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Association between pathological narcissism and emotion regulation: the role of self-mentalizing?

Short title: Mentalizing and emotions in narcissism

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Abstract

Pathological narcissism (PN) is a common psychopathological issue leading to maladaptive strategies to cope with self-esteem threats, including self enhancement and exploitation (grandiose strategies) or internalized shame, depression, and social withdrawal (vulnerable strategies). Mentalizing is a key process regulating self and other representations and their associated emotions. Patients with pathological narcissism further struggle with emotion dysregulation (ED), which during development is intertwined with the growing capacity to mentalize. We seek to contribute to emerging empirical data documenting the associations between PN and ED, PN and mentalizing, and provide information on the nature of their mutual relationships. In the present study, we assessed PN, ED, and three mentalizing dimensions (mentalizing self, other, motivation to mentalize) in 183 patients consulting in our outpatient unit specialized in ED. We found that narcissistic vulnerability was negatively associated with self-mentalizing and positively associated with overall emotion dysregulation, both even after adjustment on borderline and ADHD symptoms. However, the association with emotion dysregulation was not maintained after further adjustment on self- or overall mentalizing, which suggests mentalizing played a mediating role in this relationship. On the other hand, narcissistic grandiosity was positively associated with other-mentalizing and emotion dysregulation and negatively associated with self-mentalizing in bivariate analyses, but these last two associations were not maintained after adjustment on comorbid borderline and/or ADHD symptomatology. This study provides new information on the link between PN and ED and on key mentalizing dimensions meaningfully relating to PN, notably through a potential role of self-mentalizing processes between PN and ED.

Keywords: Emotion dysregulation; pathological narcissism; mentalization; BPD; ADHD

Association between pathological narcissism and emotion regulation: the role of self-mentalizing?

Pathological narcissism can be defined as one's inability to regulate self-esteem and to manage needs for validation and self-enhancement from the social environment, resulting in use of maladaptive strategies to cope with self-esteem dysregulation (1,2). Two non-exclusive phenotypes of pathological narcissism have been defined on the basis of the ways in which individuals deal with self-esteem dysregulation (3). On the one hand, *grandiose* narcissism can be characterized by reactions using self enhancement strategies, like overvaluation, exploitation of others or absorption in idealized fantasies. On the other hand, *vulnerable* narcissism entails reactions to self-esteem dysregulation through anger, shame, depression, self-criticism, interpersonal hypersensitivity or social withdrawal (3). These forms are not exclusive and patients often fluctuate between modes of expression (4). The personality disorder diagnosis associated to PN is narcissistic personality disorder (NPD), defined in the DSM-5 "a pervasive pattern of grandiosity (in fantasy or behavior), need for admiration, and lack of empathy", but this diagnosis has been criticized because of it only encompasses narcissistic grandiosity (1,3). However despite its flaws, this diagnosis has allowed research that providing meaningful information regarding prevalence (from 1% to 6.2% of the general population (5,6)) and social, professional and interpersonal consequences of this highly disabling disease (5,7,8).

Emotion regulation can be defined as one's ability to be aware of, understand and accept emotions, as well as the ability to manage reactions in emotional states and to modulate emotional arousal (9). According to Marsha Linehan's bio-social theory (10), emotion dysregulation (ED) emerges from the interaction between emotional vulnerability, defined as the association of a heightened sensitivity and reactivity to emotional cues with a delayed recovery

(11) and invalidation, defined as the ignorance, punishment or critical appraisal of emotion expression by self and/or others. Initially described in patients suffering from borderline personality disorder (BPD), ED is now known to be a transdiagnostic construct and can be found in many other disorders, including pathological narcissism and narcissistic personality disorder (12–16), where patients are prone to dysregulate when experiencing threats to their self-esteem (16,17). However, most of the empirical research investigating the association between narcissism and emotion regulation has been conducted on general population samples, with only a few studies investigating this association in clinical populations and - to our knowledge - no study investigating it specifically in a sample of patients suffering from ED. Moreover, the field lacks evidence regarding which clinical dimensions mediate the relation between both constructs; one exception is self-esteem, which - not surprisingly- was found to mediate either partially – for vulnerability – or totally – for grandiosity – the association between PN and ED (16).

Mentalizing can be defined as the imaginative processing of one's (*self-mentalizing)* and others' (*other-mentalizing)* mental states (i.e. the combination of emotions, beliefs, intentions, thoughts, motivations that underlies our behaviors), and is crucial to interpersonal understanding, communication and collaboration (18). Mentalizing is thought to represent a core aspect of emotion regulation (19,20), whilst impairments in mentalizing tend to promote unbridled emotional intensity (21,22). Mentalizing is also a predictor of functioning and well-being across many dimensions, including self-esteem (23,24), and impairments in mentalizing have also been associated to the developmental risk for personality pathology (25). Patients suffering from pathological narcissism are theoretically considered to experience mentalization impairments (26), with even preliminary evidences showing that mentalizing may mediate the association

between pathological narcissism and treatment outcome (27). Altogether, it seems coherent to assume that the presence of mentalizing impairments in narcissistic patients may explain the association found in several studies between narcissism (especially vulnerable) and emotion dysregulation. However, only few empirical studies were conducted to test the association between mentalizing and narcissism, and the role of mentalizing in the association between narcissism and emotion dysregulation. Moreover, given that pathological narcissism and narcissistic personality disorder are often associated with comorbidities (such as ADHD (28) and BPD (5,29)), and that these comorbidities can be associated with both emotion dysregulation and mentalizing impairments (e.g., for ADHD and BPD (10,30–32)), there is also a lack of study regarding how these comorbidities may affect mentalization and influence the results about the link between pathological narcissism, mentalization, and emotion dysregulation.

In this context, the current study had three main objectives. First, we aimed to examine the previously reported associations between pathological narcissism and emotion dysregulation in a clinical sample of patients requesting help for ED. Second, we aimed to specifically study the nature of associations between pathological narcissism and mentalizing dimensions, to provide more precise empirical data regarding this association. For this second part, we wanted to adjust on two comorbidities (namely, BPD and ADHD), to account for their own effect on mentalization. Finally, we aimed to study the possible mediating role mentalizing could play between pathological narcissism and emotion dysregulation; and, if it has one, which dimension of mentalizing is involved.

Methods

Settings

Our unit specializes in emotion regulation disorders, with a focus on borderline personality disorder (BPD) and adult attention deficit hyperactive disorder (ADHD). Usually, patients are either self-addressed or referred by health care professionals for assessment and treatment. The inclusion criteria for the participation in the present study were: 1°) Being referred to the unit for assessment and/or care of adult ADHD, BPD, or emotion dysregulation 2°) Being at least 18 years old 3°) Providing informed consent for participation in the study and use of health data for research purposes. The study was approved by the Ethics Committee of the Geneva University Hospitals (no. 2021-00694). Part of the sample used in this study was also used in one previous study (33).

Procedure

During initial assessment in our unit, patients underwent socio-demographic evaluation (age, gender, level of education, employment status and marital status) and self-report questionnaires. Here, we present the scales we chose to analyze for this study.

Emotion regulation. The assessment of emotion dysregulation was made using the Difficulties in Emotion Regulation Scale – 18 items (DERS-18 ; (34)), a shorter form of the original DERS (9). The DERS assesses the intensity of emotion regulation difficulties, in different domains : lack of awareness of one's emotions (awareness), lack of clarity about the nature of one's emotions (clarity), lack of ability to engage in goal-directed activities during negative emotions (goals), lack of ability to manage one's impulses during negative emotions (impulse), lack of acceptance of one's emotions (nonacceptance) and lack of access to effective emotion regulation strategies (strategies)). Each item is rated a 5-point Likert scale and can be summed in six sub-scores (corresponding to the six domains) and a total score (corresponding to

the sum of the six domains), with a higher score indicating a higher emotion regulation difficulty. In the present study, we only used the DERS total score.

Narcissism. Pathological narcissism was assessed using the Pathological Narcissism Inventory - brief version (PNI-B) and the Narcissistic Personality Inventory-13 (NPI-13). The PNI-B is a 28-item version of the original PNI (2,35,36). Each item is rated on a 5-points Likert scale. The PNI-B measures seven aspects of pathological narcissistic functioning, capturing both narcissistic grandiosity (exploitativeness, self-sacrificing self-enhancement, grandiose fantasies – 16 items) and narcissistic vulnerability (contingent self-esteem, devaluing, entitlement rage and hiding the self – 12 items). We only used the mean vulnerable and grandiose subscores in this study, with a higher score indicating a higher level of narcissistic traits. Moreover, the NPI-13 is a short version of the original 54-items scale (37,38), that only measures narcissistic grandiosity. Each item is rated on a yes/no scale, with total score ranging from 0 to 13 (with a higher score indicating a higher level of narcissistic grandiosity) and with three subscales (grandiose exhibitionism, entitlement/exploitativeness and leadership/authority). In the current study, we only considered the NPI total score. Finally, when clinical symptoms of narcissistic personality disorder were found during the interview at arrival, patients were assessed using the Structured Clinical Interview for DSM-IV Personality Disorders adapted for DSM-5 (SCID-5-PD, (39)).

Mentalizing. Mentalizing abilities were assessed using the Mentalization Scale (MentS) (40). It consists in 28 items rated on a 5-points Likert scale assessing the ability to mentalize. According to the validation study, MentS internal consistency is acceptable in clinical samples (α = .75), with three reliable subscales (Self-Mentalization (MentS_S), Other-Mentalization (MentS_O), and Motivation to Mentalize (MentS_M)), and good concurrent validity. A total score (MentS_tot) can be calculated by summing the three subdimensions, with lower scores

indicate higher difficulties of mentalizing. To note, we chose to use this scale rather than the one most commonly used to assess mentalizing (i.e., the Reflective Functioning Questionnaire) because of the limitations of the latter, that is thought to assess one single latent dimension related to hypo-mentalizing, and thus does not allow to measure differentially self- and other-mentalizing (40,41).

ADHD. We use the CAARS 26-items to assess the intensity of ADHD symptoms, a shorter version of the original scale (42). It explores four symptomatic subscales: inattention/memory problems, hyperactivity/restlessness, impulsivity/emotional liability, and problems with self-concept, and each item is rated on 4-point Likert rating scale (scored from 0 "not at all" to 3 "very much/very frequently"). A total score can be calculated by summing all the individual subscales, with a higher score indicating a higher intensity of ADHD symptoms. Finally, when ADHD symptoms were found in the interview at arrival, patients were further assessed using the ADHD Child Evaluation for Adults (ACE+), a semi-structured interview used to assess the presence of ADHD (43).

BPD. We used the Borderline Symptom List – 23 items (BSL-23) to assess the global severity of BPD symptoms (44,45). Each of the 23 items investigates the *last week's* symptomatic experience of BPD patients, with a 5-point Likert response format, and a mean score is calculated (with a higher score indicating a higher severity of BPD). Finally, when clinical symptoms of borderline personality disorder were found during the interview at arrival, patients were assessed using the Structured Clinical Interview for DSM-IV Personality Disorders adapted for DSM-5 (SCID-5-PD, (39)).

Statistical analysis

In the current study, we chose to employ Fisher's significance testing theoretical framework (46). Thus, we did not calculate sample size, alpha or beta *a priori,* as this study was exploratory. Furthermore, we did not correct our analyses for multiples comparisons, as several authors emphasized that it is not mandatory in exploratory study (e.g., (47)).

First, descriptive analysis was applied to calculate mean scores and frequencies. Given the low proportions of missing data for each item (mean = 0.9%), we imputed with the mean value before the calculation of the sub- and total scores. For bivariate analysis, after verifying graphically the normality of the distribution of the variable, we conducted Pearson correlation coefficient nullity tests to investigate the associations between each quantitative variable. For the only binary variable (sex), we use Student t tests to compare mean scores of PNIv, PNIg and NPI between groups, after verifying the equivalence of variance.

If the associations between narcissism and mentalizing, and between narcissism and emotion dysregulation, were found significant in bivariate association, we continued with multivariate analyses to assess if such associations could be linked to confounding factors. Regarding mentalizing, after verifying graphically the normality of the distribution of the errors, we used multiple linear regressions to test the associations between MentS self- and overall-mentalizing scores (treated as dependent variables) and PNIv or PNIg (treated as independent variables), with adjustment on the other of PNI subscore than the one studied (PNIv for PNIg, and PNIg for PNIv) and on the comorbidities associated with these mentalizing dimensions in bivariate analyses (using either CAARS total score, BSL mean score, or both). We chose these two variables (BSL and CAARS) because BPD and ADHD are highly represented in our sample and because of their known association with mentalizing deficits. Furthermore, we also included PNI sub-scores in our models, because prior research has suggested that the grandiosity subscale

of the PNI shares considerable overlap with narcissistic vulnerability, and thus that including PNIg and PNIv as simultaneous predictors in the models may help examine the unique effects of each (48). Moreover, regarding emotion dysregulation, after verifying graphically the normality of the distribution of the errors, we used multiple linear regressions to test the associations between DERS total score (treated as dependent variable) and PNIv and PNIg (treated as independent variables), with adjustment on CAARS total score, BSL mean score, and the other of PNI subscore than the one studied (PNIv for PNIg, and PNIg for PNIv). Once again, we chose these two variables (BSL and CAARS) because these two comorbidities are highly represented in our sample and because of their well-known association with emotion dysregulation. Finally, if associations were still significant after adjustment, we further adjusted on MentS total score and significant subscores (i.e., that were found to be significantly associated with narcissism in our analyses), to study if these dimensions may play a role in the relation between narcissism and emotion dysregulation.

All the analyses were made using R and R studio (version 4.1.2 (2021-11-01), (49)). The study's design and its analysis were not pre-registered.

Results

Participants characteristics

Overall, 293 subjects were administered both PNI and NPI. Among these subjects, we removed those who did not complete the DERS, yielding a total number of 190 patients. Finally, we removed those who did not complete the MentS, the CAARS and the BSL, yielding a total number 183 remaining subjects. The characteristics of our sample can be found in Table 1. Our

patients were slightly more women (n = 107, 58.47%), with a mean age of 34.86 (SD = 12.20; 95%CI [33.06 – 36.65]).

Insert Table 1.

65 patients were diagnosed with BPD (35.52%), 2 patients with NPD (1.09%) and 69 with ADHD (28 inattentive – 15.3%, 9 hyperactive – 4.92% and 32 mixed type – 17.49%). The mean BSL-23 score was 1.38 (SD = 0.93; 95% CI [1.24-1.51]; range = 0 - 4) and the mean CAARS total score was 43.87 (11.72; 42.16-45.58; 13 - 75). Regarding narcissism, the mean scores were 3.85 (2.63; 3.47-4.23; 0 - 12) for NPI, 2.43 (0.92;2.29 - 2.56; 0.25-4.75) for PNI grandiosity, and 2.29 (0.95; 2.16-2.43; 0-4.81) for PNI vulnerability. Regarding emotion regulation, the mean DERS total score was 51.68 (13.47; 49.72 - 53.65; 21-82). Finally, regarding mentalizing, the mean scores of mentalizing of self, other, motivation to mentalize and overall mentalizing were respectively 23.57 (7.10; 22.53 - 24.60; 8-40), 38.04 (6.58; 37.08 - 39.00; 21-50), 39.14 (6.35; 38.22 - 40.07; 21-50) and 100.75 (15.84; 98.44 - 103.06; 58-137).

As suggested by the reviewers, we also conducted sub-group descriptive analyses to explore the specific levels of pathological narcissism (assessed by both the NPI and the PNI) for the different diagnostic sub-groups (ADHD, BPD and NPD), and to compare these to the overall sample scores, independently of diagnosis. BPD-only patients (i.e., those without ADHD or NPD, n=42) had mean NPI, PNI grandiosity, and PNI vulnerability scores of 3.50 (2.69), 2.43 (0.83) and 2.54 (0.90), respectively. On the other hand, ADHD-only patients had mean NPI, PNI grandiosity, and PNI vulnerability scores of 3.37 (2.30), 2.44 (0.96), and 2.14 (0.85), respectively. Finally, given that the two NPD patients had both a BPD comorbidity, we were unable to describe NPD-only scores. Altogether, regarding NPI, diagnostic groups mean scores were approximatively similar but were lower than the overall sample score. Regarding PNI

grandiosity, mean scores were quasi-similar in both diagnostic groups *and* in the overall sample scores. Finally, regarding PNI vulnerability, mean scores were higher in the BPD group, and lower in ADHD group, compared to the overall sample.

Bivariate analysis

The results of correlations can be found in **Table 2.** Regarding NPI, we found a significant difference of NPI total mean scores between men and women, with a higher mean score in men (men=4.5; women=3.4; t value=3.13; p=0.002). However, NPI total score was not significantly correlated with any of the variables. Regarding PNI grandiosity, we also found significant difference of mean scores between men and women, with a higher mean score in men (men=2.8; women=2.2; t value= 4.31; p<0.000), and we found a negative correlation with age (r=-0.18; p=0.02). Moreover, PNI grandiosity was also positively correlated with the BSL mean score (r=0.24; p=0.001), the CAARS total score (r = 0.26; p<0.000) and the DERS total score (r=0.22; p=0.003). There was also a negative correlation with the MentS self (r=-0.20; p=0.007) and a positive correlation with the MentS other (r=0.15; p=0.037) subscores. Finally, regarding PNI vulnerability, we found a negative correlation with age (r=-0.17; p=0.03). Moreover, vulnerability was associated strongly positively correlated with the BSL mean score (r=0.52; p<0.000), the CAARS total score (r=0.43; p<0.000) and the DERS total score (r=0.46; p<0.000). There were also negative correlations with the MentS self (r=-0.38; p<0.000) and total scores (r=-0.20; p=0.006). All the other analyses were non-significant.

Insert Table 2.

Multivariate analysis on MentS

Regarding PNI vulnerability, the association found with deficit in self-mentalizing in bivariate analysis remained significant after adjustment on BSL-23, CAARS total score, and PNI grandiosity (b=-1.50; p = 0.041), thus suggesting a specific association between narcissistic vulnerability and self-mentalizing even when accounting for the effect of comorbidities. The same is true for the association between PNI vulnerability and overall mentalizing, that also remained significant after adjustment on BSL-23 and PNI grandiosity (b=-4.578; p=0.013). On the other hand, regarding PNI grandiosity, the association found with deficit in self-mentalizing was not maintained after adjustment on BSL-23, CAARS total score, and PNI grandiosity (b=0.18; p=0.783). To note, we did not conduct multivariate analyses on the positive association found between PNI-grandiosity and other-mentalizing because no comorbidities were associated with this dimension in bivariate analyses.

Multivariate analysis on DERS total score

Regarding PNI vulnerability, the association found in bivariate analysis remained significant after adjusting on BSL-23, CAARS total score, and PNI grandiosity (b = 2.63; p = 0.028). However, this association became non-significant when we further adjusted on self-mentalizing sub-score (b=1.61; p=0.142) or overall mentalizing score (b=1.57; p=0.172), indicating a specific effect of mentalizing on the link between narcissistic vulnerability and emotion dysregulation. Finally, regarding PNI grandiosity, the association found in bivariate analysis was not significant anymore after adjustment on BSL, CAARS, and PNI vulnerability (b = -0.91; p=0.393).

Discussion

We aimed to study the association between pathological narcissism, mentalizing and emotion dysregulation in a clinical sample of emotionally dysregulated patients. We found positive (between narcissistic vulnerability and overall emotion dysregulation) and negative (between narcissistic vulnerability and self- and overall mentalizing) significant associations, both maintained after adjustment on borderline and ADHD symptoms. The association with overall emotion dysregulation disappeared when we included overall-mentalizing or self-mentalizing as independent variables, thus suggesting a possible mediating role of mentalization between both constructs. Finally, even though narcissistic grandiosity was positively associated with other-mentalizing and emotion dysregulation and negatively associated with self-mentalizing in bivariate analyses, these last two associations were not maintained after adjustment on comorbid borderline and/or ADHD symptomatology.

The positive association between narcissistic vulnerability and emotion dysregulation is concordant with several previously published studies. In a clinical sample, Ponzoni and colleagues reported a significant association between PNI vulnerability and DERS total score (15), that remained positive after adjusting for age, gender, and negative affectivity. In another study examining a non-clinical sample, PNI vulnerability was also positively associated with most of the DERS dimensions after adjustment on age, gender, and borderline personality traits (13). Regarding studies using the Hypersensitive Narcissism Scale (HSNS) to assess narcissistic vulnerability in a non-clinical population, Zhang and colleagues found a positive correlation between narcissistic vulnerability and DERS total score, which is once again coherent with the current findings (16). Finally, in a study investigating dysfunctional personality traits in problematic gaming using HSNS in a non-clinical sample, narcissistic vulnerability was found to

be positively associated with DERS total score after adjustment with sociodemographic and behavioral covariates (14). Altogether, our results and the existing literature suggest a clear association between narcissistic vulnerability and overall emotion dysregulation, both in clinical and non-clinical populations, and independently of comorbid borderline or ADHD symptoms.

On the other hand, the absence of association between narcissistic grandiosity (as measured by the PNI and the NPI), especially when adjusting for borderline and ADHD symptoms, is partially in line with existing literature. In the same study presented above, Ponzoni and colleagues found no correlation between PNI grandiosity and DERS total or subscores for clinical patients (15). However, in the above-reference study with a non-clinical sample, Di Pierro and colleagues found PNI grandiosity to be negatively associated with several DERS dimensions, including lack of awareness, clarity and access to strategies, even after adjusting on age, gender, and BPD symptoms (13). Regarding studies using NPI, in the same two studies presented earlier conducted in non-clinical samples, Zhang and colleagues found negative correlation between grandiose narcissism and overall emotion regulation difficulties (16), whereas Di Blasi and colleagues found no significant correlation with overall emotion dysregulation (14). Altogether, our results and the existing literature seem to indicate a potential absence of association between narcissistic grandiosity and emotion dysregulation in clinical samples, especially when adjusting on comorbidities symptomatology. However, in non-clinical samples, the discordant results in the existing literature does not allow any conclusion.

These results regarding the association between pathological narcissism and emotion dysregulation should be put into perspective regarding the actual nature of the scale used in most studies (including ours). Indeed, all the aforementioned studies used the DERS to assess *difficulties in emotion dysregulation* (i.e, the intensity of emotional difficulties), but this scale

does not encompass another important aspect of emotion dysregulation: the type of strategies used to manage these emotions. To provide the reader a larger picture on this second important part, we searched the literature to find studies regarding emotion regulation strategies associated with either grandiosity or narcissistic vulnerability. Only few studies were found, and most of them used different scales to assess emotion regulation strategies. Thus, we will only report here studies that used the same scale, the most commonly found being the Emotion Regulation Questionnaire (assessing two main strategies, cognitive reappraisal - adaptive - and expressive suppression - maladaptive). Regarding vulnerable narcissism, only two studies were conducted using the ERQ, and both found a positive correlation between narcissistic vulnerability (assessed by the PNI (50) or the NI-R (51)) and expressive suppression, but not with cognitive reappraisal. On the other hand, regarding grandiose narcissism, the same two studies found that narcissistic grandiosity (assessed either using the PNI (50) or the NPI (51)) was not correlated with any of the ERQ dimensions. Altogether, narcissistic vulnerability seems to be associated with both emotion dysregulation and with a tendency to maladaptive expressive suppression when facing emotional difficulties, whereas narcissistic grandiosity seems to not be or be negatively associated with emotion dysregulation, which may possibly be linked to the absence of tendency towards maladaptive expressive suppression. Further research is needed on these aspects of emotion dysregulation in pathological narcissism.

Regarding mentalizing, we found a negative association between narcissistic vulnerability and overall mentalizing, specifically driven by low scores on the self-mentalizing subscale, indicating that the more vulnerable a patient is, the less the patient tends to accurately mentalize self. These associations were maintained when adjusting on comorbidities associated with the same mentalizing dimensions. We also found a significant negative association between PNI

grandiosity and self-mentalizing and a positive association with other-mentalizing, thus suggesting that the more grandiose a patient is, the lower he/she mentalizes him/herself, but the better he/she mentalizes other. However, the association between PNI grandiosity and self-mentalizing was not maintained when accounting for comorbidities also associated with self-mentalizing. Overall, these results are in line with theoretical works suggesting that narcissistic patients are more at risk for various forms of mentalizing impairments (26). According to our findings, patients prone to narcissistic vulnerability seem to experience deficits in self-mentalizing, which may be linked with the difficulties in identifying feelings found in narcissistic patients (52,53). On the other hand, patients prone to narcissistic grandiosity do not seem to share the same deficit in self-mentalizing but seem on the other hand to have higher levels of other-mentalizing. This surprising result can be compared to the preserved cognitive empathy abilities and tendency to overestimate their emotional understanding of others in patients with high narcissistic grandiosity (54,55) . Further experimental work should investigate whether: 1) grandiose narcissism is associated with increased sensitivity and greater understand to others' mental states, which could put them at risk of manipulativeness; or 2) grandiose narcissism is associated to an overestimation of their ability to understand others' mental states.

Moreover, our results also underline the fact that comorbidities may be of importance when considering the associations between pathological narcissism and mentalizing. Indeed, even though we found a negative association between narcissistic grandiosity and self-mentalizing in bivariate analyses, the latter association became non-significant after adjustment on other comorbidities associated with the same mentalizing dimension. This suggests that the comorbidity status may have a great impact on the potential observed associations between narcissism and mentalizing. Thus, even though we tried to account for such confounding factors

(by adjusting our models with comorbidities), our conclusions cannot be seen as definitive, even more when considering that only BPD and ADHD were assessed here. Indeed, other frequently found comorbidities in narcissistic patients are associated with mentalizing impairments (e.g., depression (56,57)) and were not assessed in our work. Further studies are needed regarding how pathological narcissism comorbidities (including BPD and ADHD) can affect mentalizing abilities, and how that can influence the results and conclusions about mentalizing in patients with predominant pathological narcissism.

Finally, we also found that further adjustment on self or overall mentalizing led to disappearance of the positive association between narcissistic vulnerability and overall emotion dysregulation. This result suggests a possible mediating role of mentalizing impairments in the relationship. This echoes a recent study reporting that self-esteem partially mediates the relationship between emotion dysregulation and narcissistic vulnerability (16), and relates to a clinical study underlining the mediating role of mentalizing between pathological narcissism and therapeutic outcome in a mixed clinical sample (27). Altogether, one could infer that the association between narcissistic vulnerability and emotion dysregulation is due to a tendency to poor mentalization in narcissistic patients, mainly on themselves, when facing self-esteem threats. This could be particularly relevant given that overall emotion dysregulation has been found to fully mediate the relationship between vulnerable narcissism and suicidal ideation (15), and given that narcissistic patients present a high risk of suicide (58). Even though these results are preliminary, they lend support to the rationale of a mentalization-based treatment for pathological narcissism, especially vulnerable narcissism, to help these patients regulate their emotions by improving overall (and especially self) mentalizing (59). Such treatment appears to yield transdiagnostic relevance, because mentalizing issues were found in our sample (even after

adjusting for BPD and/or ADHD symptoms) and were associated with emotional suffering, even though only a tiny proportion was positive for NPD.

Our study has several limitations that should be addressed. First, the fact that we only used self-report questionnaires, assessed at one time only, may have increased the risk of common method variance, which may in turn have led to incorrect estimations and false positive associations (60). Future studies should be conducted using either different methods of measurement (e.g., interviewer-rated) or longitudinal designs to overcome such limitation. Second, once again due to its cross-sectional design (but also to its exploratory stance), our study does not allow us any conclusions regarding the actual link between narcissism, mentalization and emotion dysregulation in clinical population, even more when considering selection bias (underlined for example by the very low proportion of NPD patients – 1.09% - and the globally similar mean scores of PNI grandiosity and vulnerability between our clinical population and the non-clinical population of the validation study (36)). Third, several criticisms can be made regarding the scales we used to assess narcissism. Notably, we used the PNI to measure both grandiosity and vulnerability, which may be criticized given that, despite being validated, this scale has been the subject of many debates, notably about the construct validity of the grandiosity measure. To take into account this limit, we also used the NPI to have a concomitant measure of grandiose narcissism, a scale which unfortunately is also criticized regarding its usefulness to fully grasp maladaptive narcissistic dysfunction (2,61). Thus, despite our efforts, there are inherent limits linked to the tools we used that may have biased our results. Fourth, we did not conduct mediation analysis that would have helped us conclude on the mediating role of self-mentalizing in the association between narcissistic vulnerability and emotion dysregulation. This is due to the fact that we only had transversal data, and that cross-sectional mediation has

been largely criticized given that these models likely yield incorrect estimates when compared to longitudinal approaches (62). Fifth, our population is mostly young, and as narcissism is inversely associated with age, future research should include older patients. However, the sheer number of patients and equal representations of gender, the frequency of ADHD and BPD with adjustment on these comorbidities in our models, and the use of standardized measures for narcissism, emotion dysregulation and mentalizing, provides interesting results on the link between PN and ED, and on the mediating role of mentalizing in a clinical context.

Conflict of interest statement

Margaux Bouteloup, Miguel Duarte, Martin Debbané and Nader Perroud are therapists, trainers and/or supervisors in mentalization-based therapy.

Data availability statement

All data, analysis code, and research materials have been made publicly available at the Open Science Framework (OSF) and can be accessed at: https://osf.io/hzvtj/?view_only=4e08f610c938414994729f8771fdda66.

Ethic approval statement

The study was approved by the Ethics Committee of the Geneva University Hospitals (no. 2021-00694), and every patient provided informed consent for participation in the study and use of health data for research purposes.

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Table 1. Characteristics of the population

Variable	**Mean (SD)**	**95%CI**
Age	34.86 (12.20)	33.06 - 36.65
NPI total	3.85 (2.63)	3.47 - 4.23
PNI		
Grandiosity	2.43 (0.92)	2.29 - 2.56
Vulnerability	2.29 (0.95)	2.16 - 2.43
BSL	1.38 (0.93)	1.24 - 1.51
CAARS total	43.87 (11.72)	42.16 - 45.58
DERS total	51.68 (13.47)	49.72 - 53.65
MentS		
Self	23.57 (7.10)	22.53 - 24.60
Other	38.04 (6.58)	37.08 - 39.00
Motivation	39.14 (6.35)	38.22 - 40.07
Total	100.75 (15.84)	98.44 - 103.06
Variable	**N (%)**	
Gender, women	107 (58.47%)	
BDL*	65(35.52%)	
NARC*	2(1.09%)	
ADHD*		
Inattentive	28(15.30%)	
Hyperactive	9(4.92%)	
Mixed	32(17.49%)	

** SCID-BDL was assessed in 93 patients, SCID-NARC in 62 patients, and ACE+ in 117 patients.*

Abbreviations: ADHD = diagnosis of adult ADHD made using the ADHD Child Evaluation for Adults (ACE+); BDL = diagnosis of borderline personality disorder made using the Structured Clinical Interview for DSM-IV Personality Disorders adapted for DSM-5; BSL = Borderline Symptom List – 23 items; CAARS total = Conners' Adult ADHD Rating Scales total score; DERS = Difficulties in Emotion Regulation Scale – 18 items; MentS = Mentalization Scale; NPI = Narcissistic Personality Inventory-13; PNI = Pathological Narcissism Inventory - brief version,; NARC = diagnosis of narcissistic personality disorder made using the Structured Clinical Interview for DSM-IV Personality Disorders adapted for DSM-5

Table 2. Correlation matrix

		NPI	PNI		BSL	CAARS	DERS	MentS			
		Total	**PNIg**	**PNIv**	**Mean**	**Total**	**Total**	**Self**	**Other**	**Motiv**	**Total**
NPI	**Total**	1									
PNI	**PNIg**	**0.52*****	1								
	PNIv	**0.33*****	**0.65*****	1							
BSL	**Mean**	0.03	**0.24****	**0.52*****	1						
CAARS	**Total**	0.11	**0.26*****	**0.43*****	**0.52*****	1					
DERS	**Total**	0.03	**0.22****	**0.46*****	**0.63*****	**0.51*****	1				
MentS	**Self**	-0.02	**-0.20****	**-0.38*****	**-0.49*****	**-0.27*****	**-0.59*****	1			
	Other	0.14	**0.15***	-0.05	0.04	0.10	-0.12	**0.27*****	1		
	Motiv	0.07	0.08	-0.017	-0.03	0.06	**-0.15***	**0.39*****	**0.68*****	1	
	Total	0.08	0.006	**-0.20****	**-0.21****	-0.05	**-0.37*****	**0.72*****	**0.81*****	**0.86*****	1

** < 0.05*

*** < 0.01*

**** < 0.001*

Abbreviations: BSL = Borderline Symptom List – 23 items; CAARS total = Conners' Adult ADHD Rating Scales total score; DERS = Difficulties in Emotion Regulation Scale – 18 items; MentS = Mentalization Scale; NPI = Narcissistic Personality Inventory-13; PNI = Pathological Narcissism Inventory - brief version.