

**Disentangling the Relationships between Grandiose Narcissism, Downward Social  
Comparison Tendency, Body-Pride and Weight-loss Dieting in Female University  
Students: A Moderated Mediation Analysis**

Ellen Stroemer

S4228790

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group 28

Supervisor: dr. Simon Dalley

Second evaluator: Franziska Schutzeichel

In collaboration with: Isabella Buschman, Dessa Elskamp, Niklas Lange, and Sebastian Lortz

June 29, 2023

### **Abstract**

This study aimed to examine the roles of downward social comparison tendency, grandiose narcissism, and body-pride on weight-loss dieting. It was predicted that body-pride would mediate the relationship between downward social comparison tendency and weight-loss dieting, such that with increasing downward social comparison tendency, the greater the experience of body-pride and, the more weight-loss dieting would follow. Furthermore, it was expected that grandiose narcissism would amplify this mediation pathway. A convenience sample of 202 college women with a mean age of 22.06 ( $SD = 2.19$ ), completed measures assessing downward social comparison tendency, grandiose narcissism, body-pride and weight-loss dieting. A bootstrapping technique using PROCESS software was utilized to test the predicted moderated mediation model. The results did not support the predictions, as neither downward social comparison tendency, nor body-pride were significantly associated with weight-loss dieting. However, there was a significant interaction effect between downward social tendency and grandiose narcissism on body-pride present, which indicates that grandiose narcissism amplifies body-pride following an episode of downward social comparison. The results suggest that body-pride does not seem to be a risk factor for weight-loss dieting, but might act as a protective factor instead. Emotion-regulation interventions, which foster body-pride, while preventing negative affect, might benefit women who are at risk of eating pathology.

*Keywords:* social comparison, body-pride, grandiose narcissism, weight-loss dieting, eating behavior

## Introduction

Previous studies suggested that about 43 percent of female students within the age range of 18 to 35 years are currently attempting a weight-loss diet (Fayet et al., 2012; Sharma & Wardle, 2005). Dietary restraint seems to be a substantial predictor for eating disorders (Stice et al., 2011), which affect 4 to 9 percent of these students (Corning et al., 2006). Moreover, eating disorders are associated with a range of physical and mental health issues and increase the risk of suicide and premature death (Corne et al., 2023). They do not only leave the affected individuals suffering, but their occurrence also impacts the total economic costs of mental health treatments significantly (Corning et al., 2006), which emphasizes the necessity to gain more insight into the dynamics of eating disorder development.

Recent research examined the role of body-related social comparison tendency in the context of weight-loss dieting (Jin et al., 2020, Corning et al., 2006). The constant access to social media provides unlimited opportunities to engage in body-related social comparisons, which can have a great emotional impact on women who consume media content, subsequently encouraging weight-loss dieting in these women (Jin et al., 2020). Engagement in body-related downward social comparison is likely to evoke positive affect such as body-pride (Thøgersen-Ntoumani et al., 2018), thus establishing the idea that body-pride acts as a mediator in the relationship between body-related downward social comparison tendency and weight-loss dieting. In addition, contemporary research suggests that women who display qualities associated with grandiose narcissism experience higher levels of body-pride than individuals who do not (Mahadevan & ; Jordan, 2022), and could therefore be at higher risk to weight-loss diet (Jin et al., 2020). It is expected that higher scores on grandiose narcissism amplifies the frequency of body-pride episodes following body-related downward comparisons. These women might try to maintain the episodes of body-pride through weight-loss dieting, in order to confirm their beliefs of superiority (Mahadevan & Jordan, 2022; Jin et al., 2018; Wang, 2019).

According to Gibbson and Buunk (1999), social comparison is a spontaneous and unconscious process that people engage in to gather information about themselves. It serves as a motive to evaluate, improve, and enhance their self-concept. In the context of self-evaluation, individuals assess their own qualities and opinions within their social environment and identify the accepted values and standards of their culture. Upward social comparisons, in which individuals compare themselves to superior targets, motivate and facilitate self-improvement, as individuals explore which potentials, they should invest in. Lastly, downward social comparisons, in which individuals compare themselves to inferior targets, enhance self-esteem and provide information about what to avoid.

When applying the concept of social comparisons to the body image domain, women evaluate their body to gain information about the extent to which they deviate from the ideal body in their social environment. When they compare their bodies to more attractive ones, they might be motivated to behave in ways that improve their own (Arnocky et al., 2016). Conversely, as they compare their bodies to less attractive ones, they might experience a sense of superiority and behave in ways to maintain this state (Ma & Kelly, 2019).

Lookwood (2002) proposed that the emotional impact of downward social comparison is likely to act as a self-esteem and superiority enhancer as long as the comparing individual does not identify strong a correspondence between them and the target of comparison. However, when they do notice similarities after a period of reflection, the compared target becomes more relevant, and the individual is likely to perceive threat. In this case, downward social comparisons act as a self-esteem inhibitor, encouraging them to adjust their behavior and potentially lower their social rank.

Thus, the processes and cognitions of social comparison are central to the social rank theory (Ma & Kelly, 2019). Social rank is part of a motivational system that helps individuals identify their rank in their social environment and behave accordingly, either rather submissive or dominant. The system facilitates social competition and mating selection. In the

context of downward social comparison, individuals attempt to maintain the perceived social distance to inferior targets. When focusing on body-related downward social comparisons, the desire to avoid a low social rank and inferiority has been associated with thriving for thinness and eating pathology (Ma & Kelly, 2019; van Osch et al., 2018). This is consistent with sociocultural theory, which proposes that a thin body is the Western beauty standard that is internalized by most women (Thompson & Stice, 2001). When these women identify similarities between themselves and their target of downward social comparison with an undesired body (Lookwood, 2002), weight-loss dieting might be seen as an effective strategy to avoid a low social rank and to achieve sociocultural standards (Ma & Kelly, 2019; Thompson & Stice, 2001).

Therefore, social comparisons can have a substantial emotional impact on the affected women (Arnocky et al., 2016; Lookwood, 2002). So far, most research has focused on the emotional impact of upward social comparison, frequently linking it to episodes of envy (Crusius et al., 2020), which seems to serve as a motivator to improve one's body through weight-loss dieting (Arnocky et al., 2016). However, limited research has focused on the emotional impact of downward social comparison, and it is worth investigating its potential impact, given the links between downward social comparison and eating pathology (Arnocky et al., 2016; Mendia et al., 2021).

The emotion evoked by downward social comparison is likely to be pride (Alcaraz-Ibáñez et al., 2019; van Osch et al., 2018), a positive self-conscious emotion that arises when an individual perceives themselves to be superior to others (Castonguay et al., 2013). Pride can be distinguished into the authentic and the hubristic type, with authentic pride being attributed to specific self-induced efforts and accomplishments and hubristic pride being a stable state of global superiority (van Osch et al., 2018). Swami et al. (2022) suggested that individuals tend to interpret hubristic pride as authentic pride when assessed via self-report

measures. Additionally, individuals often display both types simultaneously, which is why this study focuses on a combined construct of pride.

Body-related downward social comparison episodes tend to evoke episodes of body-pride, in which women perceive their bodies as more attractive and desirable than the bodies they compare themselves to (van Osch et al., 2018). Consequently, these women are likely to be determined to maintain this body-pride and social distance as described within the framework of the social rank theory (Ma & Kelly, 2019; van Osch et al., 2018). Based on these previous findings, it is proposed that more frequent body-related downward social comparisons amplify episodes of body-pride.

The social function of body-pride can be examined on an individual and social level, as defined by Keltner and Haidt (1999). At the individual level, body-pride provides a positive evaluation of one's own body, increases self-esteem, and confirms or elevates social rank (Ma & Kelly, 2019; van Osch et al., 2018). On a social level, body-pride is used to communicate success, superiority, and the achievement of the cultural beauty standard (Keltner & Haidt, 1999; Tracy & Robins, 2007). Thereby, expressing body-pride facilitates group acceptance and dominance among women (Tracy & Robins, 2007). In order to maintain the experience of body-pride and avoid deviating from the thin ideal, women might be motivated to engage in weight-loss dieting (van Osch et al., 2018). This might also be driven by the women's perception of correspondence between their own bodies and the bodies they compared themselves to, which can be threatening to their superior position (Lookwood, 2002).

Despite body-pride being a positive emotion (Castonguay et al., 2013), it raises body image and weight awareness, potentially provoking self-criticism, identification of flaws, and decreasing self-esteem, which might eventually motivate weight-loss dieting as a compensation strategy (Ma & Kelly, 2019). Moreover, individuals tend to repeat the behavior that evokes positive emotions (Mendia et al., 2021). Therefore, when they successfully lose weight, they might compare themselves to another inferior target and experience another

episode of body-pride. To maintain this body-pride, they might engage in another episode of weight-loss dieting. As frequent weight-loss dieting is a precursor of eating disorders, the behavior is probable to become pathological (Stice et al., 2011).

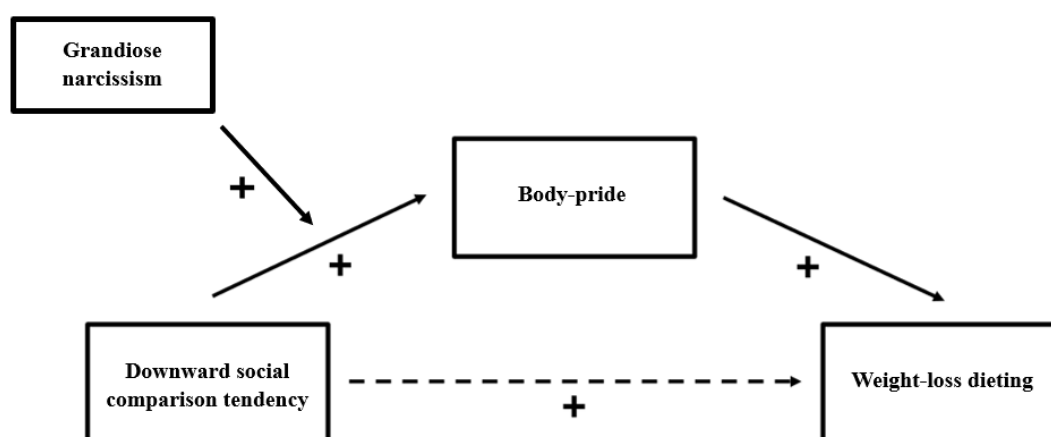
It is worth recognizing that the research investigating pride and eating pathology is limited, with some studies suggesting a positive association (Alcaraz-Ibáñez et al., 2019; Ma & Kelly; 2019) and others indicating a negative relationship, suggesting that body-related pride acts as a protective factor for eating disorders (Canstonguay et al., 2013; Mendia et al., 2021). However, given the previous findings and theories, this study predicts that the relationship between downward social comparison tendency and weight-loss dieting is mediated by body-pride. Additionally, it is proposed that this relationship is stronger for those women who display characteristics of grandiose narcissism.

Narcissism can be divided into its two subtypes, grandiose and vulnerable narcissism. Grandiose narcissism is characterized by perceived superiority, extraversion, and an inflated self-esteem, whereas vulnerable narcissism is linked to neuroticism, insecurities, and sensitivity (Mahadevan & Jordan, 2022; Rogoza et al., 2018). However, this paper will exclusively focus on grandiose narcissism for several reasons. Firstly, vulnerable narcissism has been found to have a negative association with pride, whereas grandiose narcissism seems to have a positive association with pride (Czarna, 2014). Secondly, grandiose narcissism is prevalent in the general population, while vulnerable narcissism is primarily observed in clinical populations. Since the sample of this study is a non-clinical one, it is expected to contain a higher proportion of grandiose narcissists.

It is expected that grandiose narcissists feel stronger episodes of body-pride than non-narcissists because they have a greater desire for superiority and social rank (Jin et al., 2018). Previous research suggests that grandiose narcissists express pride as a self-regulatory strategy to suppress internal states of shame (Tracy & Robins, 2007). They seem to dissociate their implicit and explicit self-representation, suppressing negative events and their emotional

impact while exaggerating positive ones (Tracy & Robins, 2003). Thus, in the context of body image, grandiose narcissists are likely to experience and express more explicit body-pride than non-narcissists. Additionally, by communicating their body-pride, they seek external confirmation from others (e.g., peers, family), which fuels their inflated self-esteem further. To maintain this state of superiority and social rank, they are likely to engage in weight-loss dieting (Wang, 2019). The desire for status and self-enhancement is frequently observed in eating disorder patients, which could explain why grandiose narcissists are at higher risk for eating pathology compared to non-narcissists (Goss & Alan, 2009; Mahadevan & Jordan, 2022; Jin et al., 2018). Therefore, it is expected that grandiose narcissism amplifies the episodes of body-pride following episodes of downward social comparisons.

To summarize, a final model is proposed, in which body-pride mediates the relationship between downward social comparison tendency and weight-loss dieting. Furthermore, grandiose narcissism is expected to moderate this mediation pathway, as shown in Fig. 1.



**Fig. 1** Proposed moderated mediation model with downward social comparison tendency as the predictor variable, body-pride as the mediator, weight-loss dieting as the outcome variable, and grandiose narcissism as the moderator.



## Methods

### Participants

A total of three hundred and forty-seven female university students volunteered to participate in this study. Participants were recruited through convenience sampling via personal and university networks and at the university library and cafeteria. One hundred and forty-five participants were excluded from the study because of refusal of informed consent, incomplete answering, or failure to answer the validity questions of the scales correctly. Thus, a final sample of 202 participants was included for statistical analysis. Ages ranged from 18 to 30, with a mean age of 22.06 (SD = 2.19).

### Measures

#### *Downward Social Comparison Tendency*

Downward Social Comparison Tendency was measured by the Downward Appearance Comparison Scale (DACCS; O'Brien et al., 2009). The scale consists of 8 items, in which participants indicate the extent to which they engage in comparisons with individuals who have less attractive appearances (e.g., "I tend to compare myself to those who have below average bodies."). Answers are given on a 5-point Likert scale (ranging from 1 = Strongly disagree, to 5 = Strongly Agree). Previous research reported a Cronbach's alpha of 0.92, indicating good internal consistency (O'Brien et al., 2009). This study found a Cronbach's alpha of 0.92, also indicating good internal consistency.

#### *Body-Pride*

Body-pride was measured by the Body and Appearance Self-conscious Emotions Scale (BASES; Swami et al., 2022). As there were significant cross-loadings in the items of the subscales, namely hubristic and authentic body-pride, Swami et al. (2022) recommended combining the scales into a single hubristic-authentic body-pride scale. The scale consists of 8 items in total, in which participants rate to what extent they experience appearance- and body-related pride (e.g., "In general, I have felt proud of my superior appearance."). Answers are

given on a 5-point Likert scale (ranging from 1 = Never, to 5 = Always). Previous research reported a Cronbach's alpha ranging from 0.85 to 0.95 (Mendia et al., 2021), indicating good internal consistency (Mendia et al., 2021). This study found a Cronbach's alpha of 0.90, also indicating good internal consistency.

#### *Grandiose Narcissism*

Grandiose Narcissism was measured by the short version of the Narcissistic Admiration and Rivalry Questionnaire (NARQ-S; Leckelt et al., 2016). It consists of 6 items, in which the participants rate the extent to which the statements describing grandiose narcissistic characteristics, apply to them (e.g., "I deserve to be seen as a great personality."). Answers are given on a 6-point Likert scale (ranging from 1 = Not agree at all, to 6 = Completely agree). Previous research reported a Cronbach's alpha of 0.74, indicating satisfactory internal consistency (Leckelt et al., 2016). This study found a Cronbach's alpha of 0.72, indicating satisfactory internal consistency as well.

#### *Weight-loss Dieting*

Weight-loss dieting was measured by the Dietary Intent Scale (DIS) (Stice, 1998). It consists of 9 items, in which the participants rate the extent of their intentions to engage in weight-loss dieting (e.g., 'I take small portions of food in an effort to control my weight.'). Answers are given on a 5-point Likert scale (ranging from 1 = "Never" to 5 = "Always"). Previous research reported a Cronbach's alpha ranging from 0.93 to 0.94, indicating good internal consistency (Stice, 1989). This study found a Cronbach's alpha of 0.93, indicating good internal consistency as well.

### **Procedure and Design**

The cross-sectional study was approved by the Ethics Committee of the Department of Psychology at the University of Groningen. The self-report measures were combined into an online questionnaire, titled "Social Comparisons and Dieting Behavior", using the digital survey software Qualtrics. After providing informed consent, participants were asked to

answer some demographic questions. To ensure English proficiency at CEFR-level B2, participants were asked to confirm their enrollment in an English-taught university program. Furthermore, they were asked to indicate whether they have a history of eating pathology, as this was considered an exclusion criterion. Participants who met the requirements were asked to complete the self-report measures on downward social comparison tendency, grandiose narcissism, body-pride and weight-loss dieting.

### **Statistical Analysis**

The predicted moderated mediation model was analyzed using the Hayes Process Macro (V29) in SPSS (Hayes, 2013). Instead of relying on the sampling distribution assumptions of the central limit theorem, bootstrapping technique was utilized to empirically generate sampling distributions. This was achieved by resampling with replacement 5000 times from the original sample to generate a bootstrap distribution, which was used to calculate standard errors for the confidence intervals and test hypotheses. Bootstrapping analysis is a robust technique in the presence of non-normal residuals and is superior to the normal theory approach in accounting for irregularities in the sampling distributions (Hayes, 2013; Jose, 2013; MacKinnon et al., 2004; Wright et al., 2011). Consequently, this approach provides more accurate estimates of standard error, more accurate inferences for the 95% confidence intervals, and higher power (Hayes, 2013; Jose, 2013; Wright et al., 2011; MacKinnon et al., 2004).

The Moderated Mediation Model 7 (Hayes, 2013) was used to test the significance of the predicted model. Afterwards, Moderation Model 1 (Hayes, 2013) was analyzed independently. Both models included body-related downward social comparison as the predictor variable, narcissism as the moderator, body-pride as a mediator, and weight-loss dieting as the outcome variable. Outside of the analyses of the hypothesized outcomes, an exploratory moderation analysis with Model 1 (Hayes, 2013), in which the hubristic-authentic body-pride scale was separated into subscales, was tested. Furthermore, a mediation analysis

with model 4 (Hayes, 2013) was conducted independently. Lastly, the Mediation Model 4 (Hayes, 2013) was used to examine the indirect effect of grandiose narcissism on weight-loss dieting through body-pride, independently of downward social comparison tendency.

## **Results**

### **Assumption Checks**

Before running the inferential analyses, the assumptions necessary for bootstrapping technique were assessed. The cross-sectional sampling method ensured the independence of the residuals. Outliers were defined as cases deviating more than 3 standard deviations from the mean and were identified using casewise diagnostics. Case 6 was considered an outlier and was therefore excluded from the dataset. Homoscedasticity of the residuals was tested by creating a scatterplot of the standardized predicted values and studentized residuals, which did not reveal any significant patterns, indicating that homoscedasticity was not violated. Lastly, linearity was checked by creating separate scatterplots for each predictor and the outcome variable. None of them showed a clear pattern, indicating sufficient linearity. Thus, none of the relevant assumptions were violated.

### **Descriptive and Correlation Analysis**

The descriptive statistics as well as the zero-order correlations were calculated and displayed in Table 1.

**Table 1**

Pearson correlations, means and standard deviations of the measured variables

	1.	2.	3.	4.
1. Downward social comparison tendency	–			
2. Body-pride	0.137	–		
3. Weight-loss dieting	0.090	0.027	–	
4. Grandiose narcissism	0.264*	0.471*	0.126	–
Mean	2.618	2.496	2.162	2.870
SD	0.982	0.724	0.886	0.814

The unstandardized Pearson correlation coefficients are reported for each variable.

\* $p < .01$ . (2-tailed)

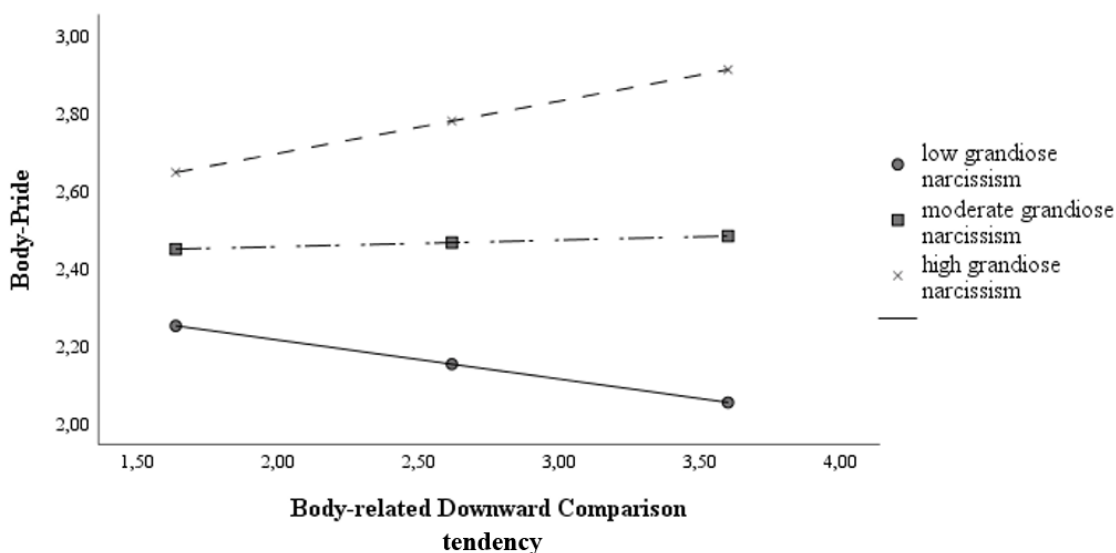
### Moderated Mediation Analysis

Following Hayes (2013), the index of moderated mediation, which conceptualizes the slope in the relationship between the moderator variable (grandiose narcissism) and the indirect effect, was calculated. In the present sample, the index was not found to be significant ( $B = 0.027$ ,  $SE = 0.016$ , 95% CI [-0.030, 0.036]). Therefore, the predicted indirect effect, in which the relationship between downward social comparison tendency and weight-loss dieting is mediated by body-pride, was not moderated by grandiose narcissism.

### Moderation Analysis

In the moderated mediation analysis, an interaction between downward social comparison tendency and grandiose narcissism could be identified. This is why a simple moderation analysis for the relationship between downward social comparison tendency and body-pride, and grandiose narcissism as a moderator, was conducted. The overall model was found to be significant ( $F(3, 198) = 21.916$ ,  $p < .001$ ), with 24.93% of the variance being explained. The negative main effect of downward social comparison tendency was significant

( $B = -0.399$ ,  $SE = 0.160$ ,  $t(200) = -2.487$ ,  $p = .014$ ), while the effect of the main effect of grandiose narcissism was not significant ( $B = 0.006$ ,  $SE = 0.1636$ ,  $t(200) = 0.0388$ ,  $p = .969$ ). Furthermore, a significant interaction effect was found ( $B = 0.145$ ,  $SE = 0.054$ ,  $t(200) = 2.6683$ ,  $p = 0.008$ ), as visualized in Fig. 2. The relationship between downward social comparison tendency and body-pride increased in magnitude from low ( $-1SD$ ;  $B = -0.101$ ,  $SE = 0.061$ ,  $p = .11$ ) to moderate (mean;  $B = 0.017$ ,  $SE = 0.047$ ,  $p = .072$ ) to high ( $+1SD$ ;  $B = 0.135$ ,  $SE = 0.066$ ,  $p = .043$ ) with increasing levels of grandiose narcissism. The effect is exclusively significant for individuals with high scores on grandiose narcissism.



**Fig. 2** Interaction between body-related downward comparison and low, average, and high levels of grandiose narcissism on their relationship with body-pride. The values are presented using unstandardized data.

### Exploratory Moderation

Within an exploratory investigation, the moderation analysis, in which the relationship between downward social comparison tendency and body-pride was moderated by grandiose narcissism, was repeated, this time separating body-pride into its subscales. Previous research

suggested that grandiose narcissism might have a stronger association with hubristic body-pride (Castonguay et al., 2013), which could thus yield a different result than testing authentic and hubristic body-pride combined. The descriptive statistics support this finding, as only hubristic pride is significantly correlated with downward social comparison tendency.

Subsequently, the question arose as to whether there is a difference in the interaction effect examined in the initial analysis, when considering for hubristic and authentic pride separately.

The first analysis included only the hubristic pride items and yielded a significant result for the overall model ( $F(3, 198) = 30.433, p < .001$ ), with 31.56% of the variance being explained. The negative main effect of downward social comparison tendency was significant ( $B = -0.383, SE = 0.172, t(200) = -2.225, p = .027$ ), whereas the main effect of grandiose narcissism was not significant ( $B = 0.123, SE = 0.176, t(200) = 0.701, p = .484$ ). The interaction effect in this analysis obtained a significant result too ( $B = 0.145, SE = 0.058, t(200) = 2.488, p = 0.014$ ). The relationship between downward social comparison tendency and body-pride increased in magnitude from low ( $-1SD; B = -0.085, SE = 0.068, p = .210$ ) to moderate (mean;  $B = 0.033, SE = 0.056, p = .511$ ) to high ( $+1SD; B = 0.152, SE = 0.071, p = .035$ ) with increasing levels of grandiose narcissism. The effect is significant only for individuals, who had a high score on grandiose narcissism. Compared to the analysis with the combined body-pride scale, the effect was slightly stronger for individuals with high grandiose narcissism scores but weaker for individuals with low or moderate scores.

The second analysis included only the authentic pride items and also yielded a significant result for the overall model ( $F(3, 198) = 8.466, p < .001$ ), with 11.37% of the variance being explained. The negative main effect of downward social comparison tendency was significant ( $B = -0.414, SE = 0.192, t(200) = -2.156, p = .032$ ), whereas the effect of main effect of grandiose narcissism was not significant ( $B = -0.110, SE = 0.196, t(200) = -0.563, p = .574$ ). Although, the combined interaction effect in this analysis was significant ( $B = 0.145,$

SE = 0.058,  $t(200) = 2.223$ ,  $p = 0.027$ ), the analyses on the individual levels were not, suggesting that the interaction effect is not significant for authentic pride.

**Table 2**

*Pearson correlations, means and standard deviations of the measured variables*

	1.	2.	3.	4.	5.
1. Downward social comparison tendency	–				
2. Hubristic body-pride	0.173*	–			
3. Authentic body-pride	0.073	0.612**	–		
4. Weight-loss dieting	0.090	0.038	0.010	–	
5. Grandiose narcissism	0.264**	0.542**	0.303**	0.126	–
Mean	2.618	2.404	2.589	2.162	2.870
SD	0.982	0.814	0.799	0.896	0.814

*Note.* The unstandardized Pearson correlation coefficients are reported for each variable.

\*\* $p < .01$ . (2-tailed)

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### Exploratory Mediation Analysis 1

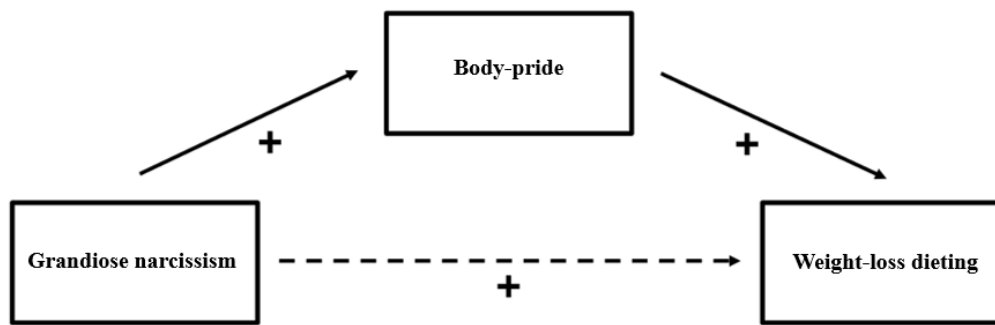
Given the significant moderation analysis, an exploratory mediation analysis was conducted to explore the indirect effect of downward social comparison on weight-loss dieting through pride. This was justified by the weak correlation between downward social comparison tendency and body-pride. The overall model did not obtain a significant result ( $F(2,199) = 0.832$ ,  $p = .437$ ). The predictors explained 0.01% of the variance of the dependent variable weight-loss-dieting. There was a significant direct effect of downward social comparison on pride ( $B = 0.010$ , SE = 0.052, 95% CI [0.000, 0.203],  $p = .05$ ), however the confidence interval contains zero, suggesting that the effect might not differ from zero and



therefore does not provide practical significance. The effect of pride on weight-loss dieting was non-significant ( $B = 0.019$ ,  $SE = 0.088$ , 95% CI [-0.156, 0.192],  $p = .838$ ), as was the total effect of downward social comparison on weight-loss dieting ( $B = 0.082$ ,  $SE = 0.064$ , 95% CI [-0.045, 0.209],  $p = .203$ ). Neither the direct effect of downward social comparison on weight-loss dieting ( $B = .080$ ,  $SE = 0.065$ , 95% CI [-0.048, 0.208]), nor the indirect effect ( $B = 0.002$ ,  $SE = 0.012$ , 95% CI [-0.020, 0.030]) were statistically significant.

### **Exploratory Mediation Analysis 2**

Within another exploratory analysis, a different mediation model, in which grandiose narcissism predicts weight-loss dieting through body-pride, was tested. This was justified by the slight correlation between grandiose narcissism and weight-loss dieting and the significant correlation between grandiose narcissism and body-pride. Moreover, grandiose narcissism might have an indirect effect on weight-loss dieting through body-pride, independent of downward social comparison tendency, which was the initial predictor. The model, displayed in Fig. 3., was not significant ( $F(2,199) = 1.744$ ,  $p = .178$ ). There was neither a significant direct effect of grandiose narcissism on weight-loss dieting ( $B = 0.160$ ,  $SE = 0.877$ , 95% CI [-0.013, 0.333],  $p = .069$ ), nor an indirect effect of grandiose narcissism on weight-loss dieting through body-pride ( $B = -0.022$ ,  $SE = 0.040$ , 95% CI [-0.098, 0.059]). However, there was a significant direct effect of grandiose narcissism on body-pride ( $B = 0.419$ ,  $SE = 0.055$ , 95% CI [0.309, 0.529],  $p < .001$ ).



**Fig. 3** Exploratory mediation model with grandiose narcissism as the predictor variable, body-pride as the mediator and weight-loss dieting as the outcome variable.

### Discussion

In a sample of female university students, it was predicted that body-pride would mediate the relationship between downward social comparison tendency and weight-loss dieting, such that with increasing downward social comparisons, the greater would be the episode of body-pride, and thereby increasing the frequency of weight-loss dieting.

Additionally, it was expected that grandiose narcissism would moderate this mediation pathway, such that with increasing downward social comparison and increasing grandiose narcissism, the greater would be the body-pride, and following this, the greater would be the frequency weight-loss dieting episodes. The results did not support the predicted moderated mediation model, which is supported by several indicators.

Firstly, the analyses showed that neither downward social comparison tendency, nor body-pride were correlated with weight-loss dieting, which would be necessary for the model to have a significant moderated mediation index. In line with the nonsignificant correlation between body-pride and weight-loss dieting, self-regulation theory suggests that motivation decreases when an individual achieves a goal (Carver & Scheier, 1982, 2000). Thus, when a woman experiences body-pride following an episode of downward social comparison, she

achieves the goal of having a superior body to the compared one. This might lead to satisfaction and eventually a shift in focus towards other goals, so that there is no further motivation to maintain body-pride through weight-loss dieting because it is not considered a goal anymore.

In addition to this idea, Lookwood (2002) suggested that downward social comparison might elicit negative affect rather than positive affect. When an individual perceives a great discrepancy between them and the compared target, they are indeed likely to experience positive affect, such as body-pride. In such a case, women might not be motivated to engage in further weight-loss dieting (Carver & Scheier, 1982, 2000). However, when they perceive little discrepancy, such as a woman noticing similarities between her body and the inferior body, negative affect is likely to arise (Lookwood, 2002). She might feel threatened and shameful, which could eventually decrease her self-esteem. This negative emotional impact could be a risk factor for weight-loss dieting, as supported by literature suggesting that shame, guilt, and low self-esteem are associated with eating pathology (Cruz-Sáez et al., 2018).

Indeed, for grandiose narcissists, downward social comparison tendency seems to elicit body-pride, in line with the significant interaction, meaning that following an episode of downward social comparison, grandiose narcissism amplifies the episodes of body-pride. Grandiose narcissists might believe that they would never be in a similar situation as their compared target, therefore experiencing primarily body-pride (Tracy & Robins, 2003), rather than negative affect. This is supported by the idea that grandiose narcissists constantly engage in downward social comparison as a self-regulation strategy to confirm their superiority and social status, thus only perceiving great discrepancy (Krizan & Bushman, 2011).

In the body image domain, women who show grandiose narcissistic qualities fuel their self-esteem by comparing their bodies to inferior ones, and express body-pride to communicate their grandiosity and social status (Tracy & Robins, 2003). Additionally, they tend to seek external confirmation from their social environment (e.g., friends and family),

who are validating their grandiosity. However, it is important to note, that the interaction effect between downward social comparison tendency and grandiose narcissism was only significant for women with high levels of narcissism.

Investigating a clinical sample of women displaying pathological levels of grandiose narcissism, could yield a different result for the relationship between body-pride and weight-loss dieting. So far, body-pride does not seem to be a strong enough motivator for weight-loss dieting (Castonguay et al., 2013; Mendia et al., 2021). However, clinical grandiose narcissists tend to produce greater body-pride because they exaggerate positive events and emotions (Tracy & Robins, 2003), as they have a stronger desire for superiority and social rank to be able to uphold their inflated self-esteem (Corning et al., 2006; Mahadevan & Jordan, 2022). This exaggerated body-pride might be strong enough to motivate weight-loss dieting in a clinical population.

Additionally, it should be recognized that there was a slight correlation between grandiose narcissism and weight-loss dieting in the present sample, which is supported by existing literature pointing towards an even stronger correlation between these variables (Jin et al., 2018; Steinberg & Shaw, 1997; Waller et al., 2007). It is possible that this relationship does not manifest through body-pride but rather through negative emotions linked to body dissatisfaction (Lookwood, 2002; Cruz-Sáez et al., 2018). Grandiose narcissists seem to dissociate their implicit and explicit self-representations, keeping negative emotions such as guilt and shame at an implicit level and displaying exaggerated pride and grandiosity at an explicit level (Tracy & Robins, 2003). Thus, grandiose narcissists might indeed experience body-pride on an explicit level when engaging in downward social comparisons but simultaneously feel shame and body-dissatisfaction on an implicit level. Consequently, this interpretation suggests that it might be underlying body-dissatisfaction rather than body-pride itself that drives weight-loss dieting and explains the association between grandiose

narcissism and eating pathology (Jin et al., 2018; Steinberg & Shaw, 1997; Waller et al., 2007).

In the exploratory moderation analysis, the body-pride scale was separated into the hubristic and authentic items in order to examine if the interaction effect between downward social comparison tendency and grandiose narcissism would differ for the subscales. This idea was justified by existing literature suggesting that downward social comparison might be more strongly associated with hubristic pride than with authentic pride (Castonguay et al., 2013) and that grandiose narcissism tends to exhibit hubristic pride to a greater extent (Rogoza et al., 2018; Tracy & Robins, 2003).

The results of this analysis align with the literature, as the interaction effect of downward social comparison tendency and grandiose narcissism was significant for hubristic pride only. Tracy and Robins (2003) propose an explanation for this finding, suggesting that grandiose narcissists primarily embrace a global and stable sense of pride because tying the experience of pride to achievements would be too instable. There would not be any guarantee of the consistent persistence of authentic pride, which poses too much of a threat for the grandiose narcissist's explicit self-esteem. Accordingly, they would not dare to link their perceived body-pride to the behavior of weight-loss dieting but rather to their universal belief of having a thinner, more attractive body compared to all inferior comparison targets.

The second exploratory analysis was a mediation model, in which downward social comparison predicts weight-loss dieting through body-pride. The outcome was not significant, which is consistent with previous outcomes, such that body-pride does not seem to be correlated with weight-loss dieting. As mentioned, when women experience body-pride, their motivation is likely to decrease due to the satisfaction of goal achievement (Carver & Scheier, 1982, 2000). Moreover, downward social comparison might produce negative affect rather than positive one (Lookwood, 2002). As women reflect on similarities between their bodies and bodies used for downward social comparison, shame or guilt might arise, ultimately

leading to body dissatisfaction. Contemporary literature suggests that body dissatisfaction might be a stronger predictor of weight-loss dieting than body-pride (Cruz-Sáez et al., 2018; Mendia et al., 2021).

Lastly, an exploratory mediation analysis in which grandiose narcissism predicts weight-loss dieting through body-pride was conducted in order to investigate if grandiose narcissists could produce enough body-pride to motivate weight-loss dieting, independently of downward social comparison tendency. The non-significant result could be explained by body-pride not being correlated with weight-loss dieting. Moreover, grandiose narcissists primarily embrace hubristic body-pride (Tracy & Robins, 2003), which occurs regardless of any specific achievements such as weight-loss through dieting. Thus, grandiose narcissists might not feel the need to weight-loss diet, as they believe that their bodies already conform to sociocultural standards of thinness and attractiveness (Thompson & Stice, 2001). It could be valuable to investigate a clinical sample of grandiose narcissists because they tend to exaggerate positive emotions such as body-pride, potentially being strong enough to serve as a motivator for weight-loss dieting. It is also possible that weight-loss dieting behavior in grandiose narcissists might rather be explained by underlying negative emotions such as shame and guilt (Lookwood, 2002; Tracy & Robins, 2003).

Based on the findings of this study and related literature, negative affect might be a stronger predictor of eating pathology than positive affect (Mendia et al., 2021), and it is likely to arise following an episode of downward social comparison (Lookwood, 2002). Conversely, positive affect, such as body-pride, seems to have no significant relationship weight-loss dieting in this study and is even suspected to act as a protective factor (Canstonguay et al., 2013; Gilchrist et al., 2018). Consequently, the practical implications of this research suggest that it is important to prevent body-related negative affect and foster positive body-related affect in female college students who are at risk of eating disorders (Tylka & Wood-Barcalow, 2015).

One approach to achieving this goal is through emotion-regulation education, such as dialectical behavioral therapy (DBT), which teaches women to identify and regulate negative body-related affect. However, decreasing negative affect alone is not sufficient to abolish negative body image. Actively promoting a positive body image by increasing positive body-related affect is also necessary to prevent eating pathology in women (Tylka & Wood-Barcalow, 2015).

Cognitive dissonance-based prevention programs might be useful to establish a positive body-image and even body-pride in these women (Tylka & Wood-Barcalow, 2015). These programs encourage women to engage in positive self-talk and writing about their bodies, building skills to protect themselves from the negative emotional impact of unrealistic media standards. They should not only focus on body-appearance, but also on the functionality of their bodies. The emphasis should be shifted from conforming to sociocultural ideals of thinness, towards appreciating what their bodies can achieve and provide in terms of strength, endurance, and simply daily activities. Moreover, not only women's internal but also the societal meaning of beauty should be reframed, away from being thin as the ideal and towards a healthy and functional body (Tylka & Wood-Barcalow, 2015). This approach can be implemented as a prevention strategy for female university students who are at risk for eating disorders, but it might also be beneficial as a treatment intervention for a clinical population that is affected by eating pathology. However, the application to a clinical sample needs further exploration to investigate its' effectiveness.

The significant findings of this study should not be interpreted without considering several limitations. Firstly, the study's design was cross-sectional, which does not allow for causal and directional conclusions, as all data was collected at a single time point (Ferreira et al., 2017). Nevertheless, the findings still contribute to the understanding of how the relevant variables impact each other and provide directions on which relationships are valuable to take into account further. However, a more predictive study-design, such as a longitudinal design,

would be necessary to gain more accurate information about the moderation analysis' dynamics.

Secondarily, this study collected the data via self-report measures, which rely on the subjective perception of the participants (Ferreira et al., 2017). The responses accuracy might be deficient due to their susceptibility to biases, thus impacting the data's validity. The measures of this study are especially vulnerable to social desirability (Fisher & Katz, 2000), as they include items in which participants rate themselves on undesirable traits and behaviors, such as superiority, the desire for others to fail, and grandiose narcissism. People tend to present themselves as having favorable behaviors and traits, partly unconsciously, and underestimate the extent of their undesirable qualities, which might result in inaccurate effect sizes. Future research should consider measuring constructs such as downward social comparison tendency and grandiose narcissism with alternative tools.

Lastly, this study exclusively investigated female university students, primarily studying in the Netherlands. Utilizing this convenience sample affects its generalizability to other populations, including clinical ones (Ferreira et al., 2017). Although the studied population is at higher risk for weight-loss dieting and the development of eating disorders (Brownell & Fairburn, 1995), it is important to consider populations such as men, individuals of different ages, and specific groups such as athletes and clinical samples, as they might display different qualities that affect the scores on the measurements of interest.

Future research should continue exploring the emotional impact of downward social comparison tendency in the context of eating pathology. Negative affect might be a result of downward social comparison tendency (Lookwood, 2002) and might interact with distorted emotion-regulation abilities, thus provoking body dissatisfaction (Cruz-Sáez et al., 2018). As body-dissatisfaction seems to be a risk factor for eating pathology, researching the effect of different emotion-regulation strategies in this relationship might benefit future prevention and intervention programs.



Additionally, the impact of body-dissatisfaction should be taken into account when studying the relationship between grandiose narcissism and weight-loss dieting. Conversely, body-pride seems to be unrelated to weight-loss dieting and might even be a protective factor when experiencing it in terms of body functionality (Tylka & Wood-Barcalow, 2015). It might be valuable to explore if body-pride regarding functionality could decrease body dissatisfaction and thereby prevent eating pathology.

Furthermore, body-pride should be studied in a clinical sample of eating disorder patients, as the findings of this study are not applicable to that population. Moreover, existing literature suggests that body-pride might be relevant in the clinical population (Ma & Kelly, 2019), which is why future research should continue to extend the knowledge on the dynamics between body-pride and eating pathology. Similarly, investigating a clinical sample of grandiose narcissists would be valuable, as these individuals tend to produce more body-pride (Tracy & Robins, 2003), which could be strong enough to motivate weight-loss dieting instead of preventing it.

To conclude, this study expands the current literature on the relationship between downward social comparison tendency, grandiose narcissism, body-pride and weight-loss dieting in a sample of female university students. The findings did not support the model, which proposed that grandiose narcissism moderates the mediation pathway, in which downward social comparison tendency predicts weight-loss dieting through body-pride. Neither downward social comparison tendency nor body-pride were found to be significantly correlated with weight-loss dieting in the current sample, leading to a non-significant model. However, an interaction effect between downward social comparison tendency and grandiose narcissism was identified, indicating that individuals with high levels of grandiose narcissism experienced a more body-pride following episodes of downward social comparison. The findings provide directions for future research and emphasize which relationships should be examined further. They can benefit practitioners when designing eating disorder prevention

and intervention programs by stressing the importance of preventing negative body-image and promoting a positive one (Tylka & Wood-Barcalow, 2015). Strategies that focus on appreciating body functionality and teaching emotion-regulation skills might have a positive and preventive impact on women at risk for developing eating pathology.

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