlement Exploitativeness] to .55 [Leadership/Authority-Grandiose Exhibitionism]), which provides scores on Leadership/Authority (α = .77), Grandiose Exhibitionism (α = .78), and Entitlement Exploitativeness (α = .78).

Psychopathic Personality Inventory-Revised, Abbreviated Form (PPI-R-40; Eisenbarth, Lilienfeld, & Yarkoni, 2015). The PPI-R-40 is a 40-item abbreviated version of the 154-item PPI-R (Lilienfeld & Widows, 2005) that was reduced in length using an automated genetic algorithm. The PPI-R is a self-report inventory designed to assess the personality traits, attitudes, and dispositions associated with psychopathy rather than overt antisocial behaviors. The measure, including its abbreviated form, consists of eight factor-analytically derived lower-order sub scales (i.e., Social Influence, Fearlessness, Stress Immunity, Rebellious Nonconformity, Blame Externalization, Carefree Nonplanfulness, Machiavellian Egocentricity, and Coldheartedness; subscale αs ranged from .60 [Machiavellian Egocentricity] to .75 [Stress

Immunity]). PPI-R-40 scales correlate highly with their full PPI-R counterparts, with convergent correlations between scales ranging from .79 [Machiavellian Egocentricity] to .87 [Blame Externalization, Social Influence], and high convergent validity insofar as both sets of scales demonstrate nearly equivalent relations with a range of external criteria (e.g., sensation seeking, punishment sensitivity; Eisenbarth et al., 2015).

The 8 PPI-R-40 subscales coalesce into two largely orthogonal higher-order factors, Fearless Dominance and Self-Centered Impulsivity (Benning et al., 2003; but see Neumann, Malterer, & Newman, 2008, for an alternative factor structure). Fearless Dominance is characterized by superficial charm, glibness, social and physical boldness, immunity to stress, and venturesomeness ($\alpha = .78$). Self-centered Impulsivity is characterized by a narcissistic and impulsive willingness to take advantage of others ($\alpha = .74$). The eighth subscale, Coldheartedness, does not load highly on either PPI higher-order factor and is sometimes used as a standalone psychopathy indicator reflecting guiltlessness, lovelessness, and lack of sentimentality ($\alpha = .67$).

To detect inconsistent responding, I used a scale developed by Kelley and colleagues (2016) that comprises 10 sets of correlated item pairs. Discrepant responses within pairs suggests carelessness or inattention, as Kelley and colleagues (2016) demonstrated that scores on this inconsistent responding scale correlated with trait conscientiousness among undergraduates and psychotic symptoms among forensic inpatients. On the basis of visual inspection, four participants were identified as potentially problematic outliers on the basis of elevated scores on the PPI-R-40 Inconsistency Scale.

HEXACO Personality Inventory-60 (HEXACO; Ashton & Lee, 2009). The HEXACO is a 60-item self-report inventory of general personality that provides scores on six dimensions,

Honesty-Humility, or the extent to which one avoids manipulating others for personal gain, feels little temptation to break rules, and feels no special entitlement to elevated social status (α = .74); Emotionality, or the extent to which one experiences fear of physical danger, anxiety in the face of life stressors, needs emotional support from others, and feels empathy for and sentimental attachment to others (α = .70); Extraversion, or the extent to which people feel positively about themselves, feel confident in groups of people, enjoy interacting with others, and experience positive emotions, such as enthusiasm and energy (α = .81); Agreeableness, or the extent to which one forgives and is lenient in judging others, is willing to compromise and cooperate, and can control one's temper (α = .74); Conscientiousness, or the extent to which one organizes one's time and surroundings, works towards one's goals in a disciplined manner, strives for perfection, and deliberates carefully when making decisions (α = .79); and Openness to Experience, or the extent to which one becomes absorbed in aesthetics, is inquisitive, uses one's imagination, and takes an interest in unusual ideas and people (α = .76); see Ashton & Lee, 2009, for a more detailed description). The HEXACO also provides scores on 24 facets, 4 for each of the 6 HEXACO dimensions, that are not reported here (Ashton & Lee, 2009).

Personality Inventory for DSM-5, Brief Form (PID-5-BF; Krueger et al., 2012). The PID-5-BF is a 25-item abbreviated version of the 220-item PID-5. The PID-5-BF is self-report inventory that assesses an alternative and recently proposed system for DSM-5 personality disorder traits. Items load onto five broad dimensions of personality pathology, Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism. Negative Affectivity is defined as frequent and intense experiences of a wide range of negative emotions, including anxiousness, insecurity, submissiveness, depressivity, and hostility (α = .71). Detachment is defined as avoidance of socioemotional experience, including withdrawal from social

interactions, restricted affect or expressivity, and reduced hedonic capacity (α = .74). Antagonism is defined as behaviors that put oneself at odds with others, including callousness, exaggerated sense of importance, readiness to manipulate others, and a lack of awareness for others' needs and feelings (α = .79). Disinhibition is defined as an orientation toward immediate gratification that leads to impulsive and destructive behaviors, often with little regard for consequences (α = .79). Psychoticism is defined as a wide range of culturally incongruent odd, eccentric, or unusual behaviors and cognitions, including believing that one has unusual abilities (e.g., mind reading), saying unusual or inappropriate things, and dissociative-like experiences (α = .73).

Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES is widely used 10-item global measure of self-esteem (α = .88). Items are rated on a 5-point scale ranging from 1 (not very true of me) to 5 (very true of me). The scale assesses a person's overall evaluation of his or her self-worth.

Patient-Reported Outcomes Measurement Information System, Emotional Distress scales (PROMIS; Pilkonis et al., 2011). The PROMIS scales are a publicly-available item pool assessing physical, mental, and social health. Participants completed short form versions of three Emotional Distress scales, Anger, Anxiety, and Depression, each of which assesses the presence of their respective symptoms over the past 7 days. The Anger scale comprises 5 items assessing angry mood (e.g., irritability, reactivity), negative social cognition (e.g., interpersonal sensitivity, envy, vengefulness), and verbal aggression (α = .84). The Anxiety scale comprises 8 items assessing fear (e.g., fearfulness, feelings of panic), anxious misery (e.g., worry, dread), hyperarousal (e.g., tension, nervousness), and somatic symptoms related to arousal (e.g., cardiovascular symptoms, dizziness; α = .91). The Depression scale comprises 8 items assessing

negative mood (e.g., sadness, guilt), decreases in positive affect (e.g., loss of interest), information-processing deficits (e.g., problems in decision-making), negative views of the self (e.g., self-criticism, worthlessness), and negative social cognition (e.g., loneliness, interpersonal alienation; α = .93).

Socially-desirable adjectives.

Participants provided ratings of themselves on a 7-point Likert-type scale on four attributes: facial attractiveness, intelligence, athletic ability, and trivia knowledge (α = .58). Participants were instructed to rate themselves taking into account their standing on each attribute relative to the "average person," which they were told fell at the midpoint of the scale (4). Previous research demonstrated that participants' tendencies towards self-enhancement are captured adequately by aggregated ratings on these adjectives (Anusic et al., 2009; Schimmack, 2007; Schimmack & Sidhu, 2007), in part because they reflect socially-desirable attributes that are largely independent of one another in nature. Schimmack (2007) first established these ratings as a bias indicator by comparing participants' self-ratings on these adjectives against independent indicators of each attribute. Schimmack found that self-ratings and objective scores were uncorrelated with one another (see also Schimmack, 2007). Importantly, objective indicators of these attributes are also uncorrelated with one another, but self-ratings tend to be moderately intercorrelated, suggesting a halo bias. Thus, when aggregated into a composite, self-ratings are thought to reflect a bias in self-perception on socially desirable attributes (see also Campbell & Fiske, 1959; Fiske & Taylor, 2013).

Self-reported insight.

Beck Cognitive Insight Scale (BCIS; Beck et al., 2004). The BCIS is a 15-item self-report instrument that assesses the extent to which individuals evaluate their own judgment by

two cognitive processes, self-certainty and self-reflection. Self-certainty reflects resistance to correction and certainty about being right (e.g., *"My interpretations of my experiences are definitely right;"* α = .70). These items reflect the extent to which participants think they could be wrong even when they felt strongly that they were right, that others could be more objective than they were, and their willingness to consider other people pointing out that their beliefs are wrong. In contrast, self-reflection reflects objectivity, reflection, and openness to feedback (e.g., *"Some of the ideas I was certain were true turned out to be false.";* α = .70). These items reflect the extent to which participants address and reflect on their decision-making processes and consider alternatives, such as when they jump to conclusions, are certain about being right, and are resistant to correction.

Beck and colleagues (2004) derived a composite Cognitive Insight score by subtracting Self-certainty Index scores from Self-reflection Index scores. Using a sample of 150 inpatients with various psychotic and mood disorder diagnoses (i.e., schizophrenia, schizoaffective, major depressive disorder), Beck and colleagues (2004) demonstrated that the Cognitive Insight index correlated significantly with the "Awareness of Having a Mental Disorder" indicator (r=-.62, p<.05) on the Scale to Assess Unawareness of Mental Disorder (Amador et al., 1993), the most widely-used measure of anosognosia (see also Lepage et al., 2008; Lysaker et al., 2008).

Self-Consciousness Scale, Private Self-consciousness subscale (pSCS; Fenigstein et al., 1975). The SCS is a 23-item index of self-consciousness that comprises three subscales: social anxiety, public self-consciousness, and private self-consciousness. Private self-consciousness refers to the consistent tendency of individuals to direct their attention inward, which Fenigstein and colleagues argued is related to the experience of self-awareness. The pSCS subscale comprises 10 items that were examined as a potential indicator of trait-like tendencies toward

self-knowledge (α = .77; e.g., "*I never scrutinize myself*," and "*I'm constantly examining my motives.*"), although some authors have argued that this subscale does not adequately distinguish rumination from self-reflection (Grant, Franklin, & Langford, 2002).

Self-reflection and Insight Scale (SRIS; Grant et al., 2002). The SRIS is a 20-item measure designed to distinguish self-reflection from insight in light of the authors' criticisms of the pSCS. The self-reflection comprises both need for self-reflection (e.g., "*It is important for me to evaluate the things that I do*") and engagement in self-reflection (α = .92; e.g., "*I frequently examine my feelings*"). The insight factor comprises items such as (α = .80; "*I usually have a very clear idea about why I've behaved in a certain way*."). Grant and colleagues (2002) demonstrated that the SRIS Self-reflection correlated positively with anxiety and stress but not depression and alexithymia. In contrast, SRIS Insight was negatively correlated with depression, anxiety, stress, and alexithymia, and positively correlated with cognitive flexibility and self-regulation.

Bias blind spot. I adopted the methodology developed by West, Meserve, and Stanovich (2012), in which participants received descriptions of seven biases to assess bias blind spot (α = .70). These biases include outcome bias, framing effect, base-rate neglect, conjunction error, anchoring and adjustment, myside bias, and cell phone hazard (i.e., being prone to error while driving and talking on the phone).

Using this technique, participants rate the extent to which (a) they and (b) the average person are susceptible to these biases on a 1 to 7 scale. Higher scores indicate more proneness to cognitive bias. The magnitude of bias blind spot is operationalized as the extent to which scores on (b) exceed standardized scores on (a). Again, higher scores indicate a greater tendency to see others as more susceptible to bias than oneself. See the following item and format as an example:

Myside bias: *Psychologists have found that people do not evaluate the evidence fairly when they already have an opinion on the issue. That is, they tend to evaluate the evidence as being more favorable to their own opinion than it actually is. When people do this, it is called myside bias.*

a. To what extent do you believe that you are likely to be susceptible to myside bias?

b. To what extent do you believe that the average person is likely to be susceptible to myside bias?

Lab-based overconfidence tasks. Adapting the methodologies of studies in the existing literature (e.g., Campbell, Bonacci, et al., 2004; Campbell, Goodie, et al., 2004; Macenczak et al., 2016), participants completed a series of tasks assessing overconfidence in a variety of abilities, including verbal and quantitative abilities (Krueger & Dunning, 1999 and Krueger & Mueller, 2002) and general ("trivia") knowledge (Macenczak et al., 2016). Broadly, these tasks require performance on some task with an objective performance score, such as the total number of questions answered correctly. Intercorrelations among self-assessments, confidence ratings, and performances on all overconfidence tasks are reported in Table 8.

In each of these tasks, participants were presented with each question and asked to select an answer. After each question, participants answered whether they believed their response to the was correct in a yes/no format and then were asked to rate the extent to which they were confident that their response was correct on a sliding scale ranging from 0 to 100 percent. At the end of each task, participants were asked how many questions out of the total number of questions both they and the average person answered correctly, and again rated their confidence

on the same sliding scale for the overall task performance. See the following item and format as an example:

Kate's impulsive nature and sudden whims led her friends to label her ------.

A. capricious

B. bombastic

C. loquacious

D. dispassionate

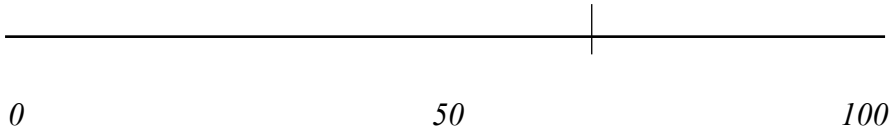
E. decorous

[Next screen]

Do you believe your answer is correct? (Choose one.)

No Yes

On a scale of 0 (not at all confident) to 100 (very confident), how confident are you that your response is correct?



0 50 100

[End of the task]

Think for a moment about your overall performance on this task. Of the 10 vocabulary questions you answered, how many do YOU think you answered correctly?

[Next screen]

How many of the 10 vocabulary questions do you think the AVERAGE PERSON answered correctly? (Participant chooses a number from 1 to 10.)

Verbal and quantitative ability. Participants were presented with 10 verbal and 10 quantitative questions from an SAT prep guide containing publically-available "retired" SAT questions, which was publicly available on the internet (College Board, 2009; see Kruger & Dunning, 1999 and Krueger & Mueller, 2002, for similar methodological approaches). Questions from an SAT prep guide were chosen because they are categorized by item difficulty (ranging from 1 to 5) based on the percentage of test takers that had answered the question correctly. Two items per difficulty level were identified to guarantee that both the verbal and quantitative tasks comprised items ranging in difficulty.

Trivia knowledge. To assess confidence in trivia knowledge, I used an adapted version of Macenczak and colleagues' (2016) methodology consisting of 15 forced-choice trivia questions administered to participants. In their original publication, Macenczak and colleagues (2016) designed their questions to reflect a range of difficulties, and participants averaged 9 correct answers out of 15 (60%). Because forced-choice responses allow for a 50 percent probability of correct response, and therefore should elicit a minimum 50 percent confidence in correct responding, I adapted their methodology to increase item difficulty, and ideally increase variability in item responses and confidence ratings.

First, I adapted Macenczak and colleagues' items to include four as opposed to two item response options. For instance, see the following item:

Which animated movie has generated the most revenue?

a. *Aladdin*
b. *Monsters, Inc.*
c. *Shrek*
d. *WALL-E*

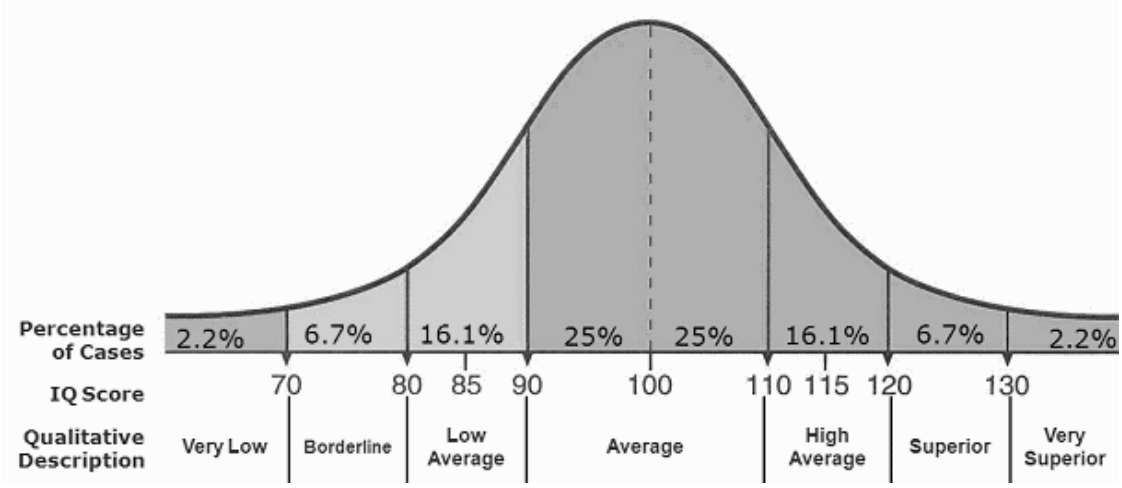
Second, for many but not all of the items, the additional response options provided were chosen to increase the difficulty of the item considerably. Regarding the aforementioned item, each of the options grossed a relatively similar amount of box office revenue, ranging from 217 million (Aladdin) to 289 million (Monsters, Inc.), rendering the likelihood of someone knowing the correct response with 100 percent certainty relatively unlikely. In final form, the trivia test used in the present study comprised 15 multiple choice responses with four choices.

Intellectual functioning. Participants completed two subtests of the Wechsler Adult Intelligence Scale, fourth edition (WAIS-IV; Wechsler, 2014), Block Design and Similarities, as a composite index of general intelligence. Although the entire WAIS-IV battery contains 10 subtests, I chose these two subtests because they comprise the well-validated abbreviated battery, the *Wechsler Abbreviated Scale of Intelligence*, second edition (Wechsler, 2011). When aggregated, Block Design and Similarities approximate overall cognitive ability, and correlate highly with IQ estimates from longer batteries (Wechsler, 2011). In isolation, Block Design and Similarities estimate Perceptual Reasoning and Verbal Comprehension, respectively.

Before completing these tasks, participants were oriented to intelligence and how it is distributed among individuals and were asked to estimate their IQ; participants were not told that they would later be completing an IQ measure. Specifically, they were provided the following prompt and depiction of a normal curve:

> *People perform differently on intelligence measures. Typically, 68 percent of people score between 85 and 115, which is the range of average intelligence. The average person scores around 100. Scoring above 115 indicates above average intelligence, whereas scoring below 85 indicates below average intelligence. About 5 percent of the*

population scores above 125 and 5 percent scores below 75. Scoring above 125 indicates superior intelligence, whereas scoring below 75 indicates low intelligence.



Then, on a sliding scale ranging from 0 to 200, participants were asked to estimate their performance on an intelligence measure.

Data Analysis

As noted earlier, researchers adopt a variety of analytic approaches to examining self-enhancement, namely, either in the form of discrepancy scores or the self-criterion residual method. Researchers tend to adopt one of two of these analytic approaches, but rarely use both. Although the latter approach is regarded as more reliable than the former, and as such are regarded as more preferable, it remains unclear whether researchers may obtain different results across these two techniques. Therefore, I calculated self-enhancement using both methods to examine the extent to which my results were sensitive to the analytic approach used. To compute discrepancy scores, I subtracted objective performance scores from self-estimated performance scores. To compute self-criterion residuals, I conducted hierarchical regressions between personality and self-estimated performance controlling statistically for objective performance. This approach yields residualized scores while allowing for simultaneous regression.

Self-criterion discrepancy scores and self-criterion residuals were highly correlated (*r*s ranged from .62 to .65) and produced nearly identical patterns of relations with personality. For the sake of brevity, only the latter will be presented in the text of the results given that they are more reliable (Cronbach, 1958; Edwards, 1995) but both are presented in table form (Tables 17, 18, 26, 27).

In accord with the recommendations of Moore and Healy (2008), I calculated three types of overconfidence using the following equations:

Overprecision = Individual's average confidence – Individual's accuracy.

Overplacement = (Estimate of own score – Estimate of other's score) –

(Actual own score – average accuracy of all scores).

Overestimation = Individual's estimated score – Individual's actual score.

Results

Aim 1: Examining Self-enhancement and Overconfidence as Universal Tendencies

Socially-desirable adjectives and estimated intelligence. Despite objective indicators of the socially-desirable adjectives being uncorrelated with one another, self-ratings were generally moderately intercorrelated (Table 9; the median inter-item correlation was .26), with one exception; trivia knowledge was uncorrelated with facial attractiveness ($r = .03$). This finding is consistent with the existing literature demonstrating that composite indicators of these self-rated attributes reflect self-enhancement bias.

In general, participants tended to rate themselves as well above average on these attributes. A series of one-sample t-tests comparing means of self-rated attributes against a mean of 4 (as noted earlier, participants were instructed that "average" indicated 4 on a 7-point scale) indicated that participants rated themselves as significantly higher than average on facial

attractiveness, intelligence, and athletic ability (all *p*s <.001); significant effects were medium to large in magnitude (*d*s ranged from .58 [Athletic Ability] to 2.44 [Intelligence]). In contrast, participants tended slightly to report themselves as below average on trivia knowledge (*d* = .29, *p* = .09).

Further suggesting that the composite of self-reported socially-desirable adjectives reflects self-enhancement, this composite was significantly moderately associated with most indices of overconfidence (i.e., overprecision, overplacement, overestimation) across all three tasks (i.e., verbal, quantitative, trivia; *r*s ranged from .23 to .32) with three exceptions. The socially-desirable adjectives composite was essentially unrelated to bias blind spot (*r* = -.13), quantitative overprecision (*r* = -.06), and trivia overprecision (*r* = .10; see Table 10).

On average, participants estimated their IQ as 111.31 (SD = 15.67; see Table 11). A one-sample t-test comparing the mean estimated IQ against an average of 100 (i.e., the approximate average in a normal population; Wechsler et al., 2011) indicated that participants estimated their IQs as significantly higher than average; this difference was nearly large in magnitude (*d* = 0.74). Although participants' performance IQ (*M* = 103, *SD* =15) was just significantly above average (*d* = 0.39), a paired-samples t-test examining the difference between self-estimated IQ and performance IQ, as predicted, indicated a significant difference between the two that was large on average (*d* = 0.74).

Bias blind spot. As predicted and consistent with existing research (West et al., 2012), a paired-samples t-test of the bias blind spot composite (aggregating all cognitive biases; Table 12) indicated that participants rated others as more likely to commit cognitive biases than themselves (t (137) = -12.08, $p < .001$; $M_{self} = 3.60$, $SD_{self} = 0.78$; $M_{other} = 4.44$, $SD_{other} = 0.76$); this difference was large in magnitude (Cohen's *d* = 1.10). All paired-samples t-tests across bias

types were significant ($p < .001$) and on average large in magnitude (average Cohen's $d = 0.73$; ds ranged from 0.33 [Cell phone hazard] to 1.13 [Base rate neglect]).

Task performance, accuracy, and confidence. Descriptive statistics (see Table 13) indicate that all overconfidence tasks were relatively difficult. On average, participants' performance on these tasks were as follows (presented in increasing order): 41% for trivia knowledge, 55% for quantitative skills, and 72% for verbal skills. Participants also had difficulty predicting their task performance. When asked question by question to indicate whether they believed their response to be correct (heretofore referred to as accuracy), participants were generally inaccurate in estimating their performance. Their average prediction accuracies were 41%, 64%, and 67% for the trivia, quantitative, and verbal tasks, respectively.

In addition to being inaccurate in predicting their own performance, participants tended towards overconfidence. On average, participants overestimated their performance by 13 percentage points on both the verbal and trivia tests, whereas they overestimated their performance by 21 percentage points on the quantitative test. Paired-samples t-tests indicated significant differences between participants' performance and confidence on the quantitative and trivia tasks (ps < .001; ds were 1.50 and 1.06, respectively) but not the verbal task ($p = .14$; $d = 0.26$).

Although inaccurate and overconfident in predicting their own task performance, participants did not uniformly predict that their performance on the aforementioned tasks was better than that of the average person (Table 14). Participants predicted that their performances on the verbal and quantitative tasks were higher than those of the average person (ds were 0.64 and 0.27, respectively), although there was no significant difference between participants' expected performance and their expected performance for the average person on the quantitative

task (t (137) = 1.59, p = .11). In contrast, they predicted that the average person performed significantly better than they did on the trivia task (t (137) = -4.23, p < .001; d = -0.72).

Summary of findings from Aim 1. Like in previous research (e.g., Schimmack, 2007), I first demonstrated that the self-reported socially-desirable adjectives could be aggregated into a composite that ostensibly reflects social comparison bias. Without objective indicators of these adjectives, however, it is impossible to conclude with certainty that an aggregated composite reflects bias. At the same time, this socially-desirable adjectives composite was significantly moderately correlated with most all overconfidence indices, lending some validation for the composite as a bias indicator.

Together, these results revealed three sets of findings consistent with well-replicated research on the better-than-average effect (see Alicke, 2005, and Leary, 2007, for reviews). First, participants view themselves as more physically attractive, intelligent, and athletic than the average person (Dunning, Johnson, Ehrlinger, & Kruger, 2003). Second, although prone to self-enhancement, participants also reported being less prone to cognitive bias than the average person (Pronin et al., 2002). Third, people tended towards overconfidence on verbal and quantitative tasks, viewing themselves as performing better than they did and better than the average person (Moore & Healy, 2008). The magnitude of effects reported here were generally medium to large in magnitude. One exception to these findings was that participants did not report performing better than the average person on the trivia task, and instead felt that they underperformed relative to the average person.

Aim 2: The Implications of Narcissistic and Psychopathic Traits for Self-enhancement & Overconfidence

Consistent with previous research (Gosling et al., 1998; John et al., 1994), there were striking individual differences in participants' calibration to their task performance. A mere 25 percent of participants accurately estimated their performance on the verbal and quantitative tasks, whereas 15 percent accurately estimated their trivia performance. Supporting the better-than-average effect, 25, 56, and 41 percent of participants overestimated their verbal, quantitative, and trivia task performances, respectively. In contrast, 49, 20, and 44 percent of participants underestimated their verbal, quantitative, and trivia task performances, respectively.

Socially-desirable adjectives and estimated intelligence. NPI Leadership/Authority and Grandiose Exhibitionism manifested significant and medium in magnitude relations with the composite of socially-desirable adjectives (*r*s were .50 and .44, respectively; Table 15). PPI-R Fearless Dominance was significantly yet only moderately associated with this same composite ($r = .32$). In contrast, NPI Entitlement Exploitativeness, PPI-R Self-centered Impulsivity, and PPI-R Coldheartedness manifested near zero relations with the socially-desirable adjectives composite (*r*s ranged from -.01 [NPI Entitlement Exploitativeness] to .08 [PPI-R Self-centered Impulsivity]).

Narcissism and psychopathy subdimensions were generally unrelated to WASI-2 IQ scores (Table 16), with one exception (*r*s ranged from -.22 [PPI-R Coldheartedness] to -.02 [PPI-R Fearless Dominance]); PPI-R Coldheartedness was moderately negatively associated with WASI-2 IQ ($r = -.22$). Despite being unrelated to performance-based IQ, PPI-R Fearless Dominance was moderately positively associated with self-estimated IQ, before and after controlling for WASI-2 IQ scores (*r*s were .18 and .20, respectively). NPI Leadership/Authority was slightly albeit nonsignificantly associated with self-estimated IQ both before and after controlling for WASI-2 scores (*r*s were .12 and .16, respectively). No other narcissism or

psychopathy subdimensions were associated with self-estimated IQ (*r*s ranged from -.05 [NPI Entitlement Exploitativeness] to .07 [PPI-R Self-centered Impulsivity]).

Self-other discrepancy. Narcissism and psychopathy subdimensions were generally unrelated to self-other residual scores, with two notable exceptions (Table 17). PPI-R Fearless Dominance was moderately positively associated with self-other residual scores on the verbal task (ß = .23), indicating that those high in such traits viewed themselves as performing better on this task. PPI-R Coldheartedness was moderately positively associated with self-other residual scores on the verbal task (ß = .20). Nevertheless, given that PPI-R Coldheartedness was moderately positively correlated with performance on the trivia task (ß = .15), I conducted a series of hierarchical regressions examining the extent to which PPI-R Fearless Dominance and PPI-R Coldheartedness were related to self-other residual scores for their respective tasks after taking into account task performance. The magnitudes of relations between PPI-R Fearless Dominance and PPI-R Coldheartedness, respectively, and self-perceived performance for the verbal and trivia tasks, respectively, after controlling for performance and reported performance of the average person on those same tasks remained nearly the same (ß = .18, p = .01; ß = .19, p = .06), although the relations for PPI-R Coldheartedness became nonsignificant.

Self-performance discrepancy. Narcissism and psychopathy subdimensions were generally unrelated to self-performance residual scores, with two notable exceptions (Table 18). PPI-R Fearless Dominance was moderately positively related to self-performance residual scores on the verbal task and PPI-R Coldheartedness was moderately positively associated with self-performance residuals on the trivia task (ßs were .21), indicating lack of self-insight.

Bias blind spot. NPI Leadership/Authority, PPI-R Fearless Dominance, and PPI-R Self-centered Impulsivity manifested moderate positive relations with bias blind spot (*r*s were .29,

.37, and .20, respectively; Table 19), indicating that individuals high in these traits were more inclined to see others as more susceptible to cognitive bias than oneself (Table 19). NPI Grandiose Exhibitionism, NPI Entitlement Exploitativeness, and PPI-R Coldheartedness were generally unrelated to bias blind spot (*r*s ranged from .02 [NPI Entitlement Exploitativeness] to .12 [NPI Grandiose Exhibitionism]).

Self-reported insight. In terms of their relations with the BCIS Cognitive Insight composite, which as a reminder reflects the discrepancy between the BCIS Self-certainty and Self-reflection subscales, each of the NPI and PPI-R subdimensions manifested moderate to medium-sized negative associations with cognitive insight (*r*s ranged from -.18 [PPI-R Coldheartedness] to -.45 [NPI Leadership/Authority]; Table 19). NPI Leadership/Authority (ß = -.38, $p<.001$), but neither of its counterpart subdimensions (NPI Grandiose Exhibitionism: ß = -.08, $p = .35$; NPI Entitlement Exploitativeness: ß = -.14, $p = .10$), was significantly and negatively associated with BCIS Cognitive Insight when each of the NPI subdimensions were entered simultaneously in a regression predicting the insight composite, indicating that NPI Authority was driving the other two subdimensions' modest relations with BCIS Cognitive Insight. Both PPI-R Fearless Dominance and Coldheartedness (PPI-R Fearless Dominance: ß = -.24, $p = .004$; PPI-R Coldheartedness: ß = -.19, $p = .03$) but not Self-centered Impulsivity (ß = -.10, $p = .24$), were significantly and negatively associated with BCIS Cognitive Insight when entered simultaneously in a regression predicting the insight composite.

These relations arose because most all NPI and PPI-R subscales were associated with higher levels of BCIS Self-certainty (*r*s ranged from .15 [PPI-R Fearless Dominance] to .37 [NPI Leadership/Authority]), indicating overconfidence in the validity of their beliefs, but lower levels of BCIS Self-reflection (*r*s ranged from -.33 [NPI Leadership/Authority] .04 [PPI-R Self-

centered Impulsivity]), indicating a reluctance to observe one's thoughts and feelings and consider alternative explanations. There were a few exceptions to this rule, however. PPI-R Fearless Dominance and Coldheartedness were not significantly associated with BCIS Self-certainty (*r*s were .15 and .16, respectively), nor were NPI Entitlement Exploitativeness and PPI-R Self-centered Impulsivity significantly associated with BCIS Self-reflection (*r*s were -.07 and .04, respectively).

The NPI and PPI-R subdimensions were generally unrelated to private self-consciousness scores (i.e., pSCS) and self-reflection and insight as measured by the SRIS, with a few notable exceptions. PPI-R Coldheartedness was significantly negatively associated with pSCS total and SRIS Self-reflection scores (*r*s were -.28 and -.27, respectively). In addition, NPI Leadership/Authority and PPI-R Fearless Dominance were moderately positively associated with SRIS Insight scores (*r*s were .18 and .24, respectively), whereas NPI Entitlement Exploitativeness was moderately negatively associated with this same scale ($r = -.23$).

Overconfidence.

Task performance. NPI Leadership/Authority was moderately negatively associated with performance on all three overconfidence tasks, verbal, quantitative, and trivia (Table 20; *r*s ranged from -.16 [Trivia] to -.22 [Quantitative]), and was also moderately negatively associated with accuracy in estimating performance on the task (*r*s ranged from -.24 [Verbal] to -.25 [Quantitative, Trivia]). Similarly, and also as predicted, NPI Grandiose Exhibitionism was negatively associated with performance on the quantitative and trivia tasks (*r*s were -.26 and -.21, respectively) but not the verbal task ($r = -.08$), and was also moderately negatively associated with accuracy in judging performance on the verbal and trivia tasks (*r*s were -.19 and -.23, respectively) but not the quantitative task ($r = -.03$). In contrast with hypotheses, PPI-R

Coldheartedness was moderately negatively associated with performance on verbal and quantitative tasks (*r*s were -.17 and -.25, respectively), as well as judging performance on these tasks (*r*s were -.18). NPI Entitlement Exploitativeness, PPI-R Fearless Dominance, and PPI-R Self-centered Impulsivity were generally unrelated to task performance (*r*s ranged from -.06 [PPI-R Self-centered Impulsivity-Trivia] to .08 [NPI Entitlement Exploitativeness-Verbal]) and accuracy in judging task performance (*r*s ranged from -.15 [PPI-R Fearless Dominance-Trivia] to .14 [PPI-R Self-centered Impulsivity-Verbal]), although PPI-R Self-centered Impulsivity was moderately negatively associated with accuracy in judging performance on the trivia task (*r* = -.22).

Overconfidence indices. Although NPI Leadership/Authority was generally negatively associated with task performance, as predicted, it was generally positively associated with all three indices of overconfidence, namely overprecision, overplacement, and overestimation, across all three overconfidence tasks (Table 21). More specifically, NPI Leadership/Authority was moderately positively associated with overprecision on all three overconfidence tasks (*r*s ranged from .19 [Quantitative] to .25 [Verbal]), overplacement on the verbal and quantitative but not trivia tasks (*r*s were .17, .24, and .14, respectively), and overestimation on all three tasks (*r*s ranged from .17 [Verbal] to .20 [Trivia]).

NPI Grandiose Exhibitionism was moderately positively associated with overprecision on quantitative and trivia but not verbal tasks (*r*s were .18, .19, and .11, respectively), overplacement on quantitative but not verbal or trivia tasks (*r*s were .21, .03, and .05, respectively), and overestimation on quantitative but not verbal or trivia tasks (*r*s were .27, .06, and .13, respectively). There was scant evidence that other NPI or PPI subdimensions were associated with overconfidence across all three tasks or types of overconfidence. PPI-R Fearless

Dominance was moderately positively associated with overestimation on the verbal task (r = .17), PPI-R Self-centered Impulsivity was moderately positively associated with overprecision on the trivia task (r = .17), and PPI-R Coldheartedness was moderately positively associated with overplacement on the quantitative task (r = .19). All relations between personality and overconfidence remained essentially unchanged after controlling for WASI-2 IQ (see Table 22).

Summary of findings from Aim 2. Although somewhat universal of phenomena, an appreciable portion of participants did not engage in self-enhancement and overconfidence, either when asked to report on their attributes or when they performed various tasks probing overconfidence, leaving open the possibility that personality may play a role in the better-than-average effect broadly construed.

The Leadership/Authority features of narcissism were moderately positively associated with self-enhancement and overconfidence across a variety of domains, including the socially-desirable adjectives composite, self-reported but not performance-based intelligence, and bias blind spot. Although negatively associated with performance on overconfidence tasks, Leadership/Authority features were moderately positively and equally associated with each of the three aspects of overconfidence. In addition, these same features were negatively associated with self-reported insight, broadly corroborating Leadership/Authority's relations with lab-based indices of overconfidence.

There was scattered evidence that other NPI and PPI subdimensions were associated with self-enhancement and overconfidence indices, with the exception of PPI-R Fearless Dominance. PPI-R Fearless Dominance was moderately positively associated with self-reported but not performance-based intelligence, self-other and self-performance residual scores, bias blind spot, and overconfidence, and was negatively associated with self-reported cognitive insight.

Aim 3: The Broader Personality Correlates of Self-enhancement and Overconfidence

Self-enhancement.

Socially-desirable adjectives. Several normal and abnormal personality traits manifested pronounced relations with the composite of socially-desirable adjectives, suggesting a lack of specificity in the relations between narcissistic and psychopathic traits, on the one hand, and self-enhancement, on the other (Table 23). For instance, HEXACO Extraversion and RSES Self-esteem manifested medium and positive relations with the socially-desirable adjectives composite (*r*s were .43 and .41, respectively) and PID-5 Disinhibition manifested small and positive relations with this same composite ($r = .17$). In contrast, HEXACO Emotionality, and each of the three PROMIS Internalizing scales manifested small and negative relations with the socially-desirable adjectives composite (*r*s ranged from -.18 [PROMIS Anger] to -.25 [HEXACO Emotionality]).

In a series of hierarchical regressions controlling for either HEXACO Extraversion or RSES Self-esteem, NPI Leadership/Authority (Table 24; ßs were .36 and .47) and NPI Grandiose Exhibitionism (ßs were .30 and .34) but not PPI-R Fearless Dominance (ßs were .15 and .10) remained significant predictors of the socially-desirable adjectives composite (average ΔR^2 was .19 and .09 for NPI Leadership/Authority and Grandiose Exhibitionism, respectively, whereas it was .02 for PPI-R Fearless Dominance). These findings indicated that self-esteem and extraversion, likely owing to the latter's overlap with positive emotionality, accounted for PPI-R Fearless Dominance's relations with self-enhancement bias. At the same time, they indicated that NPI Leadership/Authority and NPI Grandiose Exhibitionism's relations with self-enhancement bias could not be accounted for by these same variables.

Normal and abnormal personality as well as internalizing dimensions were generally unrelated to self-estimated IQ or performance-based IQ, with a few notable exceptions (Table 25). Despite being unrelated to performance-based IQ (r = .05), HEXACO Openness was moderately positively related to self-estimated IQ (r = .21). In contrast, PID-5 Negative Affectivity and PROMIS Anxiety were not significantly related, and even slightly negatively related, to self-estimated IQ (rs were -.02 and -.07, respectively) but were moderately positively associated with performance-based IQ (rs were .28 and .18, respectively).

Self-other discrepancy. Again, there was scattered evidence that other personality traits and internalizing dimensions were associated with self-other discrepancies (Table 26). HEXACO Agreeableness and Openness were moderately positively associated with self-other residuals on the verbal task (ßs were .19 and .40), indicating that individuals high in these traits estimated that their performances were significantly higher than that of the average person. As a reminder, however, both traits were slightly positively associated with performance on this task (ßs were .12 and .14, respectively), raising the possibility that these findings at least partially mirror objective reality. Hence, to examine the extent to which performance influenced participants' ratings of self- and other-performance, I conducted hierarchical regressions examining these traits' relations with the self-other residual after controlling for performance on this task. The relations between HEXACO Agreeableness and Openness, on the one hand, and self-other residuals, on the other, after controlling for performance remained unchanged (ßs were .13 and .35, respectively).

In contrast, HEXACO Emotionality and PROMIS Anger were moderately negatively associated with self-other residuals for the verbal task (ßs were -.17 and -.26, respectively). Given that these traits were not significantly related to task performance, I did not examine these

relations controlling for performance. Lastly, HEXACO Agreeableness was moderately negatively associated with the self-other residual for the trivia task (ß = -.25).

Self-performance discrepancy. Other personality traits and internalizing dimensions were generally unrelated to self-performance discrepancies (Table 27). HEXACO Openness was moderately positively associated with self-performance residuals on the verbal task (ß = .37) and PID-5 Detachment and Antagonism were moderately positively associated with self-performance residuals on the trivia task (ßs were .19 and .21, respectively). HEXACO Emotionality and Agreeableness were moderately negatively associated with self-performance discrepancies for the verbal and trivia tasks, respectively (ßs were -.19 and -.30, respectively).

Bias blind spot. Much like a number of the NPI and PPI-R subdimensions, several general and pathological personality traits manifested positive relations with bias blind spot (Table 28). Specifically, HEXACO Extraversion, HEXACO Openness to Experience, and PID-5 Antagonism also manifested moderate to medium-sized positive associations with bias blind spot (*r*s ranged from .22 [HEXACO Extraversion] to .32 [HEXACO Openness]).

Given that these traits manifested comparable relations with bias blind spot compared to NPI Leadership/Authority, PPI-R Fearless Dominance, and PPI-R Self-centered Impulsivity, I conducted a series of hierarchical regressions with these same narcissism and psychopathy indicators controlling for either HEXACO Extraversion, HEXACO Openness to Experience, and PID-5 Antagonism in isolation to examine the incremental validity of the former in predicting bias blind spot (see Table 29). In each of these regressions, narcissism and psychopathy subdimensions remained significantly associated with bias blind spot after accounting for general and abnormal personality traits (average ΔR^2 was .07).

In contrast, HEXACO Honesty-Humility, HEXACO Emotionality, PID-5 Negative Affectivity, and RSES Self-esteem scores manifested moderate to medium-sized negative associations with bias blind spot (*r*s ranged from -.21 [HEXACO Honesty-Humility] to -.31 [HEXACO Emotionality]), indicating that individuals high in negative affectivity broadly construed report being more prone to cognitive bias than the average individual.

Self-reported insight. As was the case for the socially-desirable adjectives, several general and abnormal personality traits and internalizing traits manifested diverging relations with self-reported insight (Table 28). Like most narcissism and psychopathy subdimensions, several other personality traits were negatively associated with self-reported insight. HEXACO Extraversion, PID-5 Antagonism, and RSES Self-esteem were moderately negatively associated with BCIS Cognitive Insight (*r*s ranged from -.26 [RSES Self-esteem] to -.22 [PID-5 Antagonism]). As measured by the SRIS Insight scale, other personality dimensions were also negatively associated with insight, including all PID-5 dimensions with the exception of Antagonism (*r*s ranged from -.23 [Detachment] to -.32 [Psychoticism]) and PROMIS Anxiety and Depression (*r*s were -.26). Hierarchical regressions controlling for HEXACO Extraversion, PID-5 Antagonism, or RSES Self-esteem revealed in general that narcissism and psychopathy subdimensions remained significant predictors of BCIS Cognitive Insight above and beyond the normal and abnormal personality traits that were also associated with BCIS Cognitive Insight (see Table 30).

In contrast, other personality variables were positively associated with self-reported insight. HEXACO Honesty-Humility, HEXACO Emotionality, PID-5 Negative Affectivity, PROMIS Anxiety, and PROMIS Depression were moderately positively associated with BCIS Cognitive Insight (*r*s ranged from .21 [PROMIS Depression] to .40 [HEXACO Emotionality].

Similarly, HEXACO Honesty-Humility, Conscientiousness, and Openness, as well as PROMIS Anxiety were moderately positively associated with SRIS Self-reflection (*r*s ranged from .19 [PROMIS Anxiety] to .41 [HEXACO Openness]).

Consistent with methodological criticisms of the pSCS (Grant et al., 2002), few personality traits and internalizing dimensions were associated with pSCS total scores, although HEXACO Extraversion, PROMIS Anxiety, and HEXACO Openness were moderately positively associated with this index (*r*s ranged from .17 [HEXACO Extraversion] to .30 [HEXACO Openness]).

Overconfidence.

Task performance. In general, normal and abnormal personality as well as internalizing dimensions were not significantly related to task confidence, performance, and accuracy in judging performance, with a few notable exceptions (Table 31). HEXACO Openness and PID-5 Antagonism were moderately positively associated with confidence on the verbal (r = .27) and trivia (r = .18) tasks, respectively, despite being unrelated to performance on the respective tasks (*r*s were .12 and -.05, respectively). In contrast, PID-5 Negative Affectivity was significantly associated with quantitative performance (r = .23) despite being nonsignificantly related to confidence in performance (r = .06). PROMIS Anger was moderately negatively associated with quantitative performance (r = -.18) but was also slightly negatively associated with confidence in task performance (r = -.11), suggesting calibration in confidence based on performance. Lastly, HEXACO Agreeableness and Conscientiousness were moderately positively correlated with accuracy in judging performance on the trivia task (*r*s were .20) and PID-5 Antagonism and Disinhibition were moderately negatively correlated with this same variable (*r*s were -.19 and -.26, respectively).

Overconfidence indices. There was scattered evidence that other personality traits and internalizing dimensions were associated with overconfidence (Table 32). Regarding overprecision, PID-5 Detachment and Disinhibition as well as RSES Self-esteem were moderately positively associated with overprecision on the trivia task (*r*s ranged from .18 [RSES Self-esteem] to .21 [PID-5 Disinhibition]) but neither of the other overconfidence tasks. Regarding overplacement, HEXACO Openness and RSES Self-esteem were moderately positively associated with overplacement on the verbal and trivia tasks, respectively (*r*s were .19 and .24), whereas PID-5 Negative Affectivity was moderately negatively associated with overplacement on the verbal task (r = -.17). HEXACO Emotionality was moderately negatively associated with overestimation on the verbal task (r = -.20), HEXACO Agreeableness and PID-5 Psychoticism were moderately negatively associated with overestimation on the quantitative task (*r*s were -.22 and -.17), and HEXACO Agreeableness was moderately negatively associated with overestimation on the trivia task (r = -.26). Each of the aforementioned effects reflect an underestimation one's predicted performance relative to their objective performance. In contrast, HEXACO Openness was moderately positively associated with overestimation on the verbal task (r = .28), whereas PID-5 Detachment, PID-5 Antagonism, and RSES Self-esteem were moderately positively associated with overestimation on the trivia task (*r*s ranged from. 17 [RSES Self-esteem] to .22 [PID-5 Negative Affectivity]). All relations between personality and overconfidence remained essentially unchanged after controlling for WASI-2 IQ (see Table 32).

Summary of findings from Aim 3. In general, several personality traits were consistently related to self-enhancement and overconfidence across all tasks. Extraversion, openness to experience, disinhibition, antagonism, and self-esteem were generally positively related to the socially-desirable adjectives composite, overestimating one's intelligence, bias

blind spot, and overconfidence. In addition, these same traits were generally negatively associated with self-reported insight. In contrast, neuroticism broadly construed, including the personality traits of emotionality and honesty-humility and internalizing symptomology, were generally negatively associated with self-enhancement and overconfidence, and positively associated with self-reported insight.

Discussion

Blaming overconfidence for the Chernobyl nuclear power plant meltdown and the Space Shuttle Challenger explosions, Plous (1993) stated that: "No problem in judgment and decision making is more prevalent and potentially catastrophic than overconfidence" (p. 217). Overconfidence in decision-making appears to arise from a broader cognitive tendency, termed the better-than-average effect (Alicke & Govorun, 2005; Dunning et al., 2004), in which people forge overly positively impressions of themselves. Emblematic in Plous' (1993) statement and in the broader literature is that this general tendency is associated with myriad negative consequences (e.g., Kwan et al., 2004). Overconfidence has even been implicated in some of the most striking man-made disasters in modern history.

Although well-established as a group phenomenon, efforts to identify robust, replicated individual differences in the better-than-average effect have generally left researchers empty-handed. In fact, many researchers remain unconvinced that personality bears important implications for self-enhancement and overconfidence (Moore & Dev, in press). In spite of this skepticism, narcissistic individuals have long been observed to overestimate their attributes and accomplishments (Grijalva & Zhang, 2016). Thus, narcissistic traits appear to be a promising candidate for identifying those most at-risk for overconfidence (Morf et al., 2011; Wallace, 2011). The current study aimed to make inroads into this potential association by examining the

precise nature and boundaries of the relations between personality and two aspects of the better-than-average effect, namely self-enhancement and overconfidence.

The present findings suggest that perhaps not all is lost. In the broadest sense, the current study contributed to the literature in which there are poorly-replicated effects, and has now aided in targeting replicable personality traits implicated in the better-than-average effect. Narcissism, in particular, appears to be the most salient personality construct that places people at risk for self-enhancement and overconfidence. In doing so, the current study made the following contributions to the literature.

Summary of Main Findings

First, although often studied in isolation, self-enhancement and overconfidence are largely overlapping constructs that assess the broad construct of the better-than-average effect (Moore & Healy, 2008). The findings that self-enhancement and overconfidence indices were moderately intercorrelated suggests that each of these tasks are probing differing operationalizations of the same underlying construct and is inconsistent with their tendency to be treated as theoretically distinct constructs. Indeed, the covariances among the socially-desirable adjectives composite, bias blind spot task, and all three overconfidence indices across each of the overconfidence tasks suggests that a latent factor reflecting tendencies towards the better-than-average effect may underlie these indicators (Moore & Healy, 2008).

Second, the narcissism and self-enhancement literature tends to focus on narcissism broadly construed rather than on its constituent subdimensions (e.g., Grijalva & Zhang, 2016). Given growing evidence that narcissism is multidimensional (see Krizan & Herlache, 2017; Miller, Lynam, Hyatt, & Campbell, 2017; Wright & Edershile, 2018), this emphasis on narcissism as a unitary construct is likely overly simplistic. This is especially the case in light of

the current study, which demonstrated that narcissism's relations with self-enhancement are generally limited to the Leadership/Authority features of narcissism. To better understand the nature and boundary conditions of the narcissism-self-enhancement link, researchers might more profitably focus on the Leadership/Authority features of narcissism.

Third, contrary to prediction there was generally specificity in the relations between the Leadership/Authority features of narcissism and overconfidence measures given that no other normal or abnormal personality features were consistently associated with all three types of overconfidence. Certain traits, such as reversed Agreeableness and Negative Affectivity, Detachment, and Disinhibition, were instead related to one but not all types of overconfidence across all three tasks, and their statistical effects were generally small in magnitude.

These scattered relations between other personality traits and overconfidence might also be consistent with configural models of personality disorders (e.g., Lilienfeld et al., 2015), in which certain combinations of largely independent personality traits combine to reflect interpersonally-salient (or even malignant) conditions that have come to be regarded as personality disorders. For instance, narcissism is increasingly construed as a configuration of antagonism (reversed agreeableness), disinhibition, and extraversion (reversed detachment; Miller et al., 2011, Watts et al., 2017). Although such a supposition warrants direct examination, it might be that this combination of traits in moderate to high doses produces the perfect recipe for overconfidence.[1]

[1] Given the substantial content overlap between the PPI-R, NPI, and HEXACO (e.g., Ackerman et al., 2011; Lilienfeld et al., 2015), I conducted a principal components analysis with oblique (promax) rotation in which all 8 subscales of the PPI-R, 3 subscales of the NPI, and 6 domain scales of the HEXACO were entered. Inspection of the Scree plot (see Figure 1) indicated 5 dimensions that explained 68 percent of the variance in the component indicators. Each of the scales' loadings onto the 5 dimensions are reported in Table 33. The dimensions' relations with self-enhancement and overconfidence indices are reported in Tables 34 and 35.

Fourth, the present study demonstrated robust individual differences in the propensity to report immunity to cognitive bias. In particular, a broad swath of personality variables, including multiple aspects of narcissism and psychopathy, extraversion, openness to experience, emotional stability, and self-esteem, were associated with displaying a larger bias blind spot. As discussed later (see Limitations), however, the present study did not examine whether such individuals were indeed immune to cognitive bias. Nevertheless, these findings suggest that individuals with pronounced features of positive emotionality underestimate the extent to which they are biased.

Accounts of the Narcissism-Self-enhancement Link

Most researchers agree that self-enhancing in some form reflects a maladaptive or irrational cognitive style. For one, it is statistically impossible for the majority of people to be better than the average person (Taylor & Brown, 1988). An accurate understanding of one's abilities and limitations serves an important purpose (e.g., Alicke, 1985; Dunning et al., 2004), including aiding one in selecting strategies that facilitate success (Neale & Bazerman, 1985), avoiding tasks for which one is not well-equipped (Camerer & Lovallo, 1999), and setting realistic goals for oneself (Ehrlinger & Dunning, 2003). In this way, self-enhancement and overconfidence would appear detrimental for intra- and interpersonal functioning. Overconfidence has even been implicated in entrepreneurial failure (Camerer & Lovallo, 1999), high rates of failed corporate mergers and acquisitions (Malmendier & Tate, 2005), war (Howard, 1983; Johnson, 2004), excessively high rates of stock market trading despite the substantial costs associated with doing so (Odean, 1999), labor strikes and litigation (Neale & Bazerman, 1985), and the stock market crash of 2008 (Moore & Dev, in press). If entirely maladaptive, however, the ubiquity of self-enhancement and overconfidence is perplexing, and raises an important question: Why do individuals see themselves through rose-colored glasses?

The literature offers two competing explanations. Both challenge the extent to which self-enhancement is inherently or entirely maladaptive, and in turn posit that people are motivated to see themselves in an overly positive light because doing so confers psychological benefits (e.g., Asendorpf & Ostendorf, 1998; Brown, 1986). Moreover, both models bear implications for the link between narcissism and self-enhancement.

Some view self-enhancement as a self-regulatory mechanism (Morf, 2006; Morf & Rhodewalt, 2001). According to this perspective, social comparison arises because people's behaviors are motivated by how they want to see themselves and how they want others to see them. People then interpret situations in light of these motivations, which in turn stimulates intra- and interpersonal processes that increase the likelihood that one's environment will be conducive to one's motivations.

Another account of social comparison self-enhancement emphasizes its social benefits (Leary, 2007), describing it as a status-enhancement mechanism (Anderson, Brion, Moore, & Kennedy, 2012). According to this theory, in addition to conferring intrapersonal benefits, self-enhancement convinces others that self-enhancers are more capable than they are. In contrast with self-regulatory models, this account proposes that self-enhancers are motivated primarily by social success. Supporting their theory, Anderson and colleagues (2012) demonstrated in a series of studies in which participants were assigned to group projects over a semester that overconfident individuals (a) were perceived as more competent by their group partners, (b) achieved higher status in their respective groups, (c) had greater influence over the group according to their peers, and (d) were even assigned higher grades by their peers.

More broadly, when one bores down to the subtypes of self-enhancement, social comparison and self-insight, it becomes clear that aspects of self-enhancement are

psychologically beneficial (Kwan et al., 2004). In their meta-analytic review, Kwan and colleagues (2004) concluded that social comparison might be psychologically adaptive, whereas lack of self-insight might be maladaptive (see also Kurt & Paulhus, 2008). Meta-analytically, social comparison is associated with higher self-esteem and better psychological adjustment, whereas lack of self-insight is associated with poor interpersonal adjustment, such as conflict with peers.

Within the context of narcissism, these self-regulatory and status-enhancement accounts of self-enhancement might not be all that separable. After all, seeking social status is inherent in grandiosity and superiority. To promote their grandiosity and superiority over others (Morf et al., 2011), which in turn is likely to boost one's social status, narcissistic individuals use the following intra- and interpersonal strategies: They create opportunities for self-enhancement (Brunell et al., 2008); tend to exaggerate their accomplishments (Farwell & Wohlwend-Lloyd, 1998; John & Robins, 1994); preempt threat so as not to endanger their self-image, leading to hypervigilance to cues of social threat (Horvath & Morf, 2009); ascribe positive outcomes to themselves (Rhodewalt & Morf, 1998); blame others for their failures and deflect negative feedback (Campbell et al., 2000; Kernis & Sun, 1994); and partner with high-status individuals and attractive romantic partners to gain status through association (Campbell, 1999). All of these strategies are thought to manipulate the social environment to support their positive self-illusions.

Some research evidence suggests that these self-regulatory and status-enhancing strategies work. Narcissistic individuals tend to make positive first impressions (Paulhus, 1998; but see Back, Schmukle, & Egloff, 2010, for evidence that their charm wears off with time); become leaders in new groups (Brunell et al., 2008); excel in job interviews (Paulhus, Westlake,

Calvez, & Harms, 2013); perform especially well when others evaluate them (Wallace & Baumeister, 2002); and convince others that their ideas are innovative when they are not (Goncalo et al., 2010). Moreover, narcissistic people may also be adept at acquiring higher degrees of social status, such as at becoming celebrities (Young & Pinsky, 2006) or even U.S. presidents (Watts et al., 2013). Together, these findings indicate that self-enhancement might be adaptive to a certain extent, such that these intra- and interpersonal strategies serve an operant function that is at least intermittently reinforced. Previous research has attempted to establish that self-enhancement might be adaptive at moderate but not high doses (i.e., is curvilinear), but these efforts have not been fruitful (Anderson et al., 2012; Morf et al., 2011).

Limitations

The results of the current study must be interpreted in light of a number of limitations, many of which provide promising directions for future research in the areas of personality and the better-than-average effect.

Sample size. One noteworthy limitation of the current study is the sample size. Presuming a population correlation between narcissism and self-enhancement of .2 (Grijalva & Zhang, 2016), Schönbrodt and Perugini (2013) observed using Monte Carlo simulation that a sample size of approximately 230 is necessary to achieve precise and stable correlational estimates within a reasonable window of the population value (i.e., .20 ± .05). With a sample size of 138, confidence intervals surrounding observed parameter estimates are likely to be larger relative to those observed with a larger sample size. Moreover, concerns with statistical power preclude direct examination of interactional tests, such as narcissism as a moderator of the relation between self-estimated and performance-based IQ.

Correlational design. This study employed a correlational, cross-sectional design, which does not establish a temporal ordering among variables, let alone causal inference. At present, these findings indicate that personality is associated with self-enhancement and overconfidence, but do not address whether the cognitive processes associated with confidence and judging accuracy precede personality, vice versa, or if these cognitive processes and certain personality traits stem from one or more shared experiences. Longitudinal designs, although not probative evidence of causality, might establish a temporal ordering among personality and self-enhancement variables that would shed light on the developmental processes giving rise to the observed associations in the present study. Moreover, there is reason to believe that the relationship between personality and self-enhancement broadly construed might be reciprocal. For instance, due to various motivational factors, depressed or neurotic individuals might perform worse on a certain task, which is likely to make them less confident, which in turn determines the goals they pursue (e.g., Maniscalco & Lao, 2012).

Other methods, such as natural and laboratory experiments might also shed light on the nature of the relationship between personality and self-enhancement, such as to what extent self-enhancement and overconfidence are domain-specific or malleable. The limited experimental and clinical literatures have demonstrated that confidence is indeed malleable. For instance, providing false but positive feedback to healthy individuals engaged in a decision-making task boosted confidence and heightened future task performance (Zacharopoulos, Binetti, Walsh, & Kanai, 2014), and improvements in cognitive insight in psychotherapy settings have predicted decreases in delusional beliefs among patients diagnosed with psychotic disorders (see Riggs, Grant, Perivoiotis, & Beck, 2012, for a review). At the same time, increasing confidence might

be a slippery slope given that overconfidence is typically associated with myriad negative consequences (Moore & Healy, 2008). Future research should explore such a possibility.

Laboratory data. Much of the scope of this investigation was limited to laboratory indicators, what Block termed t- (or test-) data (Block, 1977), which present certain methodological challenges that may affect (attenuate) the observed relations between personality and overconfidence. T-data are data drawn from standardized situations created in a laboratory, where behavior can be observed and measured with relatively high levels of objectivity (Block, 1977; Cattell, 1965). Despite their utility for measuring behavior, these data have been criticized for being erratic, unreliable, and at times of questionable validity (Block, 1977; Epstein, 1979). This poor reliability, and even validity, may be in part due to the situational specificity of behavior (Mischel, 1973), including those exhibited in overconfidence tasks (Moore & Dev, in press). Moreover, due to method variance and the aforementioned methodological challenges with t-data, interview and self-report measures typically show only modest covariation with laboratory indices (Epstein, 1979); researchers might expect a maximum correlation of .2 or .3 between self-report measures and laboratory tasks.

Other aspects of how overconfidence indices are constructed might also affect the reliability of overconfidence measurement. As noted briefly in the introduction, there are two types of self-peer comparisons used in the literature, direct and indirect (see Alicke & Govorun, 2005, for a review). As a reminder, the direct approach uses a single scale to compare self-judgments against the average person, with the latter represented as the midpoint of the scale. The indirect approach uses two scales, one for self-judgments and one for judgments of the average person. The current investigation relied on indirect comparisons. Because direct comparisons provide a stronger comparative frame (Alicke & Govorun, 2005), they tend to yield

stronger effects than do indirect comparisons (Otten & van der Pligt, 1996). Indirect comparisons are more informative than direct comparisons, however, because researchers can infer the direction of the contrast between ratings of the self and average person. Using the direct method, for instance, one cannot determine whether self-enhancement occurs due to self-inflation, average peer deflation, or both (Alicke & Govorun, 2005).

Analyzing indirect comparison data, in the form of either (a) self and peer or (b) self and performance contrasts, although advantageous in many respects, comes with certain analytic costs. Grijalva and Zhang (2016) reported meta-analytically that the use of residual scores in examining narcissism's relations with self-enhancement resulted in slightly (albeit nonsignificantly) larger effect sizes relative to the relations observed for difference scores. This finding is consistent with criticisms of difference scores due to their unreliability (Cronbach, 1958; Edwards & Parry, 1993; Krueger & Wright, 2011; but see Rogosa & Willett, 1983). Nevertheless, preliminary data presented here suggest that either approach resulted in nearly identical observed relations with personality, although neither approach yielded robust relations between personality and self-enhancement residual scores.

Residual scores are generally preferable to difference scores because the latter are vulnerable to regression artifacts and are hence less reliable (Edwards & Parry, 1993; Johns, 1981; but see Rogosa & Willett, 1983, for an argument that this low reliability better reflects reality), although residual scores have recently encountered their fair share of methodological criticisms (Krueger & Wright, 2011). Krueger and Wright (2011) generally advocated for alternative ways of creating self-enhancement and overconfidence composites, including the Moore and Healy (2008) composites used in the present study (i.e., overestimation, overplacement, overprecision) and round-robin designs (Kwan et al., 2004). Taken together, in

light of each of the methodological challenges described, it may be unrealistic to anticipate large effect sizes between self-reported personality and overconfidence (Moore & Dev, in press).

Inferring bias. One shortcoming of using the socially-desirable adjectives and bias blind spot task as indicators of bias is that bias cannot be established clearly without objective, external criteria (e.g., Colvin et al., 1994). Regarding the socially-desirable adjectives, Schimmack (2007) established that objective indicators of the socially-desirable adjectives are themselves uncorrelated, and thus the covariance among these adjectives when self-reported is thought to reflect self-enhancement bias. Without objective indicators of these attributes, however, it is not entirely possible to establish that the aggregated composite of socially-desirable adjectives in and of itself reflects self-enhancement bias.

Similarly, reporting being less prone to cognitive biases than the average person does not necessarily indicate bias. Initial validation of the bias blind spot task used in the current study, however, demonstrated that bias blind spot did not predict performance on classic bias tasks, such as Baron and Hershey's (1988) outcome bias problem; Kahneman and Tversky's (1973) lawyer-engineer problem, which detects base-rate neglect; or Tversky and Kahneman's (1980) disease problem, which detects framing effects (West et al., 2012). Nevertheless, West and colleagues' (2012) findings indicated that those with smaller bias blind spots were equally as likely as those with larger bias blind spots to display various cognitive biases, suggesting that those who deny being prone to cognitive bias are equally as likely to fall prey to cognitive bias

Self-report data. The finding that certain personality features, especially those associated with narcissism and psychopathy, were associated with self-enhancement and overconfidence suggests that the current study's exclusive reliance on self-reported personality may be problematic. Because psychopathy is associated with grandiose self-concept, deception,

and lack of insight, prominent researchers in clinical psychology and allied fields have raised concerns regarding the use of self-report psychopathy measures. For example, Hart, Hare, and Forth (1996) once asserted that "behavioral checklists and self-report scales are poorly suited to assessing psychopathy" (p. 85). Less research has challenged the validity of self-report narcissism measures, although criticisms of self-reported psychopathy apply to narcissism as well (cf., Sleep et al., 2017; see Paulhus & Vazire, 2007, for a discussion of such issues).

It is worth noting that studies examining the extent to which response bias – the tendency to deny or minimize socially undesirable traits and to emphasize socially desirable ones, resulting in an overly positive or negative impression of oneself (e.g., Davis, Thake, & Weekes, 2012) – attenuates self-reported narcissistic and psychopathic traits' relations with ostensibly more objective criteria (e.g., interview-based measures, laboratory tasks) have demonstrated that self-reports are not necessarily compromised by under- or over-reporting of psychopathological features (Sleep et al., 2017; Verschuere et al., 2014; Watts et al., 2016). Such findings may allay researchers' concerns that a tendency to make oneself look unrealistically healthy or unhealthy necessarily compromises the validity of self-report psychopathy measures in research settings.

Another possibility is that self-reported personality, particularly narcissism and psychopathy, is not invalid but instead a genuine reflection of how individuals with high levels of these traits see themselves. Meehl (1945) noted importantly that self-reports need not reflect factual accuracies to provide diagnostically useful information. One way to circumvent narcissistic and psychopathic individuals' overly positive view of themselves is to incorporate informant reports, in accord with the view that aggregated informant data act as quasi-criteria for the validity of self-reported personality (Vazire, 2006; see Future Research Directions).

The working assumption is that the pooled ratings of observers who are familiar with their "target" individuals provide helpful benchmarks for evaluating the validity of personality ratings (Cheek, 1982; John & Robins, 1994; Robins & John, 1997). If Person A sees herself as kind-hearted, but Persons B, C, D, E, and F who know Person A well perceive her as mean-spirited, the reasoning goes, it is likely – although not guaranteed – that Person A is misperceiving or at least misreporting her personality traits. In contrast, if one's self-perception aligns adequately with others' perspectives, he or she is considered to be relatively self-aware.

Future Research Directions and Planned Analyses

Future revisions of this manuscript will include a larger sample size, informant-reported personality and psychopathology, and executive functioning data. There are three broad aims for these future revisions, each of which will employ a latent variable modeling approach. This approach is in line with recommendations by Patrick and colleagues (2013), who proposed adopting a multiple measurement approach in which target constructs (in this case, self-enhancement and overconfidence) are strengthened by bootstrapping. Given that single laboratory tasks are generally fallible indicators of their respective latent constructs, aggregating multiple laboratory tasks into a composite circumvents much of the measurement error endemic to laboratory tasks (see also Miyake & Friedman, 2012). Once adequately powered for latent variable modeling, future revisions of the manuscript will again examine the relations between personality and self-enhancement better accounting for impurities in overconfidence tasks (i.e., random noise).

Better-than-average as an overarching construct. One advantage of the present study is that we collected multiple indices of self-enhancement and overconfidence, in light of poor reliability of single laboratory task indicators (Block, 1977) and recent criticisms of the utility of

personality as a predictor of overconfidence (Moore & Dev, in press). In general, self-enhancement and overconfidence researchers tend not to collect multiple measures of these constructs within a single study, let alone parse their constructs into their subforms (e.g., Kwan et al., 2004; Moore & Healy, 2008). Future revisions of this manuscript will address the extent to which the self-enhancement and overconfidence indices conjointly reflect a latent "better-than-average" factor, given that the present study was underpowered to conduct factor analyses.

The present findings suggest that self-enhancement and overconfidence may indeed reflect a common, underlying construct. Using confirmatory factor analyses, I will first fit a measurement model of self-enhancement and overconfidence indices as a single latent variable, which I will supplement with exploratory factor analyses examining the optimal number of factors underlying these indicators. Such models might be parameterized most accurately with method factors, such as one for self-reported self-enhancement and another for laboratory tasks, given that multiple modes of assessment were used in the present study (e.g., Eid et al., 2008).[2]

Cognitive mechanisms associated with the better-than-average effect. Kruger and Dunning (1999) demonstrated that the least capable are typically the most confident about themselves, a phenomenon termed the Dunning-Kruger effect. In turn, they hypothesized that poor task performers lack the requisite metacognitive ability to distinguish accuracy from error: "Poor performers reach erroneous conclusions and make unfortunate choices, but their incompetence robs them of the ability to realize it" (p. 1121; see Dunning, 2005, for a review). The present data suggest that IQ may be one important factor in overconfidence, but not in self-

[2] To examine the coherence of self-enhancement and overconfidence indices, I conducted a series of confirmatory factor analyses examining the extent to which self-enhancement and overconfidence could be modeled as a single latent variable, or three correlated latent variables that map onto the theoretical structure of overconfidence (Moore & Healy, 2008). Model fit in either case was very poor. Given that the covariances among self-enhancement and overconfidence are unlikely to be stable at this sample size (Schönbrodt & Perugini, 2013), future revisions of this manuscript will reexamine these models with a larger sample size.

enhancement and bias blind spot (see also West et al., 2012). These findings raise the possibility that multiple cognitive mechanisms are at play in the better-than-average effect broadly construed.

One potential candidate is executive functioning, which is defined as a set of higher-order cognitive processes that are called upon to engage in goal-directed, flexible, and adaptive behavior (see Miyake et al., 2000, for a review). Much research has focused on executive functioning as a mechanism that gives rise to metacognition (see Roebers, 2017, for a review), the ability to think about thinking, both one's own thinking and the thinking of others (Semerari et al., 2003), which is implicated in self-enhancement and overconfidence (Jiang & Kleitman, 2015). Executive functioning tends to be a better predictor of metacognitive ability than IQ (Fernandez-Duque, Baird, & Posner, 2000; Lysaker et al., 2008). In light of this body of research, subsidiary analyses will examine the extent to which executive functioning deficits are associated with the better-than-average effect. In addition, I will examine the relations between personality and self-enhancement after controlling for executive functioning.

Self-informant convergence. Another area of research examining the putative validity of self-reported narcissism and psychopathy has explored convergence between self- and informant reports. Comparing self- and informant reports of PD traits provides two types of information. First, examining the correlation between self- and informant reports informs relative agreement, or the extent to which those with pronounced PD traits are capable of or willing to report higher levels of such traits. Second, examining mean level differences of PD traits across source informs absolute agreement, or the extent to which the self-reported traits reflect levels reported among informants.

Among the first to do so using psychopathy measures, Lilienfeld and Fowler (2006) found a small to moderate correlation (r = .32) between self- and informant reports of psychopathic traits, and a small mean difference (d = .33) between the two such that informants reported higher levels of psychopathic traits than did participants. Miller, Jones, and Lynam (2011) replicated these results, finding a strong significant correlation between self and informant reported psychopathy (median r = .64). In a review of self-informant convergence of PDs, Klonsky and Oltmanns (2002) reported a median correlation of .29 between self- and informant reports of narcissistic personality disorder, which is likely a more extreme conceptualization of the social-personality construct of narcissism (Miller & Campbell, 2008).

Using informant report data, I will examine the extent to which self-reports of narcissism and psychopathy correspond with informant reports of their respective constructs. Based on the existing literature (Miller et al., 2011), I hypothesize that there will be strong convergence between self- and informant reports of narcissistic and psychopathic traits, and clear evidence for differences that narcissistic and psychopathic individuals rate themselves as modestly less narcissistic and psychopathic than informants. These findings are likely to inform the extent to which researchers conflate lack of insight with lack of concern for the consequences of one's actions.

Validity of self-reported personality. Although informative, the mere presence of bias does not imply that such biases statistically affect the prediction of important outcomes. Along these lines, self-reported personality traits can be compared with external criteria traditionally considered more "objective" than self-reports to address the putative accuracy of self-reported personality. Using informant reports collected in this ongoing project, I plan to examine the extent to which self-enhancement and overconfidence (construed as latent variables) enhance the

validity of self-reported personality, using informant data, as well as internalizing and externalizing symptomologies, as external criteria.

Primary hypotheses will be corroborated if the latent better-than-average variable moderates the relation between self- and (a) informant reported narcissistic and psychopathic traits and (b) additional external criteria (i.e., internalizing, externalizing psychopathology). I expect that this moderation will be more pronounced in magnitude for (a) personality traits as opposed to other external criteria (e.g., Jones & Miller, 2012) and (b) traits of these two PDs than for other PDs; the latter hypothesis is consistent with suppositions that narcissistic and psychopathic traits in particular are associated with lack of insight (e.g., Cleckley, 1941). I will also examine mean length of acquaintance of informants and informant type (e.g., friend, significant other, co-worker, roommate) as potential moderators in light of evidence that self-informant agreement for personality traits tends to increase with degree of acquaintance (Connelly & Ones, 2010).

Conclusion

In the broadest sense, the present study corroborated previous research challenging the extent to which the better-than-average effect is a universal phenomenon and further demonstrated that researchers might more gainfully focus on individual differences factors that place individuals at risk for various cognitive biases (cf., Moore & Dev, in press). Certain features of narcissism appear to be the most promising candidate at this time. Having now identified replicated personality differences in overconfidence, the present study might allay some researchers' concerns and skepticism surrounding the utility of personality as a salient individual differences factor implicated in self-enhancement and overconfidence.

Planned analyses notwithstanding, the present analyses have the potential to inform the broader clinical literature. Distortions in self-evaluation have been implicated in numerous forms of psychopathology, including but not limited to depression, psychosis, Alzheimer's disease, and substance abuse (Beck et al., 2004; Rouault, Seow, Gillan, & Gleming, 2018). For instance, generally used within the context of Alzheimer's disease or schizophrenia, anosognosia refers to an inability to recognize that one possesses a mental illness or is experiencing psychopathological symptoms (Fleming, Dolan, & Frith, 2012). Because metacognitive deficits appear to cut across multiple forms of psychopathology, it might be that metacognition would serve as a useful transdiagnostic indicator of ego-syntonic psychopathology or psychological maladjustment. Moreover, given that not all individuals with schizophrenia or substance use exhibit biased self-evaluation, it might also be that the presence of certain personality traits function as meaningful risk factors among individuals with various forms of psychopathology.

Ultimately, understanding the mechanisms responsible for the better-than-average effect may allow for behavioral interventions to restore accurate self-evaluation. At the same time, certain aspects of self-enhancement are considered beneficial for well-being, whereas others are considered harmful. Behavioral interventions aimed at manipulating self-evaluation should consider the extent to which self-evaluation is malleable, domain-specific, trait-like as opposed to situational, and whether there are optimal levels of insight such that high or low levels are maladaptive.

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Table 1. *Intercorrelations among narcissism and psychopathy indicators.*

	M (SD)	1.	2.	3.	4.	5.
1. NPI Leadership/Authority	0.54 (0.28)					
2. NPI Grandiose Exhibitionism	0.43 (0.27)	.55***				
3. NPI Entitlement Exploitativeness	0.25 (0.28)	.18*	.29***			
4. PPI-R Fearless Dominance	2.72 (0.48)	.41***	.31***	-.17*		
5. PPI-R Self-centered Impulsivity	2.10 (0.39)	.10	.26**	.41***	.22**	
6. PPI-R Coldheartedness	1.93 (0.58)	.23**	.19*	.31***	.01	.13

Note. *p<.05; **p<.01; ***p<.001.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised.

Table 2. *Intercorrelations among normal and abnormal personality traits.*

	M (SD)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. HEXACO Honesty-Humility	3.17 (0.68)										
2. HEXACO Emotionality	3.25 (0.65)	.24**									
3. HEXACO Extraversion	3.61 (0.68)	-.18*	-.25**								
4. HEXACO Agreeableness	3.24 (0.65)	.28***	-.20**	.11							
5. HEXACO Conscientiousness	3.56 (0.66)	.17*	.03	.11	.07						
6. HEXACO Openness	3.74 (0.66)	.01	-.09	.14	.18*	-.09					
7. PID-5 Negative Affectivity	2.19 (0.73)	.01	.57***	-.30***	-.35	-.08	-.26**				
8. PID-5 Detachment	1.77 (0.68)	-.08	-.03	-.57***	-.23**	-.13	-.10	.30***			
9. PID-5 Psychoticism	2.10 (0.74)	-.15	.08	-.29***	-.09	-.37***	.11	.38***	.41***		
10. PID-5 Antagonism	1.75 (0.68)	-.60***	-.09	.06	-.36***	-.14	-.05	.29***	.38***	.36***	
11. PID-5 Disinhibition	1.96 (0.74)	-.35***	-.11	-.01	-.18*	-.62***	-.02	.21**	.25**	.52***	.42***

Note. *p<.05; **p<.01; ***p<.001.
PID-5 = Personality Inventory for DSM-5 Personality Disorders.

Table 3. *Correlations between narcissism and psychopathy indicators and normal and abnormal personality traits.*

	HEXACO						PID-5				
	H	E	X	A	C	O	NA	DET	PSY	ANT	DIS
NPI Leadership/Authority	-.40***	-.29***	.57***	-.19*	.03	.06	-.22**	-.17*	-.11	.43***	.07
NPI Grandiose Exhibitionism	-.42***	-.22**	.51***	-.19*	-.03	-.02	-.03	-.07	.04	.41***	.23**
NPI Entitlement Exploitativeness	-.40***	-.10	-.16	-.35***	-.17*	-.22**	.24**	.37***	.30***	.48***	.32***
PPI-R Fearless Dominance	-.29***	-.54***	.63***	.25**	-.17*	.33***	-.42***	-.29***	-.06	.17*	.10
PPI-R Self-centered Impulsivity	-.41***	-.25**	-.08	-.27**	-.57***	.16	.19*	.32***	.46***	.47***	.60***
PPI-R Coldheartedness	-.29***	-.32***	-.05	-.25**	-.09	-.13	-.30***	.09	-.15	.19*	.04

Note. *p<.05; **p<.01; ***p<.001.

NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised; H = Honesty-Humility; E = Extraversion; X = Extraversion; A = Agreeableness; C = Conscientiousness; O = Openness; PID-5 = Personality Inventory for DSM-5 Personality Disorders; NA = Negative Affectivity; DET = Detachment; PSY = Psychoticism; ANT = Antagonism; DIS = Disinhibition.

Table 4. *Intercorrelations among internalizing indicators.*

	M (SD)	1.	2.	3.
1. RSES Self-esteem	3.01 (0.56)			
2. PROMIS Anger	2.38 (0.77)	-.34***		
3. PROMIS Anxiety	2.07 (0.82)	-.50***	.58***	
4. PROMIS Depression	2.01 (0.86)	-.72***	.67***	.71***

Note. *p<.05; **p<.01; ***p<.001.
RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System.

Table 5. *Correlations between narcissism and psychopathy and internalizing.*

	RSES Self-esteem	PROMIS		
		Anger	Anxiety	Depression
NPI Leadership/Authority	.44***	-.06	-.19*	-.20**
NPI Grandiose Exhibitionism	.27**	.00	-.08	-.16
NPI Entitlement Exploitativeness	-.23**	.20**	.06	.20**
PPI-R Fearless Dominance	.46***	-.44***	-.50***	-.43***
PPI-R Self-centered Impulsivity	-.14	.15	.11	.24**
PPI-R Coldheartedness	-.05	-.15	-.20**	-.10

Note. *$p<.05$; **$p<.01$; ***$p<.001$.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System.

Table 6. *Correlations between normal and abnormal personality and internalizing.*

	RSES Self-esteem	PROMIS		
		Anger	Anxiety	Depression
HEXACO Honesty-Humility	-.02	-.08	.08	-.07
HEXACO Emotionality	-.20**	.27**	.44***	.26**
HEXACO Extraversion	.61***	-.34***	-.39***	-.51***
HEXACO Agreeableness	.17*	-.30***	-.19*	-.31***
HEXACO Conscientiousness	.17*	.02	-.07	-.10
HEXACO Openness	.15	-.27**	-.06	-.12
PID-5 Negative Affectivity	-.38***	.45***	.59***	.50***
PID-5 Detachment	-.41***	.42***	.32***	.51***
PID-5 Psychoticism	-.36***	.21**	.42***	.37***
PID-5 Antagonism	-.04	.23**	.09	.20**
PID-5 Disinhibition	-.15	.07	.13	.16

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$.
PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System.

Table 7. *Intercorrelations among self-report insight and bias blind spot.*

	M (SD)	1.	2.	3.	4.	5.	6.
1. BCIS Self-certainty	2.34 (0.55)						
2. BCIS Self-reflection	2.47 (0.51)	-.24**					
3. BCIS Cognitive Insight	0.12 (0.83)	-.81***	.76***				
4. pSCS Total	3.13 (0.48)	.06	.28***	.13			
5. SRIS Self-reflection	3.27 (0.61)	.10	.23**	.08	.65***		
6. SRIS Insight	3.02 (0.62)	.04	-.13	-.11	.30***	.38***	
7. Bias Blind Spot	0.84 (0.72)	-.28***	.04	.21**	-.31***	-.26**	-.23**

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$.
BCIS = Beck Cognitive Insight Scale; pSCS = Private Self-consciousness Scale; SRIS = Self-report Insight Scale.

Table 8. *Interrelations among overconfidence task self-assessments, confidence ratings, and performance.*

	Self-assessment				Confidence			Performance		
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Self-Assessment										
1. Verbal										
2. Quantitative	.37***									
3. Trivia	.00	.21**								
4. Intelligence Quotient	.43***	.33***	.29***							
Confidence										
5. Verbal	.65***	.40***	-.05	.35***						
6. Quantitative	.32***	.76***	-.02	.22**	.58***					
7. Trivia	.13	-.02	.43***	.27**	.44***	.30***				
Performance										
8. Verbal	.53***	.41***	-.19*	.28***	.62***	.54***	.00			
9. Quantitative	.34***	.73***	-.01	.22**	.40***	.73***	-.06	.62***		
10. Trivia	.09	.07	.13	.11	.04	.15	.16	.25***	.21**	
11. Intelligence Quotient	.29***	.49***	.05	.28***	.42***	.48***	-.06	.55***	.57***	.12

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$.

Table 9. *Descriptive statistics for and intercorrelations among socially-desirable adjectives.*

	M (SD)	One-sample t-test	Cohen's *d*	1.	2.	3.
1. Facial attractiveness	4.81 (1.30)	5.78***	0.99			
2. Intelligence	5.55 (0.99)	14.29***	2.44	.36***		
3. Athletic ability	4.52 (1.41)	3.38***	0.58	.28***	.31***	
4. Trivia knowledge	3.74 (1.42)	-1.69	0.29	.03	.46***	.24***

Note. ***p<.001.
T-tests were conducted on 137 degrees of freedom.
All one-sample t-tests indicate the difference between adjective mean and the midpoint (4) of the scale reflecting the average person.

Table 10. *Intercorrelations among self-enhancement and overconfidence indicators.*

	SDA	BBS	Overprecision			Overplacement			Overestimation		
	1	2	3	4	5	6	7	8	9	10	11
1. Socially-desirable adjectives											
2. BBS	-.13										
3. Verbal overprecision	.24**	-.09									
4. Quantitative overprecision	-.06	-.01	.41***								
5. Trivia overprecision	.10	-.19*	.50***	.43***							
6. Verbal overplacement	.23**	-.35***	.60***	.15	.13						
7. Quantitative overplacement	.28***	-.22**	.26**	.45***	.05	.52***					
8. Trivia overplacement	.27**	-.18*	.07	-.03	.41***	.08	.28***				
9. Verbal overestimation	.32***	-.11	.67***	.15	.24**	.78***	.33***	.03			
10. Quantitative overestimation	.30***	.05	.35***	.58***	.17*	.28***	.64***	.22**	.35***		
11. Trivia overestimation	.32***	-.05	.27**	.04	.56***	.12	.24**	.75***	.26**	.35***	

Note. *p<.05; **p<.01; ***p<.001. SDA = Socially-desirable adjectives; BBS = Bias blind spot.

Table 11. *Descriptive statistics for self- and performance-based intelligence.*

	M (SD)	One-sample t-test	Cohen's *d*	Paired-samples t-test	Cohen's *d*
Estimated IQ	111.31 (15.67)	7.43***	1.27	4.35***	0.74
WASI-2 IQ	103.30 (14.75)	2.27*	0.39		

Note. $^{*}p<.05$; $^{***}p<.001$. T-tests were conducted on 137 degrees of freedom.
One-sample t-test results reflect the difference between participants' self-estimated and performance IQ and an average of 100.
Paired-sample t-test results reflect the difference between participants' self-estimated IQ and their estimated IQ on the WASI.
IQ = Intelligence Quotient. WASI = Wechsler Abbreviated Scale of Intelligence-Second Edition.

Table 12. *Descriptive statistics for the bias blind spot task.*

	Self	**Other**	Paired-samples t-test	Cohen's *d*
	M (SD)	*M (SD)*		
Total	3.60 (0.78)	4.44 (0.76)	-12.08***	1.10
Outcome bias	3.50 (1.19)	4.30 (0.91)	-7.63***	0.76
Framing effect	3.66 (1.31)	4.57 (0.99)	-7.88***	0.79
Base rate neglect	3.18 (1.35)	4.55 (1.06)	-9.38***	1.13
Conjunction effect	3.24 (1.18)	3.92 (1.03)	-7.86***	0.61
Anchoring effect	3.45 (1.24)	4.07 (1.04)	-6.03***	0.54
Myside bias	3.69 (1.22)	4.75 (1.02)	-8.66***	0.94
Cell phone hazard	4.51 (1.59)	4.97 (1.15)	-3.59***	0.33

Note. ***p<.001. T-tests were conducted on 137 degrees of freedom.
Descriptive statistics reflect the extent to which the self and others display various cognitive biases. Higher scores indicate more proneness to cognitive bias.

Table 13. *Descriptive statistics for overconfidence tasks.*

	Performance	Confidence	Performance – Confidence Paired samples t-test	Cohen's *d*
Verbal	71.51 (20.78)	73.98 (16.60)	-1.52	0.26
Quantitative	55.00 (24.54)	69.76 (21.86)	-8.74***	1.50
Trivia	41.65 (13.68)	54.95 (17.31)	-6.22***	1.06

Note. ***p<.001. T-tests were conducted on 137 degrees of freedom.

Table 14. *Descriptive statistics for self- and other-performance estimates on overconfidence tasks.*

	Self	**Other**	Paired-samples t-test	Cohen's *d*
	M (SD)	*M (SD)*		
Verbal	66.79 (18.29)	59.91 (12.23)	3.77***	0.64
Quantitative	64.06 (24.72)	60.75 (16.37)	1.59	0.27
Trivia	41.23 (21.12)	50.88 (14.74)	-4.23***	-0.72

Note. ***p<.001. T-tests were conducted on 137 degrees of freedom.

Table 15. *Correlations between personality and socially-desirable adjectives.*

	Composite	**Socially-desirable adjectives**			
		Facial attractiveness	Intelligence	Athletic Ability	Trivia Knowledge
NPI Leadership/Authority	.50***	.42***	.49***	.29***	.18*
NPI Grandiose Exhibitionism	.44***	.43***	.39***	.23**	.23**
NPI Entitlement Exploitativeness	-.01	.06	-.01	-.14	-.02
PPI-R Fearless Dominance	.32***	.13	.24**	.22**	.23**
PPI-R Self-centered Impulsivity	.08	.02	.13	-.20**	.19*
PPI-R Coldheartedness	.07	.17*	.06	.02	.04

Note. *$p<.05$; **$p<.01$; ***$p<.001$.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised.

Table 16. *Correlations between personality and self- and performance-based intelligence.*

	Self-estimated IQ	WASI-2 IQ	Self-estimated IQ controlling for WASI-2 IQ
NPI Leadership/Authority	.12	-.08	.16
NPI Grandiose Exhibitionism	-.08	-.07	-.05
NPI Entitlement Exploitativeness	-.05	-.03	-.04
PPI-R Fearless Dominance	.18*	-.02	.20**
PPI-R Self-centered Impulsivity	.07	-.05	.09
PPI-R Coldheartedness	-.03	-.22***	.04

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised.

Table 17. *Correlations between personality and self-other discrepancies.*

	Verbal		**Quantitative**		**Trivia**	
	Discrepancy	Residual	Discrepancy	Residual	Discrepancy	Residual
NPI Leadership/Authority	.03	.00	-.01	-.02	.08	.09
NPI Grandiose Exhibitionism	-.03	-.03	-.07	-.06	-.04	-.02
NPI Entitlement Exploitativeness	.04	.03	-.04	-.03	.11	.10
PPI-R Fearless Dominance	.21**	.23**	.02	.03	-.18*	-.15
PPI-R Self-centered Impulsivity	.10	.12	-.07	-.04	-.09	-.03
PPI-R Coldheartedness	-.03	-.06	-.08	-.09	.18*	.20**

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised.

Table 18. *Relations between personality and self-performance discrepancies.*

	Verbal		**Quantitative**		**Trivia**	
	Discrepancy	Residual	Discrepancy	Residual	Discrepancy	Residual
NPI Leadership/Authority	.17	.08	.07	.08	-.06	.13
NPI Grandiose Exhibitionism	.10	.01	.02	.14	.05	.04
NPI Entitlement Exploitativeness	.10	-.02	.11	-.01	.12	.10
PPI-R Fearless Dominance	.17	.21**	.19	.06	.20**	-.11
PPI-R Self-centered Impulsivity	.06	.12	.27	.04	.13	.03
PPI-R Coldheartedness	-.06	.01	-.01	.02	.08	.21**

Note. *p<.05; **p<.01; ***p<.001.

NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised.

Table 19. *Correlations between personality, bias blind-spot, and self-reported insight.*

		Self-reported Insight					
	Bias Blind-spot	BCIS Self-certainty	BCIS Self-reflection	BCIS Cognitive Insight	pSCS Total	SRIS Self-reflection	SRIS Insight
NPI Leadership/Authority	.29***	.37***	-.33***	-.45***	.08	-.01	.18*
NPI Grandiose Exhibitionism	.12	.29***	-.22**	-.33***	.13	.01	.03
NPI Entitlement Exploitativeness	.04	.28***	-.07	-.23**	.01	-.16	-.23**
PPI-R Fearless Dominance	.37***	.15	-.27**	-.26**	.13	.03	.24**
PPI-R Self-centered Impulsivity	.20**	.31***	.04	-.18*	.07	-.10	-.10
PPI-R Coldheartedness	.07	.16	-.17*	-.21**	-.28**	-.27**	-.05

Note. *p<.05; **p<.01; ***p<.001. Higher bias blind-spot scores indicate a larger self-other discrepancy such that others are more prone to cognitive bias.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised; BCIS = Beck Cognitive Insight Scale; pSCS = Private Self-consciousness Scale; SRIS = Self-report Insight Scale.

Table 20. *Correlations between personality and confidence, performance, and accuracy on overconfidence tasks.*

	Verbal			Quantitative			Trivia		
	Conf	Perf	Acc	Conf	Perf	Acc	Conf	Perf	Acc
NPI Leadership/Authority	-.10	-.17*	-.24**	.04	-.22**	-.25**	.11	-.16	-.25**
NPI Grandiose Exhibitionism	-.15	-.08	-.19*	.01	-.26**	-.03	.05	-.21**	-.23**
NPI Entitlement Exploitativeness	-.02	.08	-.01	.05	.01	.07	.09	.02	-.03
PPI-R Fearless Dominance	.07	.05	.01	.15	.03	-.08	.06	-.09	-.15
PPI-R Self-centered Impulsivity	.01	.02	.14	.10	.06	.05	.15	-.06	-.22**
PPI-R Coldheartedness	-.19*	-.17*	-.18*	-.19*	-.25**	-.18*	.18*	.15	-.04

Note. *p<.05; **p<.01; ***p<.001.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised.
Conf = Confidence; Perf = Performance; Acc = Accuracy.

Table 21. *Correlations between personality and overconfidence indices.*

	Overprecision			**Overplacement**			**Overestimation**		
	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia
NPI Leadership/Authority	.25**	.19*	.21**	.17*	.24**	.14	.17*	.19*	.20*
NPI Grandiose Exhibitionism	.11	.18*	.19*	.03	.21**	.05	.06	.27**	.13
NPI Entitlement Exploitativeness	-.04	-.04	.07	-.04	-.05	.08	-.06	-.01	.08
PPI-R Fearless Dominance	.09	.05	.11	.14	-.01	-.15	.17*	.07	-.06
PPI-R Self-centered Impulsivity	.06	-.08	.17*	.09	-.14	-.09	.10	.02	.05
PPI-R Coldheartedness	.02	.11	.06	.11	.19*	.07	.10	.11	.12

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised.

Table 22. *Correlations between personality and overconfidence indices after controlling for intelligence.*

	Overprecision			**Overplacement**			**Overestimation**		
	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia
NPI Leadership/Authority	.30***	.23**	.17*	.24**	.10	.14	.12	.28***	.18*
NPI Grandiose Exhibitionism	.15	.18*	.15	.26**	.02	.05	.10	.35***	.12
NPI Entitlement Exploitativeness	-.02	-.03	-.01	-.08	-.08	.09	-.07	.06	.06
PPI-R Fearless Dominance	.10	.10	.14	-.01	.16	-.17*	.22**	.11	-.06
PPI-R Self-centered Impulsivity	.05	-.09	.12	-.20**	.08	-.09	.16	.03	.04
PPI-R Coldheartedness	-.07	.04	.00	.14	.01	.08	-.14	.08	.09

Note. *p<.05; **p<.01; ***p<.001.
NPI = Narcissistic Personality Inventory; PPI-R = Psychopathic Personality Inventory-Revised.

Table 23. *Correlations between personality and socially-desirable adjectives.*

	Composite	Halo adjectives			
		Facial attractiveness	Intelligence	Athletic Ability	Trivia Knowledge
HEXACO Honesty-Humility	-.05	-.19*	-.07	.21**	-.09
HEXACO Emotionality	-.25**	-.25**	-.05	-.25**	-.03
HEXACO Extraversion	.43***	.36***	.36***	.31***	.15
HEXACO Agreeableness	.04	-.04	-.02	.15	-.05
HEXACO Conscientiousness	.04	.09	.06	.19*	-.19*
HEXACO Openness	.11	.02	.15	.02	.25**
PID-5 Negative Affectivity	-.07	-.05	-.07	-.23**	.12
PID-5 Detachment	-.05	-.08	-.19*	-.01	.00
PID-5 Psychoticism	-.09	-.21**	-.12	-.09	.14
PID-5 Antagonism	.13	.13	.23**	-.13	.11
PID-5 Disinhibition	.17*	-.02	.01	.07	.25**
RSES Self-esteem	.48***	.32***	.42***	.40***	.13
PROMIS Anger	-.18*	.02	-.13	-.26**	-.06
PROMIS Anxiety	-.21**	-.16	-.12	-.32***	.07
PROMIS Depression	-.23**	-.15	-.19*	.00	.53***

Note. *$p<.05$; **$p<.01$; ***$p<.001$.
PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale.

Table 24. *Incremental validity of narcissism and psychopathy indicators over personality and self-esteem in predicting the socially-desirable adjectives composite.*

Model	Step	Variable	ß	P	*R*	Δ R^2
1	1	HEXACO Extraversion	.33	.002	.33	
	2	HEXACO Extraversion	.06	.62	.51	.26
		NPI LA	.47	<.001		
2	1	HEXACO Extraversion	.33	.002	.33	
	2	HEXACO Extraversion	.19	.08	.45	.10
		NPI GE	.34	.002		
3	1	HEXACO Extraversion	.43	.002	.43	
	2	HEXACO Extraversion	.38	.002	.44	.01
		PPI-R FD	.10	.44		
4	1	RSES Self-esteem	.48	<.001	.48	
	2	RSES Self-esteem	.31	.003	.58	.11
		NPI LA	.36	<.001		
5	1	RSES Self-esteem	.48	<.001	.48	
	2	RSES Self-esteem	.39	<.001	.56	.08
		NPI GE	.30	.002		
6	1	RSES Self-esteem	.48	<.001	.48	
	2	RSES Self-esteem	.41	<.001	.49	.02
		PPI-R FD	.15	.18		

NPI = Narcissistic Personality Inventory; LA = Leadership/Authority; GE = Grandiose Exhibitionism; PPI-R = Psychopathic Personality Inventory-Revised; FD = Fearless Dominance; RSES = Rosenberg Self-esteem Scale.

Table 25. *Correlations between personality and self- and performance-based intelligence.*

	Self-estimated IQ	WASI-2 IQ	Self-estimated IQ controlling for WASI-2 IQ
HEXACO Honesty-Humility	-.15	-.03	-.03
HEXACO Emotionality	-.07	.08	-.04
HEXACO Extraversion	.07	.00	.15
HEXACO Agreeableness	.01	.02	.01
HEXACO Conscientiousness	.01	.01	-.03
HEXACO Openness	.21**	.05	.13
PID-5 Negative Affectivity	-.02	.28***	-.01
PID-5 Detachment	-.12	-.01	-.12
PID-5 Psychoticism	.03	.03	.00
PID-5 Antagonism	.21	.15	.08
PID-5 Disinhibition	.12	.10	.04
RSES Self-esteem	.09	-.02	.08
PROMIS Anger	-.11	-.07	-.21**
PROMIS Anxiety	-.07	.18*	-.15
PROMIS Depression	-.02	.02	-.07

Note. *p<.05; **p<.01; ***p<.001.
PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System.

Table 26. *Relations between personality and self-other discrepancies.*

	Verbal		Quantitative		Trivia	
	Discrepancy	Residual	Discrepancy	Residual	Discrepancy	Residual
HEXACO Honesty-Humility	-.02	.01	.04	.03	-.10	-.07
HEXACO Emotionality	-.16	-.17*	.06	.05	.15	.10
HEXACO Extraversion	.17*	.15	.10	.08	-.12	-.12
HEXACO Agreeableness	.17*	.19*	.02	.01	-.19*	-.25***
HEXACO Conscientiousness	-.11	-.12	-.03	-.03	.03	-.04
HEXACO Openness	.34***	.40***	-.02	-.01	.01	.01
PID-5 Negative Affectivity	-.15	-.13	.08	.10	.13	.13
PID-5 Detachment	-.12	-.08	-.05	-.03	.11	.15
PID-5 Psychoticism	.08	.06	.02	.02	-.04	-.09
PID-5 Antagonism	.02	.06	-.04	-.01	.15	.18
PID-5 Disinhibition	.14	.13	.02	.03	.01	.01
RSES Self-esteem	.08	.07	.10	.09	.08	.04
PROMIS Anger	-.25***	-.26***	-.19*	-.16	.09	.06
PROMIS Anxiety	-.03	-.05	.05	.05	.06	.03
PROMIS Depression	-.12	-.14	-.07	-.05	.02	.05

Note. *p<.05; **p<.01; ***p<.001.

PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System..

Table 27. *Relations between personality and self-performance discrepancies.*

	Verbal		Quantitative		Trivia	
	Discrepancy	Residual	Discrepancy	Residual	Discrepancy	Residual
HEXACO Honesty-Humility	.02	.03	-.06	-.03	.04	-.03
HEXACO Emotionality	-.20**	-.19*	-.12	-.05	.01	.05
HEXACO Extraversion	.08	.10	.15	.10	-.05	-.10
HEXACO Agreeableness	.05	.14	-.22**	-.13	-.26***	-.30***
HEXACO Conscientiousness	-.02	-.08	.14	.06	-.08	-.11
HEXACO Openness	.28***	.37***	-.08	-.03	.06	.02
PID-5 Negative Affectivity	-.16	-.13	-.05	.03	.03	.11
PID-5 Detachment	.03	-.01	-.04	.00	.22**	.19*
PID-5 Psychoticism	-.07	-.01	-.17*	-.08	-.12	-.13
PID-5 Antagonism	.06	.08	.04	.04	.19*	.21**
PID-5 Disinhibition	.07	.10	-.06	-.01	.07	.03
RSES Self-esteem	-.04	.02	.16	.10	.17*	.04
PROMIS Anger	-.10	-.20	.04	-.03	.00	.03
PROMIS Anxiety	-.05	-.05	-.06	-.02	-.09	-.03
PROMIS Depression	-.03	-.09	-.04	-.02	-.05	.04

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$.

PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System..

Table 28. *Correlations between personality, bias blind-spot, and self-reported insight.*

	Bias Blind-spot	Self-reported Insight					
		BCIS Self-certainty	BCIS Self-reflection	BCIS Cognitive Insight	pSCS Total	SRIS Self-reflection	SRIS Insight
HEXACO Honesty-Humility	-.21**	-.35***	.17*	.34***	-.05	.21**	-.01
HEXACO Emotionality	-.31***	-.30***	.33***	.40***	.06	.08	-.04
HEXACO Extraversion	.22**	.17*	-.20**	-.23**	.17*	.13	.26**
HEXACO Agreeableness	.10	-.18*	-.10	.06	.06	.16	.06
HEXACO Conscientiousness	-.04	-.02	-.01	.01	.09	.24**	.22**
HEXACO Openness	.32***	.02	.09	.04	.30***	.41***	.38***
PID-5 Negative Affectivity	-.28***	.33***	-.08	.26**	.11	.07	-.26**
PID-5 Detachment	-.06	.05	.08	-.03	-.14	-.10	-.23**
PID-5 Psychoticism	.06	.23**	.05	.11	.14	.01	-.32***
PID-5 Antagonism	.26**	-.02	.31***	-.22**	.13	-.12	.01
PID-5 Disinhibition	.16	.08	.18*	-.07	-.03	-.19*	-.23**
RSES Self-esteem	.23**	.15	-.26**	-.26**	.16	.09	.46***
PROMIS Anger	-.02	.01	.25*	.14	.14	.05	-.11
PROMIS Anxiety	-.15	-.12	.38***	.31***	.18*	.19*	-.26**
PROMIS Depression	-.04	-.05	.30***	.21**	.05	.04	-.26**

Note. *p<.05; **p<.01; ***p<.001. Higher bias blind-spot scores indicate a larger self-other discrepancy such that others are more prone to cognitive bias.
PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System; BCIS = Beck Cognitive Insight Scale; pSCS = Private Self-consciousness Scale; SRIS = Self-report Insight Scale.

Table 29. *Incremental validity of narcissism and psychopathy indicators over personality and self-esteem in predicting bias blind spot.*

Model	Step	Variable	ß	*p*	R	Δ R^2
1	1	HEXACO Extraversion	.21	.03	.22	
	2	HEXACO Extraversion	-.08	.50	.27	.03
		NPI LA	.22	.07		
2	1	HEXACO Extraversion	.21	.03	.22	
	2	HEXACO Extraversion	-.02	.89	.37	.09
		PPI-R FD	.38	.001		
3	1	HEXACO Extraversion	.21	.03	.22	
	2	HEXACO Extraversion	.23	.02	.31	.05
		PPI-R SCI	.22	.02		
4	1	HEXACO Openness	.32	<.001	.32	.08
	2	HEXACO Openness	.22	.02	.43	
		PPI-R FD	.30	.002		
5	1	HEXACO Openness	.32	<.001	.32	
	2	HEXACO Openness	.19	.002	.35	.02
		PPI-R SCI	.15	.10		
6	1	HEXACO Agreeableness	.10	.33	.10	
	2	HEXACO Agreeableness	.14	.14	.32	.09
		NPI LA	.31	.002		
7	1	HEXACO Agreeableness	.10	.33	.10	
	2	HEXACO Agreeableness	-.01	.93	.37	.13
		PPI-R FD	.37	<.001		
8	1	HEXACO Agreeableness	.10	.33	.10	
	2	HEXACO Agreeableness	.16	.12	.26	.06
		PPI-R SCI	.24	.02		

NPI = Narcissistic Personality Inventory; LA = Leadership/ Authority; PPI-R = Psychopathic Personality Inventory-Revised; FD = Fearless Dominance; SCI = Self-centered Impulsivity.

Table 30. *Incremental validity of narcissism and psychopathy indicators over personality in predicting self-reported cognitive insight.*

Model	Step	Variable	ß	*p*	R	Δ R^2
1	1	HEXACO Extraversion	-.23	.01	.23	
	2	HEXACO Extraversion	.04	.71	.45	.15
		NPI LA	-.47	<.001		
2	1	HEXACO Extraversion	-.23	.01	.23	
	2	HEXACO Extraversion	-.08	.39	.34	.06
		NPI GE	-.29	.01		
3	1	HEXACO Extraversion	-.23	.01	.23	
	2	HEXACO Extraversion	-.27	.003	.13	.07
		NPI EE	-.27	.003		
4	1	HEXACO Extraversion	-.23	.01	.23	
	2	HEXACO Extraversion	-.11	.34	.28	.02
		PPI-R FD	-.19	.10		
5	1	HEXACO Extraversion	-.23	.01	.23	
	2	HEXACO Extraversion	-.25	.01	.30	.04
		PPI-R SCI	-.20	.03		
6	1	HEXACO Extraversion	-.23	.01	.23	
	2	HEXACO Extraversion	-.24	.01	.32	.05
		PPI-R C	-.22	.02		
7	1	PID-5 Antagonism	-.22	.02	.22	
	2	PID-5 Antagonism	-.04	.68	.44	.15
		NPI LA	-.42	<.001		
8	1	PID-5 Antagonism	-.22	.02	.22	
	2	PID-5 Antagonism	-.10	.31	.34	.07
		NPI GE	-.28	.01		
9	1	PID-5 Antagonism	-.22	.02	.22	
	2	PID-5 Antagonism	-.13	.23	.28	.03
		NPI EE	-.19	.07		

NPI = Narcissistic Personality Inventory; LA = Leadership/ Authority; PPI-R = Psychopathic Personality Inventory-Revised; FD = Fearless Dominance; SCI = Self-centered Impulsivity.

Table 30 (continued). *Incremental validity of narcissism and psychopathy indicators over personality in predicting self-reported cognitive insight.*

Model	Step	Variable	ß	*p*	R	Δ R^2
10	1	PID-5 Antagonism	-.22	.02	.22	
	2	PID-5 Antagonism	-.18	.06	.31	.05
		PPI-R FD	-.23	.02		
11	1	PID-5 Antagonism	-.22	.02	.22	
	2	PID-5 Antagonism	-.15	.16	.26	.02
		PPI-R SCI	-.15	.15		
12	1	PID-5 Antagonism	-.22	.02	.22	
	2	PID-5 Antagonism	-.18	.05	.28	.03
		PPI-R C	-.18	.05		
13	1	RSES Self-esteem	-.32	<.001	.32	
	2	RSES Self-esteem	-.17	.09	.44	.09
		NPI LA	-.33	<.001		
14	1	RSES Self-esteem	-.32	<.001	.32	
	2	RSES Self-esteem	-.25	.01	.38	.05
		NPI GE	-.23	.02		
15	1	RSES Self-esteem	-.32	<.001	.32	
	2	RSES Self-esteem	-.40	<.001	.48	.13
		NPI EE	-.37	<.001		
16	1	RSES Self-esteem	-.32	<.001	.32	
	2	RSES Self-esteem	-.29	.01	.32	.00
		PPI-R FD	-.07	.52		
17	1	RSES Self-esteem	-.32	<.001	.32	
	2	RSES Self-esteem	-.35	<.001	.41	.07
		PPI-R SCI	-.27	.004		
18	1	RSES Self-esteem	-.32	<.001	.32	
	2	RSES Self-esteem	-.33	<.001	.39	.06
		PPI-R C	-.24	.01		

NPI = Narcissistic Personality Inventory; LA = Leadership/ Authority; PPI-R = Psychopathic Personality Inventory-Revised; FD = Fearless Dominance; SCI = Self-centered Impulsivity.

Table 31. *Correlations between personality and confidence, performance, and accuracy on overconfidence tasks.*

	Verbal			Quantitative			Trivia		
	Conf	Perf	Acc	Conf	Perf	Acc	Conf	Perf	Acc
HEXACO Honesty-Humility	.09	.01	-.01	.07	.07	-.08	-.14	-.12	.01
HEXACO Emotionality	-.04	.04	.13	.07	.13	.13	.03	.07	.05
HEXACO Extraversion	.14	.04	-.07	.04	-.02	-.08	-.04	-.06	-.05
HEXACO Agreeableness	.08	.14	.14	.07	.12	.06	-.16	-.01	.20**
HEXACO Conscientiousness	.00	-.09	-.06	-.05	-.16	-.10	-.15	-.02	.20**
HEXACO Openness	.27**	.12	-.08	-.02	.08	.00	-.01	-.08	-.15
PID-5 Negative Affectivity	.16	.06	.16	.06	.23**	.13	.06	.14	.00
PID-5 Detachment	.09	-.07	.07	.04	.08	.02	.14	-.13	-.15
PID-5 Psychoticism	.05	.10	.11	.09	.15	.11	-.08	.00	.03
PID-5 Antagonism	.02	.03	.06	.10	.03	.02	.18*	-.05	-.19*
PID-5 Disinhibition	.06	.05	.03	.12	.12	.00	.16	-.11	-.26**
RSES Self-esteem	.12	.09	-.01	.01	-.02	-.06	-.03	-.30	-.17
PROMIS Anger	-.11	-.14	.13	-.11	-.18*	.15	.04	.02	.08
PROMIS Anxiety	.07	-.01	.04	.08	.10	.07	-.01	.14	.10
PROMIS Depression	-.05	-.10	.04	.03	.03	.15	.07	.16	.09

Note. *p<.05; **p<.01; ***p<.001.
PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System; Conf = Confidence; Perf = Performance; Acc = Accuracy.

Table 32. *Correlations between personality and overconfidence indices.*

	Overprecision			Overplacement			Overestimation		
	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia
HEXACO Honesty-Humility	.08	-.01	-.04	-.02	-.05	-.01	.02	-.06	.04
HEXACO Emotionality	-.09	-.10	-.02	-.16	-.08	.11	-.20**	-.12	.01
HEXACO Extraversion	.09	.09	-.02	.10	.13	-.08	.08	.15	-.05
HEXACO Agreeableness	-.09	-.08	-.13	.01	-.13	-.14	.05	-.22**	-.26***
HEXACO Conscientiousness	.10	.16	-.11	-.04	.15	.09	-.02	.14	-.08
HEXACO Openness	.12	-.14	.04	.19*	-.13	.04	.28***	-.08	.06
PID-5 Negative Affectivity	-.02	-.13	-.05	-.17*	-.17*	.04	-.16	-.05	.03
PID-5 Detachment	.12	-.01	.20**	-.02	-.14	.15	.03	-.04	.22**
PID-5 Psychoticism	-.03	-.14	-.07	.02	-.13	-.04	-.07	-.17*	-.12
PID-5 Antagonism	.06	-.01	.19	.01	-.05	.13	.06	.04	.19*
PID-5 Disinhibition	.06	-.10	.21**	.09	-.12	.03	.07	-.06	.07
RSES Self-esteem	.01	.05	.18*	.00	.14	.24**	-.04	.16	.17*
PROMIS Anger	.07	.12	.02	-.05	.06	.07	-.10	.04	.00
PROMIS Anxiety	.08	-.04	-.11	.02	-.04	-.01	-.05	-.06	-.09
PROMIS Depression	.08	.00	-.06	.01	-.09	-.08	-.03	-.04	-.05

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$.
PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System.

Table 32. *Correlations between personality and overconfidence indices after controlling for intelligence.*

	Overprecision			Overplacement			Overestimation		
	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia
HEXACO Honesty-Humility	.06	-.08	-.03	-.10	-.01	-.01	.07	-.10	.04
HEXACO Emotionality	-.07	-.10	-.07	.00	-.09	.07	-.14	-.15	-.01
HEXACO Extraversion	.11	.08	.05	.23**	.21**	-.06	.16	.17*	-.03
HEXACO Agreeableness	-.05	-.01	-.06	-.17*	.09	-.14	.16	-.22**	-.23**
HEXACO Conscientiousness	.08	.16	-.04	.19*	-.11	.13	-.11	.15	-.04
HEXACO Openness	.08	-.17*	-.02	-.08	.27**	.00	.35***	-.09	.04
PID-5 Negative Affectivity	.07	-.12	-.02	-.12	-.12	.04	-.06	-.07	.02
PID-5 Detachment	.13	-.04	.13	-.22**	-.09	.14	.11	-.05	.20**
PID-5 Psychoticism	-.06	-.15	-.15	-.16	.02	-.05	.01	-.18*	-.15
PID-5 Antagonism	.13	.10	.13	.02	-.04	.11	.13	.16	.17*
PID-5 Disinhibition	.12	-.06	.17*	-.06	.17	.02	.16	-.06	-.05
RSES Self-esteem	.12	.12	.22**	.28***	.13	.24**	.11	.23**	.21**
PROMIS Anger	.07	.10	-.08	.03	-.11	.05	-.06	.08	-.03
PROMIS Anxiety	.14	-.03	-.15	-.03	.08	-.02	.09	-.07	-.11
PROMIS Depression	.03	-.02	-.09	-.18	-.07	-.07	-.06	-.06	-.07

Note. *p<.05; **p<.01; ***p<.001.
PID-5 = Personality Inventory for DSM-5 Personality Disorders; RSES = Rosenberg Self-esteem Scale; PROMIS = Patient Reported Outcomes Measurement Information System.

Table 33. *Loadings of personality scales onto 5 principal components.*

	Principal Components				
	1	2	3	4	5
NPI Leadership/Authority	.69	.13	-.40	-.08	-.20
PPI-R Social Influence	.67	.48	-.21	.17	-.07
NPI Grandiose Exhibitionism	.67	-.10	-.36	.06	-.16
PPI-R Rebellious Nonconformity	.65	-.25	.41	.25	.02
HEXACO Extraversion	.64	.52	-.23	.13	-.25
HEXACO Honesty-Humility	-.62	.38	.18	.02	-.05
HEXACO Emotionality	-.57	-.17	-.20	.45	-.48
PPI-R Stress Immunity	.55	.52	.15	-.22	.34
NPI Entitlement Exploitativeness	.26	-.69	-.23	-.14	.12
HEXACO Agreeableness	-.10	.62	.40	-.07	.20
PPI-R Machiavellian Egocentricity	.49	-.59	-.03	.27	.09
PPI-R Blame Externalization	-.04	-.54	.04	.35	.47
HEXACO Conscientiousness	-.25	.42	-.66	.04	.35
PPI-R Carefree Nonplanfulness	.13	-.19	.58	-.53	-.38
PPI-R Fearlessness	.50	-.02	.55	.27	.02
HEXACO Openness to Experience	.24	.26	.41	.38	.07
PPI-R Coldheartedness	.27	-.29	-.14	-.69	.12

Table 34. *Correlations between personality components and overconfidence indices.*

	Socially-desirable Adjectives Composite	Bias Blind Spot	Self-estimated IQ
PCA Component 1	.44***	.40***	-.10
PCA Component 2	.20**	.13	.01
PCA Component 3	-.15	.10	.04
PCA Component 4	.05	-.03	.08
PCA Component 5	-.07	.18*	-.13

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$. PCA = Principal Components Analysis.

Table 35. *Correlations between personality components and overconfidence indices.*

	Overprecision			**Overplacement**			**Overestimation**		
	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia	Verbal	Quantitative	Trivia
PCA Component 1	.12	.10	.19*	.16	.09	-.05	.17*	.17*	.06
PCA Component 2	.07	.09	-.06	.08	.07	-.07	.12	.01	-.12
PCA Component 3	-.08	-.26**	-.02	.07	-.32***	-.19*	.13	-.23**	-.06
PCA Component 4	.07	-.11	.00	-.07	-.15	.03	-.06	-.05	-.03
PCA Component 5	.05	.07	-.09	.05	.03	-.01	.03	.02	-.13

Note. $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$. PCA = Principal Components Analysis.