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Me, myself, and my muscles: associations between narcissism and muscle dysmorphia

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ABSTRACT

The conceptualisation and measurement of the associations between narcissism and muscle dysmorphia (MD) are poorly understood in the literature. It is recognised that narcissism features two broad dimensions: vulnerable and grandiose. Studying both narcissism dimensions is important given their differences in etiology and health-related outcomes. Therefore, the aim of this study was to investigate the associations between MD, vulnerable and grandiose narcissism. A total of 336 participants (48% male; $M_{\text{age}} = 26.4$ years) completed measures of MD and narcissism. Hierarchical regression analysis revealed that vulnerable narcissism was significantly, positively associated with MD, whilst grandiose narcissism was not. Practitioners should be aware that vulnerable narcissism may be a potential risk factor of MD.

Clinical implications

- Vulnerable narcissism was associated with muscle dysmorphia
- Grandiose narcissism was not associated with muscle dysmorphia
- Negative self-worth may explain some variance with muscle dysmorphia
- Vulnerable narcissism may be a risk factor for muscle dysmorphia in men and women

Muscle dysmorphia (MD) is a clinical specifier for body dysmorphic disorder in the DSM-5 and is characterised by a pathological belief of being insufficiently muscular (American Psychiatric Association, 2013). This pre-occupation with muscularity can cause significant impairment to daily functioning and an intolerance towards one's appearance (e.g., Hildebrandt et al., 2004). Common symptoms of MD include negative body image, high levels of anxiety and stress, and excessive and compulsive weight training (Sandgren & Lavalley, 2018). Consequently, these symptoms may result in behaviours with serious psychological and physiological health outcomes (e.g., anabolic steroids abuse; Rohman, 2009). Therefore, identifying risk factors of MD is

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important to advance our knowledge of the factors that may play a role in the development of MD. Research around personality risk factors suggest that perfectionism is associated with MD (e.g., Dryer et al., 2016). However, narcissism has received little attention in the MD literature despite the apparent theoretical overlap regarding the infatuation with the self. In this paper, we define narcissism from the non-clinical, social-personality perspective, which reflects an antagonistic and grandiose interpersonal style (Miller & Campbell, 2008).

The few studies investigating narcissism and MD reveal ambiguous relationships between the two constructs. For example, some evidence suggests narcissism is positively associated with MD (e.g., Rodrigue et al., 2018), whilst others have failed to find any associations (e.g., Collis et al., 2016). Importantly, the measurement of narcissism in these studies is inconsistent. For example, researchers have focussed on single dimensions of narcissism (i.e., grandiose narcissism; Collis et al., 2016) or narrow, facet-level measurements (i.e., grandiosity; Rodrigue et al., 2018), which could explain the conflicting results. However, from the extant literature, narcissism has two broad dimensions: (1) grandiose and (2) vulnerable (Miller et al., 2011). Grandiose narcissism primarily reflects grandiosity, aggression and dominance, whilst vulnerable narcissism reflects fragile self-confidence, as well as feelings of inadequacy and negative affect. In respect to the vulnerable/grandiose narcissism model, *grandiose* narcissism reflects an inflated self-image (e.g., “no one is more muscular than I am”), whereas an individual who presents with symptoms of MD typically has a more deflated self-image (e.g., “everyone is more muscular than me”).

Research from the broader eating disorder literature have found that vulnerable narcissism predicts symptoms of bulimia nervosa; a disorder characterised by episodes of binge eating followed by compensatory behaviours (e.g., purging; Maples et al., 2011). Indeed, there is evidence to suggest MD is inclusive of bingeing and purging (Murray et al., 2012). As such, investigating divergent and broader dimensions of narcissism could offer a more comprehensive and inclusive understanding of the associations between narcissism and MD, whereby vulnerable narcissism may predict MD over and above grandiose narcissism. Based on this body of work, the aim of the current study is to investigate the associations between broad dimensions of narcissism and MD in a non-clinical sample to address the limitations with previous work (e.g., Collis et al., 2016; Rodrigue et al., 2018).

Method

Participants and procedure

Institutional ethical approval was obtained. Participants were recruited online from the UK using non-probability convenience sampling. Study advertisements were posted regularly on Twitter and Facebook over six months, and participants who were members of various online exercise forums, pages and groups were specifically targeted. Participants were invited to provide some background information (age, sex, training and mental health history) and complete an online survey. To protect potentially vulnerable individuals, participants who reported a history of a *clinical* mental health disorder diagnosis (e.g., body dysmorphic disorder, eating disorder, depression) were excluded and unable to proceed with the survey. In total, 336 participants gave consent and took part in the study (48% male, 52% female; $M_{\text{age}} = 26.35$, $SD = 8.20$ years, range: 18–63; $M_{\text{BMI}} = 24.66$, $SD = 9.19$, range: 16–37 BMI). Participants were either in employment (49.4%) or studying at university (50.6%), and most participants ($n = 271$; 80.7%) were currently involved with weekly strength and cardio training and had done so for a minimum of one year.

Measures

Muscle dysmorphia

The pre-validated Muscle Dysmorphic Disorder Inventory (MDDI; Hildebrandt et al., 2004) was used to measure MD symptomatology (encompassing Drive for Size [DFS], Appearance Intolerance [AI] and Functional Impairment [AI]). The MDDI is a 13-item self-report measure using a Likert scale from 1 (strongly disagree) to 5 (strongly agree). Composite reliability estimates of $>.60$ suggest acceptable internal consistency (Hyland et al., 2013), and the MDDI displayed good internal consistency in the study (p_c [composite reliability] = .70). The mean MDDI global score was 33.95 ($SD = 8.65$) and the mean subscale scores were as follows: DFS ($M = 13.07$, $SD = 5.03$), AI ($M = 10.80$, $SD = 3.70$) and FI ($M = 9.91$, $SD = 4.47$).

Grandiose narcissism

The pre-validated Narcissistic Personality Inventory-16 (NPI-16; Ames et al., 2006) was used to measure grandiose narcissism. Each item consists of a narcissistic or a non-narcissistic statement, where participants are asked to choose one of two statements for each pair. The total number of narcissistic statements that a participant endorses represents the score of the participant (maximum possible is 16). Composite reliability estimates

Table 1. Bivariate Correlation Matrix for all demographics and study measures.

Variable	1	2	3	4	5	6	7	8
1. Sex								
2. Age	.15**							
3. Years at Gym	-.07	.24**						
4. Strength training (hrs/week)	-.08	.00	.45**					
5. Cardio training (hrs/week)	-.05	.07	.22**	-.01				
6. BMI	-.12*	.21**	.11	.20**	-.06			
7. NPI	-.20**	-.06	.08	.20**	-.02	.04		
8. HSNS	-.00	-.21**	-.09	-.01	-.08	-.06	.11*	
9. MDDI	-.32**	-.16**	.14*	.46**	.02	.19**	.14*	.19**

* $p < .05$; ** $p < .01$.

Sex: 1 = male, 2 = female.

BMI = Body Mass Index; NPI = Narcissistic Personality Inventory; HSNS = Hypersensitivity Narcissism Scale; MDDI = Muscle Dysmorphia Disorder Inventory.

Table 2. Standardized beta coefficients for hierarchical regression model with global MDDI scores as outcome.

Variable	Step 1	Step 2
(Intercept)	0.00 [3.24]	0.00 [3.91]
Sex	-0.25 [0.87]**	-0.26 [0.86]**
Age	-0.11 [0.06]*	-0.08 [0.06]
BMI	0.13 [0.12]	0.06 [0.12]
Years at gym	-0.08 [0.29]	-0.07 [0.28]
Strength training (hrs/week)	0.46 [0.41]**	0.46 [0.42]**
Cardio training (hrs/week)	0.03 [0.49]	0.04 [0.48]
Other training (hrs/week)	0.01 [0.46]	0.02 [0.46]
NPI		-0.04 [0.16]
HSNS		0.19 [0.07]**
F-Ratio	17.61**	16.10**
R^2	.28**	.32**
ΔR^2		.04**

* $p < .05$; ** $p < .01$.

Sex: 1 = male, 2 = female.

BMI = Body Mass Index; NPI = Narcissistic Personality Inventory; HSNS = Hypersensitivity Narcissism Scale.

Standard errors in parentheses.

displayed good internal consistency in the study ($p_c = .68$). Mean score: 3.63 ($SD = 2.74$).

Vulnerable narcissism

The pre-validated Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997) was used to measure narcissistic tendencies that reflect hypersensitivity, vulnerability and entitlement. The 10-item self-report measure assesses responses on a 1 (strongly disagree) to 5 (strongly agree) Likert scale. Composite reliability estimates displayed good internal consistency in the study ($p_c = .64$). Mean score: 27.63 ($SD = 5.96$).

Results

Bivariate correlations between the measured variables revealed significant positive associations between grandiose and vulnerable narcissism and the

global MDDI score ($r = .14 - .19, p < .05$; see Table 1). A two-step hierarchical regression model was further computed to determine whether narcissism was associated with MD over and above our control variables (Table 2). Narcissism dimensions explained 4% additional variance over and above the control variables. Vulnerable narcissism was significantly and positively associated with MD scores ($\beta = 0.19, t = 3.95, p < .001$) but grandiose narcissism was not ($\beta = -0.04, t = -0.80, p = .42$).

Discussion

This study is the first to investigate the associations between broad dimensions of narcissism (vulnerable and grandiose) and MD. Bivariate correlations revealed positive associations for both narcissism dimensions. However, hierarchical regression results revealed a significant positive association between vulnerable narcissism and MD, but not for grandiose narcissism. These findings support our hypothesis and reflect a similarity to previous eating disorder research where vulnerable narcissism, but not grandiose narcissism, has been found to be associated with eating disorder symptoms (Maples et al., 2011). Indeed, vulnerable narcissism and MD share aspects of negative emotionality (e.g., depression and anxiety), but grandiose narcissism does not reflect these aspects. Therefore, it appears that the negative self-worth characteristic in vulnerable narcissism is likely to explain some variance with MD.

Furthermore, the present study demonstrates that simultaneous incorporation of broad dimensions of narcissism represents an important methodological advancement in MD/narcissism research. Consequently, our results suggest that practitioners should consider vulnerable narcissism as a potential risk factor for the development of MD, similar to how those high in vulnerable narcissism are potentially more likely to develop an eating disorder (e.g., Sivanathan et al., 2019).

Moreover, in addition to the accurate conceptualisation and measurement of narcissism, a further strength of this study is the inclusion of a balanced sample of male and female participants. Given the recognition of MD in both sexes (Hale et al., 2013), this study provides more generalisable findings compared to previous research which have focused largely on male-only populations (e.g., Collis et al., 2016). Nonetheless, some limitations are highlighted. For example, the current data relies on cross-sectional self-report measures which could lead to shared method variance and thus biased estimations. Future research would benefit from incorporating informant ratings of narcissism and/or MD to minimise the risk of shared method variance.

In conclusion, vulnerable narcissism was associated with MD, but grandiose narcissism was not. This study offers insight and clarifications around the associations between narcissism and MD by considering both narcissism

dimensions simultaneously. Findings may suggest that practitioners should consider vulnerable narcissism as a potential risk factor of MD.

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