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Why Narcissists are more likely to be aggressive? The role of hostile attribution bias

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Abstract

Narcissism is commonly associated with aggressiveness, but the underlying mechanisms of this relationship are still not yet fully understood. Based on previous research showing that narcissists are suspicious, the present research investigated whether hostile attribution of intent could explain the relationship between narcissism and aggression. In Study 1, participants (N=347) completed a self-report measure of grandiose narcissism (Narcissistic Personality Inventory) and a measure of hostile attribution bias (Social Information Processing-Attribution Emotion Questionnaire). Analyses revealed that narcissism was a strong predictor of hostile attribution bias, angry feelings, and aggressive reactions. Moreover, hostile attribution bias appeared to mediate the relation between narcissism and aggressive reactions. Study 2 (N = 130) replicated the findings of Study 1 using a measure of vulnerable narcissism (Hypersensitive narcissism scale). In addition, perspective taking was manipulated in Study 2 and the results showed that participants in the high perspective taking condition (vs. low perspective taking) were less likely to make hostile attributions. These findings suggest that hostile attribution of intent is particularly relevant to understand narcissistic aggression. (170 words)

Keywords: Hostile attribution bias, Narcissism, Aggression

Why Narcissists are more likely to be aggressive? The role of hostile attribution bias

Self-enhancement and self-protection are two of the basic motivations of human beings (Alicke & Sedikides, 2009). People are strongly motivated to hold a positive view of the self, and any event that could damage their self-image is perceived as a threat. It is thus no surprise that negative social feedback generate strong negative affects and aggressive reactions (Bushman & Baumeister, 1998). Ego-threat, as a form of insults, devaluation of the public image, belittling remarks has been found to be a precursor of violent crimes, assaults, rapes, or domestic violence (e.g., Berkowitz, 1978). However, not everyone is likely to react aggressively to ego-threat. It has been argued that people who hold an inflated view of the self would be more likely to see negative feedback as inconsistent with their self-view, and thus more threatening (Baumeister et al., 1996). Bushman and Baumeister (1998) have shown that the effect of ego-threat on aggression is stronger for narcissistic individuals. In their experiment, narcissistic participants were more likely than were less narcissistic participants to behave aggressively toward people who criticize them. These findings have been corroborated by numerous studies showing a relation between narcissism, threatened egotism, and violence among clinical and non-clinical samples (Kjærvik & Bushman, 2021).

In their meta-analysis, Kjærvik and Bushman demonstrated that the link between narcissism and aggression is particularly consistent given that narcissism was related to all forms (i.e., direct or indirect, verbal or physical) or function (i.e., proactive or reactive) of aggression. Moreover, the meta-analysis shows that the narcissism-aggression link was consistent across different dimensions and conceptualization of narcissism (e.g., pathological or normal narcissism, vulnerable or grandiose narcissism). This is of importance because numerous scholars have argued that narcissism is not a unitary construct but rather is composed of different dimensions or factors (e.g., Du et al., 2022). On a broad sense,

narcissism is characterized by an inflated sense of self-importance and an unreasonable sense of entitlement (Kjærvik & Bushman, 2021). Within this conceptualization, numerous studies have stressed out the importance to separately investigate two seemingly opposed subtypes of narcissism, grandiose narcissism and vulnerable narcissism. Whereas grandiose narcissism is characterized by high self-esteem, low emotional distress and extraversion, vulnerable narcissism is characterized by low self-esteem, high emotional distress and introversion (Krizan & Johar, 2015).

Narcissism and aggression: the role of hostile attribution of intent

Several explanations have been proposed to account for the relation between narcissism and aggression. Some of these explanations have focused on the instrumental value of aggression for narcissists, arguing that aggression is a means to deter and prevent criticism, to regain a sense of dominance and control over their social environment (Baumeister et al., 1996). Other explanations have highlighted the hostile component of aggression arguing that narcissists experience strong negative affects (e.g., shame and anger) following negative feedback which facilitate aggressive reactions (Krizan & Johar, 2015). Beside these explanations, it has been suggested that narcissistic aggression is not necessarily determined by the reaction to a given stimulus (e.g., a negative feedback), but also by the perception and the interpretation of the stimulus itself. Narcissists would perceive negative feedback as more threatening precisely because they would attribute more hostile intent to others. For instance, it has been shown that narcissists report more interpersonal transgressions and consider themselves the victims of these transgressions more often than non-narcissists (McCullough et al., 2003). Thus, a potential explanation for the link between narcissism and aggression lies in the cognitive appraisal of social interactions.

Cognitive appraisal is considered as a core determinant of aggression (e.g., General Aggression Model, Anderson & Bushman, 2002; Social information processing theory, Crick

& Dodge, 1994). It has become widely accepted that cognition plays an important role in how individuals interpret situations, attribute intentions, and select behavioral responses. More specifically, it has been shown that aggressive individuals were more likely to interpret ambiguous situations as hostile: In comparison to nonaggressive boys, aggressive boys tended to perceive more hostility and to react more aggressively when a peer's intention is ambiguous. However, when a peer's intention is unambiguous, both aggressive and nonaggressive boys reacted identically (Dodge, 1980). Numerous works, both among children and adults, both among clinical and non-clinical samples have confirmed that the tendency to attribute hostile intent about others' ambiguous behavior is a key determinant of aggressive reactions (e.g., Klein Tuente et al., 2019).

Subsequent research has investigated developmental, cognitive, and emotional factors that could lead to a hostile attribution bias (HAB). Among these factors, the ability to adopt the perspective of others could be to be an important predictor of HAB (Choe et al., 2013). For instance, it has been shown that individuals who are high in self-focused attention are more likely to respond negatively to an ambiguous rejection by a peer than are individuals who are low in self-focused attention (Fenigstein, 1979). Conversely, asking people to adopt a decentered mindset decreases HAB (Van der Schans et al., 2020). Moreover, individuals with deficits in theory of mind (which encompasses perspective taking) have an increased tendency to make personal (vs. situational) attributions about others' negative behaviors (Kinderman et al., 1998). The role of perspective taking in explaining the hostile attribution of intent is particularly of interest when studying narcissistic aggression precisely because narcissists are self-centered and lack perspective-taking abilities (Urbonaviciute & Hepper, 2020). Importantly, it should be noted that low affective and cognitive empathy, which has been related to hostile attribution bias, are characteristic of both vulnerable and grandiose narcissism (Urbonaviciute & Hepper, 2020). Thus, if perspective taking plays a role in the

relationship between narcissism and aggression, both grandiose and vulnerable narcissists should display a HAB.

Several previous studies have already investigated the plausible relation between narcissism and HAB. Edwards and Bond (2012) have found a small but significant relationship between narcissism and the HAB among a population of mentally disordered offenders. However, it is unsure whether this finding is due to the fact that the majority of the sample was diagnosed with schizophrenia. Two recent studies on non-clinical samples have been done and report mitigated findings. On the one hand, Law and Falkenbach (2018) conducted a correlational study and found no association between narcissism, measured with the Narcissist Personality Inventory and hostile attributions, measured with an attributional style questionnaire. On the other hand, Hansen-Brown and Freis (2021) have measured in two studies vulnerable narcissism, grandiose narcissism and hostile attributions and they found that vulnerable (but not grandiose) narcissism was correlated with HAB.

Objectives

Thus, the aim of the present research is to further investigate the relationship between narcissism and the hostile attribution bias. First, a valid and reliable measure of HAB, the Social Information Processing- Attribution and Emotional response Questionnaire (Coccaro et al., 2009) will be used. As the previous studies (Hansen-Brown & Freis, 2021; Law & Falkenbach, 2018) used measures of hostile attributions for which the validity has not been assessed yet, it is necessary to strengthen these conclusions. Second, different measures of narcissism (grandiose narcissism in Study 1 vs. vulnerable narcissism in Study 2) will be used in order to test whether the relation between narcissism and HAB could be generalized to both grandiose and vulnerable narcissism. Third, the current research will also assess emotional and behavioral reactions associated with these attributions of intentions. Emotional processes have been integrated into the Social Information Model given the interplay between cognition

and emotion, and it is particularly of importance given the emotional reactivity of narcissists (Emmons, 1987). Fourth, the assessment of behavioral intentions will allow us to test the mediating role of HAB on the relationship between narcissism and aggressive reactions. Finally, the role of perspective taking on the hostile attribution bias will be experimentally explored to shed light on a proposed mechanism linking narcissism and hostile attribution of intent.

Study 1

Method

Participants

A total of 347 participants from the general population completed the online survey and were included in the present study (81% females, *Mage* = 27.1, *SD* = 8.1, age range 18-65 years). The inclusion criteria were being able to speak and understand French and being older than 18 years old and younger than 65. Participants were recruited using a convenience sample approach. An invitation to participate in this study was sent through social networks (e.g., Facebook) and through different forums and blogs. In order to obtain a broader sample, the study was posted in different groups/boards. The sample size in this study was determined by the availability of participants. Entering the sample size into a sensitivity power analysis with the R package "pwr", we would have been able to detect a minimal effect size of $r = .15$ for the relationship between narcissism and HAB, given $\alpha = 0.05$ (two-tailed) and power = 0.80.

Materials and procedure

After obtaining informed consent, participants completed the questionnaire in a fixed order. They first completed the Narcissistic Personality Inventory, then the measure of hostile attribution bias, and finally the demographic measures. All measures, manipulations, and exclusions in the study are disclosed. No additional data were collected once data analysis was started.

Narcissism. Grandiose narcissism was measured using the French version (Braun et al., 2016) of the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988). The 40-item questionnaire had to be answered on a 5-point scale (1 = not at all, 5 = very much). Sample items from the scale are "If I ruled the word it would be a better place" and "I'm going to be a great person". Participants' ratings on all 40 items were averaged to create a total score of grandiose narcissism (M = 2.6, SD = 0.6). The Cronbach's alpha of the scale was 0.92 and the McDonald's omega (ω) was 0.92.

Hostile attribution bias. To measure hostile attribution bias, a French translated version of the Social information processing – Attribution and Emotional Response Questionnaire was used (SIP-AEQ; Coccaro et al., 2009). The original version of the questionnaire was translated and back translated. The instrument consists of 8 vignettes describing ambiguous negative social interactions (e.g., "One of your co-workers bumps your arm and spills your coffee over your shirt"). For each vignette, four possible explanations of the character's behavior were proposed and respondents had to rate the probability (0 = *not at all likely* to 3 = *very likely*) of each explanation. Four types of attribution of intention were assessed: direct hostile intent (e.g., "My co-worker wanted to burn me with hot coffee"), indirect hostile intent (e.g., "My co-worker wanted to make me look bad to the customer"), instrumental non-hostile intent (e.g., "My co-worker was focused on the meeting), and benign intent (e.g., "My co-worker did it by accident"). The HAB score was computed by averaging the responses of the 16 questions (two for each vignette) that assessed direct and indirect hostile intent (α = 0.85, ω = 0.86). The correlation between direct and indirect hostile intent was r = .74, p < .001. In addition, each vignette was followed by two items measuring angry feelings ("How likely is it that you would be angry if this happened to you") and aggressive reactions ("how likely is it that you would respond aggressively if this happened to you"). The anger and aggressive intent subscales showed good internal consistencies (α = 0.79 and 0.87

respectively, ω = 0.80 and 0.87). It should be noted that the scores and reliability indices observed in this study are similar to the results obtained in the original study validating the SIP-AEQ (Coccaro et al, 2009).

Results and discussion

Descriptive statistics and zero-order correlations for main variable are presented in Table 1.

(Insert Table 1 here)

Prediction of hostile attributions

To test the relation between grandiose narcissism and HAB, grandiose narcissism was entered as a predictor in a multiple regression model. Because previous studies have shown moderating effects of age and gender on the relationship between narcissism, HAB and aggression (e.g., Zajenkowska & Rajchert, 2020), these variables were also entered as predictor variables along with the second order and third order interaction terms. A significant model emerged, $F(7,339) = 2.29$, $p = 0.027$ that explained 5% of the variance in hostile attribution scores. Grandiose narcissism was significantly related to HAB, $b = .13$, $SE = .05$, $t(339) = 2.43$, $p = 0.015$, 95% CI [0.02, 0.24]. No other effects were significant.

Mediation analysis

To test the hypothesis that HAB mediates the relationship between grandiose narcissism and aggressive reactions, a joint significance test was conducted (Yzerbyt et al., 2018). According to the joint-significance test, an indirect effect can be claimed when both the effect of the independent variable on the mediator variable and the effect of the mediator variable on the dependent variable is simultaneously significant. Thus, multiple regression analyses were performed first to determine whether: (1) Grandiose narcissism was associated with aggressive reactions (2) Grandiose narcissism was associated with HAB; (3) both Grandiose narcissism and HAB were associated with aggressive reactions. In order to examine the magnitude and confidence interval of indirect effects, we opted to use the Monte Carlo test as suggested by Yzerbyt et al. (2018). This test employs a repeated random sampling procedure to

compute magnitude and confidence intervals of indirect effects (the product of the path linking the independent variable to the mediator and linking the mediator to the dependent variable).

Thus, we first tested whether grandiose narcissism had an effect on aggressive reactions. This analysis revealed a significant effect, $b = 0.33$, $SE = .065$, $t(345) = 5.13$, $p < .001$, 95% CI [0.20, 0.46]. Then, we tested the indirect path from grandiose narcissism to aggressive reactions through HAB. This analysis revealed a significant effect of grandiose narcissism on HAB, $b = 0.13$, $SE = .04$, $t(345) = 2.87$, $p = .004$, 95% CI [0.04, 0.21] and a significant effect of HAB on aggressive reactions while controlling for grandiose narcissism, $b = 0.67$, $SE = .07$, $t(344) = 9.59$, $p < .001$, 95% CI [0.53, 0.81]. Consistently with this analysis, the Monte Carlo confidence interval for the indirect effect did not contain 0, 95% CI [0.025; 0.149]. Finally, the effect of grandiose narcissism on aggressive reactions after controlling for HAB was still significant, $b = 0.25$, $SE = .06$, $t(344) = 4.24$, $p < .001$, 95% CI [0.13, 0.36] (see Figure 1). Thus, the link between grandiose narcissism and aggressive reactions was statistically explained by the tendency to attribute hostile intents.

(Insert Figure 1 about here)

These results provide initial evidence of the relation between narcissism and hostile attribution bias. However, a potential limitation of Study 1 is that narcissism was measured using the Narcissistic Personality Inventory, which mostly capture the grandiose facet of narcissism. Given that a specific measure of vulnerable narcissism has not been included in this study, we cannot draw conclusions about the possible divergent results between the two sub-dimensions of narcissism and the hostile attribution of intent. Given this limitation, a second study was conducted to test relation between vulnerable narcissism and aggression using the same procedure and the same measure of HAB, which allows comparing both studies. Additionally, the underlying mechanisms that could explain the relation between narcissism and hostile attribution bias were not assessed Study 1. The role of perspective taking seems a promising avenue to explore because narcissists lack perspective taking

abilities (Urbonaviciute & Hepper, 2020) and perspective taking has been related to hostile perception of others (e.g., Choe et al., 2013). Thus, we took the opportunity of this study to test whether perspective taking could increase the hostile attribution of intent.

Study 2

The aim of this study was twofold. First, we aimed to complete the results of Study 1 which shows a correlation between grandiose narcissism and HAB, by testing the link between vulnerable narcissism and HAB. Second, Study 2 aimed at exploring a potential mechanism of the narcissism-HAB relationship by testing whether experimentally induced perspective taking would decrease HAB.

Method

Participants and design

In this study, 130 French participants (65% females, M_{age} = 41.5, *SD* = 17.8, age range 18-67 years) were recruited online to participate in a web-based experiment. As in Study 1, data were collected through convenience sampling with the help of voluntary research assistants who shared the study on social media. The experiment had a between-subjects design, with participants randomly assigned to one of the two conditions: High perspective taking (N = 67) or low perspective taking (N = 63). A sensitivity analysis, computed with the R package "pwr", indicated that this sample size (N = 130) was sufficient to detect a correlation of at least r = .24 for the narcissism-HAB relationship, and a d = .35 for the effect of perspective taking on HAB, given α = 0.05 (two-tailed) and power = 0.80.

Materials and procedure

Participants were informed that the study would address "perceptions of social experiences and decision-making." After giving informed consent, participants were asked to complete an online survey. They first completed a measure of vulnerable narcissism, the Hypersensitive narcissism scale (HSNS; Hendin & Cheek, 1997). The 10-item questionnaire

had to be answered on a 5-point scale (1 = not at all, 5 = very much). Participants' ratings on all 10 items were averaged to create a total score of vulnerable narcissism (M = 2.9, SD = 0.5). The Cronbach's alpha of the scale was 0.60 and the McDonald's omega (ω) was 0.57. Then, participants were asked to complete a five-minute writing task about a specific experience from their life in which they had a conflict or disagreement with someone else, and participants were instructed to either describe the conflict/disagreement from their own perspective (low perspective taking) or from the perspective of the other person(s) involved (high perspective taking). This manipulation was proven effective in inducing perspective taking in previous studies (e.g., Davis et al., 1996). To ensure that participants were sufficiently engaged in the writing tasks, this section of the survey was timed, such that participants could not move on to the next part of the study until they had been writing for a minimum of five minutes. Finally, participants completed the same measure of hostile attribution bias as Study 1.

Results and discussion

(Insert Table 2 here)

Prediction of Hostile attributions

To test the relation between perspective taking, vulnerable narcissism and HAB, we computed a multiple regression model. Perspective taking was contrast coded (-1, +1) and entered as a predictor in the regression as well as vulnerable narcissism and their interaction term. As in Study 1, age and gender were entered as covariates. A significant model emerged, $F(5,124) = 5.14$, $p < .001$ that explained 17% of the variance in hostile attribution scores. Vulnerable narcissism was significantly related to HAB, $b = .26$, $SE = .07$, $t(124) = 2.43$, $p < .001$, 95% CI [0.12, 0.40]. Moreover the effect of perspective taking on HAB was significant, $b = .08$, $SE = .03$, $t(124) = 2.44$, $p = .016$, 95% CI [0.02, 0.15], indicating that participants in the low perspective taking (M = 0.82, SD = 0.43) were more likely to display a hostile

attribution bias than participants in the high perspective taking condition (M = 0.65, SD = 0.39). No other effects were significant. Further analysis found that differences between participants in the low and high perspective taking were not significant for the attribution of instrumental intent, benign intent, angry feelings and aggressive reactions, *ps* >.55.

Mediation analysis

As in Study 1, we tested whether HAB mediated the relationship between vulnerable narcissism and aggressive reactions. First, we examined whether vulnerable narcissism had an effect on aggressive reactions. This analysis revealed a significant effect, b = 0.33, SE = .10, $t(128) = 3.33$, p = .001, 95% CI [0.13, 0.53]. Then, we tested the indirect path from vulnerable narcissism to aggressive reactions through HAB. This analysis revealed a significant effect of vulnerable narcissism on HAB, b = 0.28, SE = .07, $t(128) = 4.19$, $p <$ .001, 95% CI [0.15, 0.41] and a significant effect of HAB on aggressive reactions while controlling for vulnerable narcissism, b = 0.59, SE = .12, $t(127) = 4.82$, $p < .001$, 95% CI [0.35, 0.83]. Consistently with this analysis, the Monte Carlo confidence interval for the indirect effect did not contain 0, 95% CI [0.073; 0.281]. Finally, the effect of vulnerable narcissism on aggressive reactions after controlling for HAB was no longer significant, b = 0.17, SE = .09, $t(127) = 1.71$, p = .09, 95% CI [-0.03, 0.36] see figure 2). Thus, the link between vulnerable narcissism and aggressive reactions was statistically explained by the tendency to attribute hostile intents.

(Insert Figure 2 about here)

General Discussion

The main objective of this study was to evaluate the relationship between narcissism and the inference of hostile intent. Using a valid and reliable measure of hostile attribution bias, this research provides support for the expected positive association between narcissism and the hostile attribution bias in an adult general population sample. This finding suggests

that narcissism could affect social perception in leading narcissists to infer hostile intentions to others. This is consistent with previous studies reporting that narcissists are more suspicious, are less trusting of others, and report being more frequently victims of transgressions from others (e.g., Krizan & Johar, 2015; McCullough, et al., 2003).

The fact that narcissists display a hostile attribution bias helps explain the relationship between narcissism and aggression. Perceiving that others has malevolent intentions toward us is a powerful predictor of aggressive reactions (Klein Tuente et al., 2019). The present study corroborates this assertion as the results show that hostile attribution bias mediates the relationship between narcissism and aggressive reactions. The more narcissistic people are, the more they interpret another person's intentions as hostile, which leads to increase in aggressive reactions. Consistently, the results also show that narcissism was positively associated with angry feelings. People high in narcissism reported that they would be more angry if they faced these situations.

The role of hostile attribution bias in the narcissism-aggression relationship adds interesting new findings on the causes of narcissistic aggression. Previous studies have demonstrated that narcissists display strong affective and behavioral reactions to potential threats (Krizan & Johar, 2015). The present work complements these findings in demonstrating that these reactions could be driven, in part, by the cognitive appraisals of social interactions. A potential explanation to account for the link between narcissism and the hostile attribution of intent relies on the fact that narcissists display deficit in theory of mind, perspective taking and empathy (Urbonaviciute & Hepper, 2020). The results of the present research give credence to this hypothesis as Study 2 found that experimentally manipulating perspective taking could decrease the attribution of hostile intent. However, it is still not clear whether the explanation is related to capacity or to motivation. Are narcissists less capable of perspective taking or simply less motivated? It has been suggested that a distinction could be

drawn between socially competent narcissist (labeled as grandiose narcissists), for whom the apparent lack of perspective taking would be mainly caused by a lack of motivation, and socially less competent narcissist (labeled as vulnerable narcissists), for whom the lack of perspective taking would reveal social skill deficits (Urbonaviciute & Hepper, 2020).

These findings have implications for the prevention of narcissistic aggression. As shown in Study 2, interventions aiming at reducing the hostile attribution bias could result in a reduction in aggression among narcissistic individuals. In this line, a recent study demonstrated that decentration, a specific component of mindfulness, could decrease the hostile attribution bias (Van der Schans et al., 2020). Thus, the practice of mindfulness seems a promising path to investigate as a contribution to the diminution of (narcissistic) aggression.

Limitations and future directions

Several limitations of the study's design and results should be noted. First and foremost, the correlational nature of the data does not allow us to support causal inferences. If the effect of narcissism on hostile attribution bias is a prime explanation for their positive association, the causal relationship could not be established. The test of the mediation model in the analysis demonstrates the statistical plausibility of the proposed causal relationships between narcissism, hostile attribution bias and aggressive reactions, but warrant further inquiry. Moreover, the studies mainly rely on participants' self-assessment, which could lead to several bias (e.g., desirability bias, recall bias). A possibility to overcome self-report bias would be to adopt a longitudinal design by collecting two sets of data at different time points.

Second, the underlying mechanisms that could explain the relation between narcissism and hostile attribution bias need to be further investigated. Study 2 showed that increasing perspective taking could decrease the hostile attribution bias. However, in order to demonstrate that perspective taking is a potential mechanism linking narcissism and HAB,

further studies should demonstrate that it mediates the relationship between narcissism and HAB.

Third, results show that both vulnerable and grandiose narcissism were linked to hostile attribution. However, the fact that vulnerable narcissists have been depicted as socially anxious, less self-confident, and particularly sensitive to what other think of them has led some researchers to postulates that only vulnerable narcissists would display a hostile attribution bias (e.g., Krizan & Johar, 2015). In line with this, Hansen-Brown and Freis (2021) have found that hostile attribution bias was positively associated with vulnerable narcissism but not with grandiose narcissism. I argued in the present research that the relationship between narcissism and the hostile attribution of intent could be explained by the fact that narcissists display a lack of perspective-taking, which in turn increases the likelihood to perceive others' actions as hostile. If this explanation holds, there is no reason to expect differences between vulnerable and grandiose narcissism because they both lack perspective taking (Urbonaviciute & Hepper, 2020). However, another possibility is that the vulnerable narcissism - HAB and the grandiose narcissism-HAB relationships are supported by distinct and specific mediators and/or moderators. Thus, future studies are needed to address the specificity of grandiose and vulnerable narcissism in relation to the hostile attribution of intent and aggression. For instance, the role of provocation could be investigated since it has been shown that the relation between narcissism and aggression is stronger under provocation but still significant without provocation (Kjærvik & Bushman, 2021). In addition, the consideration of different types of aggression (i.e., proactive vs. reactive) could be relevant to the question at hand because previous studies have shown that vulnerable narcissism is more strongly associated with proactive aggression whereas vulnerable narcissism is more strongly associated with reactive aggression (e.g., Du et al., 2022).

Lastly, the majority of the study sample was female (82%), which limits the generalizability of the results to the general population. To this respect, some previous studies have shown that the relationship between hostile attribution of intent and aggression was observed for men but not for women (Zajenkowska & Rajchert, 2020). However, no main or interactive effects of gender on either hostile attribution of intent nor aggressive reactions were found in the present study.

Despite these limitations, the present study provides a contribution to the comprehension of the narcissism-aggression relationship. By analyzing the relation between narcissism and the hostile attribution of intent, we demonstrate that narcissists are more likely to attribute hostile intent to others' behavior, which is associated with aggressive reactions. This is in line with social-cognitive models of aggression (e.g., Anderson & Bushman, 2002; Crick & Dodge, 1994) that proposes aggression to be driven by the cognitive appraisals of social interactions. Thus, this research shed light on the sociocognitive aspects of narcissistic aggression.

Ethical Compliance section

Compliance with Ethical Standard

All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Bordeaux committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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Conflict of Interest

The author declares that he has no conflict of interest.

Informed Consent

Informed consent was obtained from all participants included in the study.

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Data Availability Statement

De-identified data and materials for the experiments are posted on the Open Science Framework: https://osf.io/aws2x/?view_only=2db1626d1ce2410babdb7c3e4209b811

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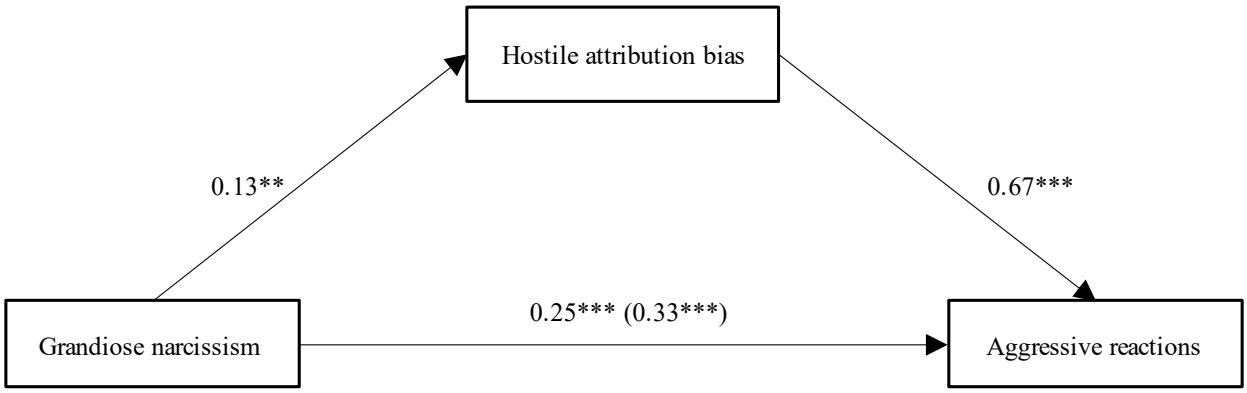
Table 1

Means, standard deviations and bivariate correlations of main variables

	M	SD	Grandiose narcissism	HAB	Angry feelings	Aggressive reactions
Grandiose narcissism	2.58	0.56				
HAB	0.87	0.47	.15**			
Angry feelings	1.81	0.58	.23***	.57***		
Aggressive reactions	1.02	0.69	.27***	.48***	.64***	

Notes. *$p < .05$, **$p < .01$, ***$p < .001$

Figure 1.
Regression coefficients for the relationship between grandiose narcissism and aggressive reactions as mediated by hostile attribution bias.



Note. The number in parentheses represents the total effect of narcissism (without the mediator in the model). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed).

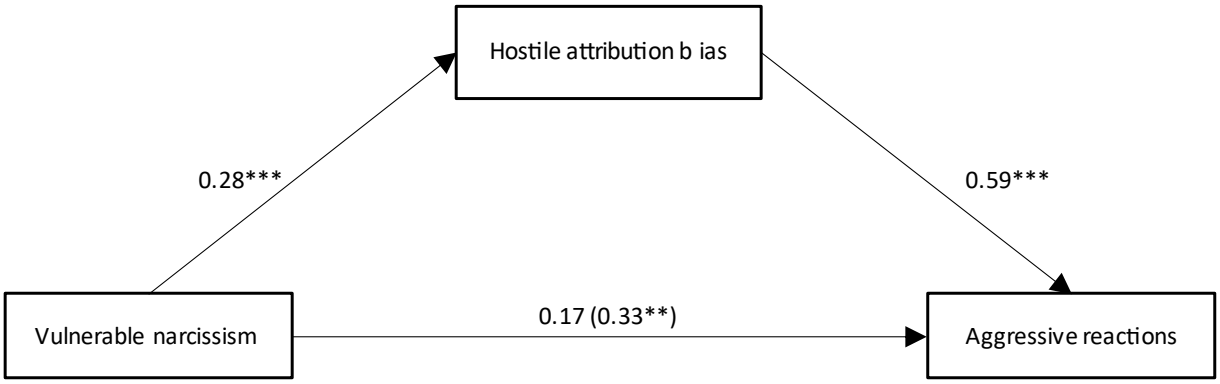
Table 2

Means, standard deviations and bivariate correlations of main variables

	M	SD	Vulnerable narcissism	HAB	Angry feelings	Aggressive reactions
Vulnerable narcissism	2.86	0.52				
HAB	0.74	0.42	.35***			
Angry feelings	1.64	0.48	.23**	.27**		
Aggressive reactions	1.00	0.61	.28**	.45***	.46***	

Notes. *$p < .05$, **$p < .01$, ***$p < .001$

Figure 2.
Regression coefficients for the relationship between vulnerable narcissism and aggressive reactions as mediated by hostile attribution bias.



Note. The number in parentheses represents the total effect of narcissism (without the mediator in the model). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed).