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SHORT REPORT

Cognitive performance and stress states in vulnerable and grandiose narcissism

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BACKGROUND
We examined the associations between grandiose narcissism (GN), vulnerable narcissism (VN), cognitive inhibition, and task-related state responses.

PARTICIPANTS AND PROCEDURE
Participants (N = 154; age: M = 23.60, SD = 3.71) completed measures of narcissism, performed a cognitive inhibition task (the antisaccade task), and reported stress states (distress, worry and engagement) before and after the task.

RESULTS
The results revealed that VN was negatively linked to cognitive inhibition. Furthermore, VN predicted higher levels of distress and lower levels of engagement during the task, whereas GN predicted higher engagement and lower distress.

CONCLUSIONS
These findings demonstrate a negative impact of VN on cognitive performance and stress responses during task performance. Understanding these dynamics enhances our knowledge of how narcissism may influence cognitive functioning.

KEY WORDS
inhibition; grandiose narcissism; vulnerable narcissism; stress states

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BACKGROUND

Narcissism is a personality trait characterized by an excessive sense of entitlement, disregard of others, and grandiose self-relevant fantasies. These tendencies may manifest in two major forms: grandiose and vulnerable narcissism. Grandiose narcissism (GN) is often characterized by an inflated positive self-image, high self-esteem, exhibitionism, entitlement, approach motivation, social boldness, self-confidence, arrogance, and a need to be admired by others (Sedikides, 2021). However, Bosson et al. (2008) demonstrated that high narcissism is not always connected with higher self-esteem. Moreover, GN positively correlates with extraversion and negatively with neuroticism and agreeableness. Vulnerable narcissism (VN) is characterized by hypersensitivity, anxiety, low self-esteem, defensiveness, and a sense of insecurity (Sedikides, 2021). It is positively correlated with neuroticism and negatively with extraversion and agreeableness (e.g., Maciantowicz & Zajenkowski, 2021).

NARCISSISM, COGNITIVE FUNCTIONING, AND STRESS STATES

Both forms of narcissism have been extensively studied in the context of emotional and social functioning, but they have been less frequently investigated in the context of cognitive performance. GN was typically unrelated to objectively measured cognitive performance (e.g., intelligence tests). However, grandiose narcissists exhibited overly positive self-estimates of their abilities (Zajenkowski et al., 2020). Much less is known about VN and cognitive functioning. Nevertheless, this form of narcissism has been reported to be associated with a wide range of negative emotions, including neuroticism, negative mood, anxiety, and depression (Jauk & Kaufmann, 2018; Maciantowicz & Zajenkowski, 2021). All these factors were found to impair cognitive performance, especially executive functioning (e.g. Matthews & Zeidner, 2012). Executive functions include three processes: working memory, switching, and inhibition. Inhibition is considered a type of executive function and has been defined as the ability to "deliberately inhibit dominant, automatic, or pre-potent responses when necessary" (Miyake et al., 2000, p. 50). Findings indicate that inhibition, but not switching and working memory, could potentially serve as a widespread factor across all executive functions (Miyake & Friedman, 2012) and represent a general cognitive control. Previous studies show that these kinds of processes might be poorer among people with a higher level of VN. VN relates to regulatory difficulties and it is a stronger and clearer relationship than between GN and regulation. It has been shown that VN is positively connected with deficits in affect regulation and distress intolerance (Underwood et al., 2021). These findings are quite consistent, and were also confirmed by a psychophysiology study which showed that VN is related to overall emotion regulation difficulties, but also to difficulties with impulse control (Zhang et al., 2015).

Emotional states during task performance have been conceptualized as stress states which reflects motivational, affective, and cognitive processes experienced during performance (Matthews & Zeidner, 2012). Within this concept, three factors were proposed: task engagement (i.e., interest, energy, motivation, and concentration); distress (negative mood, tension, and lack of confidence); and worry (task-irrelevant thoughts, self-focused attention, and low self-esteem). The self-report measure of these states is typically administered before and after a cognitive task. The post-task stress, controlling for pre-task, is considered an indicator of stress reactivity. Grandiose narcissists tend to self-enhance their intellectual abilities, which may protect them against experiencing stress when solving demanding cognitive tasks (Leniarska & Zajenkowski, 2022). Correspondingly, vulnerable narcissists showed higher stress while performing an intelligence test (Zajenkowski et al., 2020).

THE CURRENT STUDY

In the current study, we examined the association between GN and VN and a task measuring cognitive inhibition. We were interested in whether grandiose and vulnerable narcissism differ in cognitive control and how GN and VN are associated with state responses related to the performance of the inhibition task. In order to test these relationships, we conducted a cross-sectional study using measurements of narcissism and stress states validated in Polish language. In our study, we aimed to examine cognitive control. Therefore, we chose the antisaccade task as a validated and reliable example of a cognitive task used in a number of studies that measure general cognitive control (e.g. McDowell et al., 2005; Reuter et al., 2005). Taking into account the above-mentioned results showing differences between GN and VN in cognitive and emotional functioning, we hypothesize that difficulties with emotional control during task performance may reduce cognitive abilities only in the case of VN. Thus, we expected that VN would be negatively associated with cognitive inhibition (H1).

Moreover, we hypothesized that GN would correlate with lower levels of stress states (i.e., low distress, low worry, and high engagement; H2). By contrast, vulnerable narcissists frequently experience negative emotions in everyday life (Pilch et al., 2020) and are prone to stressful situations (Maciantowicz & Zajenkowski, 2021). Thus, we expected VN to correlate with increased task-related stress (i.e., high distress, high worry, and low engagement; H3). Additionally, we hypothesized that the effects of stress states will

account for the relationship found between VN and cognitive performance (H4).

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

Adult volunteers were recruited via social media and university announcements. Each participant was tested individually, in a laboratory at the University of Warsaw. A total of 154 subjects took part in the study (73 females, 69 males; 12 participants did not indicate sex). The mean age was 23.60 (*SD* = 3.71) with a range of 18-37. After providing informed consent, participants filled out questionnaires measuring narcissism and stress states. Next, they were administered the cognitive task and reported their post-task stress.

MEASURES

The Narcissistic Personality Inventory. GN was measured by the validated Polish adaptation (Bazińska & Drat-Ruszczak, 2000) of the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979), consisting of 34 items and a five-point response scale from 1 (*does not apply to me*) to 5 (*applies to me*). The original version contains 40 items divided into seven components: authority, exhibitionism, superiority, vanity, exploitativeness, entitlement, and self-sufficiency. The structure of the NPI was not replicated in its Polish validation; therefore we decided to use only the general score. Sample item: "I stand out from the crowd".

The Polish version of the Hypersensitive Narcissism Scale (HSNS; Czarna et al., 2014; Hendin & Cheek, 1997) was used to assess VN. This measure consists of ten items, and respondents were asked to provide their responses using a five-point Likert-like scale, with 1 representing *strong disagreement* and 5 indicating *strong agreement*. Sample item: "I don't like sharing credit with others".

The Dundee Stress State Questionnaire (DSSQ; see Matthews & Zeidner, 2012) was used to measure task-related stress. The short version of the questionnaire translated into Polish by Zajenkowski and Zajenkowska (2015) consists of 24 items, with responses provided on a 5-point scale. The DSSQ comprises three key factors: task engagement, which encompasses elements related to one's interest and focus on the task, including energetic arousal, motivation, and concentration; distress, which combines negative mood and tension with a sense of reduced confidence and perceived control; and worry, a cognitive factor characterized by self-focused attention, low self-esteem, and cognitive interference. Sample items: "I am motivated to do my best, I think about things that are important to me, I feel restless".

The antisaccade task. Cognitive inhibition was measured with the antisaccade task in the version proposed by Chuderski et al. (2012). In the antisaccade task, a central fixation point was displayed on the screen for a duration ranging from 1500 to 2500 milliseconds. Following this, there was a brief 200-millisecond presentation of rapidly flashing black square on either side of the screen. Subsequently, a small arrow pointing in one of three directions (down, right, or left) appeared on the side opposite to the square. After 150 milliseconds, this arrow was replaced with a mask. Participants were asked to indicate the direction of the arrow by pressing the corresponding key. The total score was determined by the number of accurately detected arrow directions out of a total of 60 trials.

RESULTS

To verify the hypotheses, we carried out correlation and regression analyses in SPSS version 29.

Correlations and descriptive statistics are presented in Table S1 included in Supplementary materials https://osf.io/yn6mx/. We found that VN was negatively associated with inhibition, supporting H1. Moreover, VN was associated with increased stress before the task (worry) and after the task (distress, worry) and a lower level of engagement. GN showed a significant positive correlation with pre- and post-task engagement and a negative correlation with pre-task worry and post-task distress.

The regressions presented below analyzed the predictive ability of VN and GN (Table 1) for post-task stress levels, considering baseline stress levels (added in the first step). The results indicated that VN significantly predicted lower task engagement and higher distress. GN was a significant predictor of increased task engagement and decreased distress, but not worry.

Regression analysis exploring the variance of inhibition is presented in Table 2; VN was entered in the first step, followed by stress states in the second step. The effect of VN was significant only in the first step of the analysis. All effects found in the second step were non-significant. Overall, the second step model was non-significant.

DISCUSSION

We found that VN was negatively connected with inhibition, which supports H1. The findings showed that VN tends to experience maladaptive stress states (low task engagement, high distress), in contrast to GN, confirming H2 and H3, which has the potential of influencing VN cognitive performance (H4). Negative emotionality experienced by those with high VN aligns with previous research (Maciantowicz & Za-

Table 1

Regression analyses for vulnerable narcissism (VN) and grandiose narcissism (GN)

Predictors	Dependent variables					
	Post-task engagement		Post-task worry		Post-task distress	
	β	R^2	β	R^2	β	R^2
Models for vulnerable narcissism (VN)						
Pre-task engagement	.06	.09***	Pre-task worry	.75*** .57***	Pre-task distress	.17 .09***
VN	−.32***		VN	.04	VN	.27***
	$F(2, 150) = 8.21$, $p < .001$		$F(2, 150) = 104.18$, $p < .001$		$F(2, 150) = 8.67$, $p < .001$	
Models for grandiose narcissism (GN)						
Pre-task engagement	−.01	.02*	Pre-task worry	.77 .58***	Pre-task distress	.22** .13***
GN	.19*		GN	.03	GN	−.34***
	$F(2, 150) = 2.79$, $p = .065$		$F(2, 150) = 103.86$, $p < .001$		$F(2, 150) = 12.43$, $p < .001$	

Note. This table represents the second step of the analyses. Baseline stress states were controlled by entering in the first steps. *$p < .05$, **$p < .01$, ***$p < .001$.

Table 2

Regression analysis with inhibition as dependent variable

Dependent variable: Inhibition	ΔR^2	β
Step 1	.03*	
Vulnerable narcissism		−.16*
$F(1, 150) = 4.03$, $p < .05$		
Step 2	.04#	
Vulnerable narcissism		−.08
Post-task engagement		.17
Post-task distress		.01
Post-task worry		−.14
$F(4, 147) = 2.79$, $p < .05$		

Note. *$p < .05$, #$p = .076$.

jenkowski, 2021; Pilch et al., 2020), and it may suggest that these factors have some potential to impact cognitive performance in VN (H4). The poorer cognitive performance in VN may also be explained by insecurity and poorer cognitive self-evaluation (Zajenkowski et al., 2020). Self-doubting patterns of VN can influence cognitive performance, whereas narcissistic grandiosity might be protective in situations in which confidence may be challenged (such as cognitive performance; see Zajenkowski et al., 2021). The current study is an attempt to extend knowledge about differences between vulnerable and grandiose narcissism in the context of cognitive performance. The obtained results may be important for clinical approaches as nomological networks of both types of narcissism are important for creating therapeutic protocols. Better understanding of the ways of functioning may have implications for working with patients and clients with narcissistic traits.

Our study has certain limitations. First, the obtained correlation of VN and cognitive performance is relatively small, which urges caution when interpreting the results of the present study. Since many maladaptive components (e.g., worse mood, neuroticism, higher antagonism) coexist with narcissism at higher levels of narcissism (Jauk & Kaufmann, 2018), future studies may analyze individuals with higher narcissism, increasing effect sizes. Moreover, our sample size was rather small, which probably influenced the statistical analysis and unfortunately limits the generalizability of the results obtained to the population. Furthermore, we relied on self-report measures that can be biased, as they rely on individuals' perceptions of themselves. To enhance the reliability, future research should incorporate alternative measures of emotional state (e.g., using electroencephalography).

Since VN was in the past connected with greater emotional reactions in experimental procedures (e.g. Maciantowicz & Zajenkowski, 2021), the described effects should be in future explored under emotional induction, which may enhance them, such as negative emotional induction or ego-threatening procedures.

Supplementary materials are available on the journal's website.

Disclosures

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The study was approved by the Ethics Committee at the Faculty of Psychology at the University of Warsaw (date of approval: May 2018).
The authors declare no conflict of interest.

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