Disentangling Upward Social Comparison Tendency, Body-Envy and Perfectionism on

Dieting in a sample of college women: A moderated mediation analysis

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Abstract

There has been a rise in the prevalence of restrictive dieting and eating disorders in women due to the beauty ideal becoming thinner. The sociocultural theory suggests that upward social comparison (USC) and the emotions that stem from it may explain this phenomenon. Therefore, the first prediction in this study was that women's tendency to compare upwardly (upward social comparison tendency; USCT) towards the thin ideal would increase their body-envy tendency (BET) which would in turn increase their weight-loss dieting (WLD) attempts. BET would act as a mediator in this relationship. Research also suggests that maladaptive perfectionism (MP) might increase the susceptibility of women to compare upwardly and experience envy. Therefore, the second prediction in this study was that higher MP would enhance the relationship between USCT, BET, and WLD and that these effects would occur above and beyond BMI and adaptive perfectionism. Therefore, a moderated mediation model was tested. A convenience sample of college women was gathered ($N = 205$) with a mean age of 21.35 ($SD = 2.56$) and a battery of questionnaires was provided to them. Then, a bootstrapped moderated mediation analysis using PROCESS was performed, which was non-significant. Thus, two mediation analyses were performed with MP and USCT as explanatory variables with BET as a mediator. These were found to be significant. These results suggest that women high in both MP and USCT should be targeted in the prevention and management of BET to prevent WLD.

Keywords: Upward social comparison tendency; body-envy tendency; perfectionism; thin ideal, weight-loss dieting.

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The prevalence of unhealthy eating behaviors such as strict dieting and fasting has been steadily increasing among women for the last twenty years from 2.5% in 1998 to 6.2% in 2017 (Santana et al., 2023). Additionally, the prevalence of general dieting among the population of young adult women, who usually attend college at this age, has been stipulated to be between 27% and 68% (Czepiel & Koopman, 2023). Unfortunately, dieting with the intention to lose weight (a.k.a. Weight loss dieting; WLD) has been found to be related to eating pathology such as anorexia nervosa (e.g. Czepiel & Koopman, 2023; Santana et al., 2023). Anorexia nervosa is one of the psychiatric disorders with the highest mortality rate, with an estimated 5 in 1000 persons dying from associated causes every year (Arcelus et al., 2011). Due to the growing prevalence and high mortality of these disorders among the population of college-age women, it is important to be able to identify their causes and diagnose them quickly. Previous studies suggest that eating pathology may be developed because of upward social comparison (USC) to thinner, more attractive women (O'Brien et al., 2009). Despite this, little research has examined the specific emotions that could theoretically mediate the impact of such comparisons; usually, only the concept of broad negative affect is explored (Stice, 2002).

With this in mind, the first aim of this study is to examine whether the tendency to experience body-envy mediates the relationship between USC to more attractive women and WLD. The first prediction in this study is that women with a higher tendency to compare upwardly (upward social comparison tendency; USCT) will experience more body-envy episodes and will attempt more WLD as a result. Body-envy tendency (BET) would thus mediate the relationship between USCT and WLD. Also, perfectionism has been previously linked to a

higher susceptibility to envy those who are admired more (Lyman & Luthar, 2014). Thus, the second hypothesis of this study is that maladaptive perfectionism will amplify the relationship between USCT, BET, and WLD. Overall, this study aims to explore a moderated mediation model for the variables which could enhance the relationship between USCT and WLD.

The sociocultural model as proposed by Tiggemann (2012) may provide an explanation as to why women compare upwardly to the thin ideal. According to Tiggemann (2012), the sociocultural model is a multidimensional model in which the ideal of beauty is derived from multiple sources in someone's sociocultural context. Within this model there is a societal ideal of beauty which gets modified with changes in society. Indeed, for the last few decades, this ideal has been characterized by thinness. This ideal is often linked to happiness and status, and it is therefore used to evaluate oneself and others (Tiggemann, 2012). Then, the way women evaluate themselves compared to others and the ideal is through a process of social comparison (Buunk & Gibbons, 2000; Nabi & Keblusek, 2014). As stated in Festinger's classic social comparison theory (1954), individuals are motivated to know where they stand compared to others in dimensions relevant to their self-concept. For women, beauty is an essential component of their self-concept, which is demonstrated by the amount they spend maintaining their appearance (Tiggemann, 2012). Consequently, women will compare themselves to the beauty ideal and if they find they are not close to it, they will attempt WLD to conform to this ideal (Stice, 2002; Tiggemann, 2012). This is illustrated by Tiggemann's review (2012) and research by O'Brien and colleagues (2009) which shows there exists a relationship between USC and WLD. Usually, body dissatisfaction is studied as a mediator between USC and WLD (O'Brien et al., 2009; Stice, 2002). With the aim to further expand this theory, this paper will focus on how emotions, specifically body-envy, could mediate the relationship between USCT and WLD.

According to O'Brien and colleagues (2009), some women have a stronger tendency to compare upward to others. Hence, when the comparison is unfavorable, they are more likely to be negatively emotionally affected by portrayals of the thin ideal (Buunk et al., 1990). This ideal of beauty is unrealistic and unattainable for most women, hence it is frustrating and painful and elicits feelings of inferiority within women (Stice, 2002). Therefore, because unfavorable USCs cause a woman to feel inferior and frustrated, she is likely to feel envy of the target of comparison's body (i.e. body-envy) (Arnocky et al., 2016; Buunk & Gibbons, 2007; Buunk et al., 1990; Crusius et al., 2020) Smith & Kim, 2007; van de Ven et al., 2011). As per Smith and Kim's review (2007), envy is an unpleasant and painful emotion resulting from the knowledge that someone else possesses something that one does not have. Envy lets people know of their inferior position and that they should do something to reduce the gap between the envied person and themselves (Crusius et al., 2020). Additionally, those close to the thin ideal are rewarded with praise, success, and happiness, leading other women to feel that their advantage is unfair, especially when the comparison target is like them in other dimensions (Smith & Kim, 2007; Tiggemann, 2012). Because of these similarities, it is easy for women to think in terms of "it could have been me," leaving them frustrated, but otherwise motivated to achieve the position of the comparison target (Smith & Kim, 2007). Therefore, to ameliorate the pain and frustration coming from body-envy after a USC and gain status in society, women are likely to attempt WLD to close the gap between the thin ideal and themselves (Crusius et al., 2020). Hence, a higher USCT will result in women experiencing a higher tendency for body-envy, leading to more WLD in university women. Therefore, the first prediction in this paper is that BET will mediate the relationship between USCT and WLD.

The predicted pathway of USCT through body-envy on WLD, is stronger for some women than for others. The second prediction in this paper is that women high in maladaptive perfectionism (MP) are more likely to experience more episodes of body-envy, resulting in more WLD. Perfectionism as a stable personality trait is characterized by self-evaluation, having the need to establish impossibly high standards for oneself and feeling a sense of profound failure when unable to achieve said standards (Davis, 1998; McComb & Mills, 2022). Perfectionism is divided into two dimensions, one adaptive and one maladaptive, with the most evidence showing that MP affects the eating patterns of young women (Czepiel & Koopman, 2023; Davis, 1998; Lyman & Luthar, 2014; Rentzsch & Gross, 2015). Additionally, MP is often characterized by a worry about imperfection (Yang & Stoeber, 2012), which, when relating to body appearance, has been found to be connected to disordered eating patterns including WLD (Czepiel & Koopman, 2023; Stice, 2002). This could be because the thin ideal is regarded as objective perfection in the eyes of society and therefore a standard to adhere to if one is to be perfect (McComb & Mills, 2022; Tiggemann, 2012). In summary, first, it has been established in the literature that MP is linked to disordered eating behaviors to achieve the perfect thin ideal. Secondly, that calorie restriction in the form of WLD may be used by perfectionistic individuals to achieve said perfect ideal of beauty.

Maladaptive perfectionism has also been linked to USCT and more experiences of body-envy because perfectionists depend on the admiration of others to maintain good self-esteem and to not feel inferior (Lyman & Luthar, 2014; McComb & Mills, 2022). When they do not receive admiration, but someone else does (such as those close to the thin ideal), they will feel inferior resulting in envy towards them (Lyman & Luthar, 2014). Perfectionistic women are likely to consider the thin ideal perfection and have been found to be more likely to compare to

that which they consider perfection (McComb & Mills, 2022). When falling short of perfection (i.e. the thin ideal), perfectionistic women are more prone to feeling inferior and thus experience body-envy towards those who are considered perfect (Davis, 1998; Lyman & Luthar, 2014). Lyman and Luthar (2014) also found that girls link their appearance to their personal satisfaction and success, and it is only when they have reached the ideal of beauty that they can be proud of themselves. If the ideal is not achieved, they may experience more unfairness leading to body-envy towards those who do reach the thin ideal. To summarize, perfectionistic women are more likely to compare to the thin ideal for self-evaluation purposes as it is considered perfect (McComb & Mills, 2022). Consequently, they experience more body-envy when they do so because they feel inferior when they cannot adhere to their standard of perfection (Lyman & Luthar, 2014). In turn this will lead to increased WLD. Thus, the last prediction of this study is that MP will have a moderating effect in the relationship between USCT and BET, in which having more MP will cause one to compare upwardly more often to the thin ideal, experience more instances of body-envy afterwards, and hence attempt more WLD.

In this study, I aim to research the mediating effect of BET after an unfavorable USC and its effects on WLD. In addition, I would like to investigate how perfectionism can amplify the relationship between USC, BET, and WLD. I predict that women high in USCT and especially those high MP will tend to experience more episodes of body-envy towards peers representing the "perfect" thin ideal. This is because these women get more advantages in society leading average women to feel inferior as well as experiencing deep feelings of frustration, and unfairness because the ideal is unattainable. To close the gap between themselves and the ideal, women will resort to WLD as a way of achieving "perfection." This will be investigated through a survey study conducted on a sample of college women. Adaptive perfectionism will be

controlled to ensure that only the effects of MP moderate the hypothesized model (Stoeber &

Otto, 2006). Finally, BMI will also be controlled to assess whether the results occur above and

beyond body size, which would suggest a universal effect rather than one only occurring within

those who do not fit an ideal weight (O'Brien et al., 2009).

Figure 1

Predicted Moderated Mediation Model
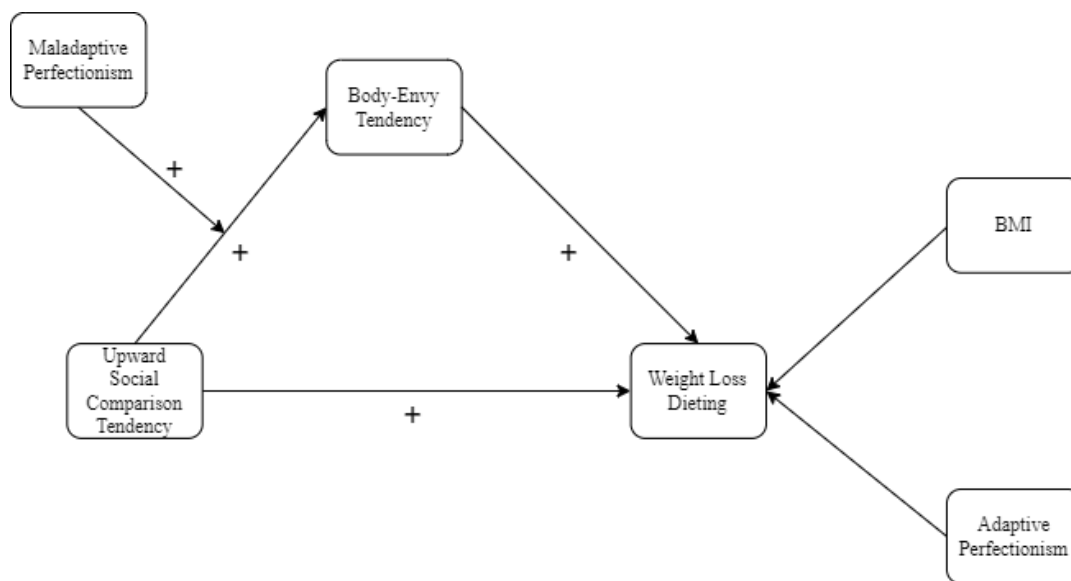
Methods

Participants

A convenience sample of 206 female students from a university or other higher education

institution initially volunteered to participate in the study. One participant was removed from this

sample because of missing data, therefore leaving a final sample of 205 participants. The mean

age of the sample was $M = 21.35$ ($SD = 2.69$) and the mean BMI was $M = 22.39$ with a standard

deviation of $SD = 4.52$. 45% of participants were Dutch, 20% were German and 35% indicated

having another nationality (e.g., American, Belgian, Brazilian, British, Bulgarian, Canadian,

Chinese, Croatian, Colombian, Filipino, Finnish, French, Greek, Indian, Iraqi, Irish, Italian, Lithuanian, Polish, Romanian, Serbian, Slovak, Spanish, Slovenian, Turkish, Venezuelan or mixed). The sample also consisted of 5% Asian participants, 1% Black or African American, 3% Hispanic, 86% White, 5% Mixed, and 1% indicated "other" without specification.

Measurements

Tendency of Body Envy. The envy scale consisted of eight items that measured the number of episodes of envy the participant experienced. This was a self-constructed scale based on contemporary theories by Smith and colleagues (1999) and Crusius (2020). Examples of items of this scale were: "I am often bothered when I see women who are slimmer and more defined than me" and "I tend to think it's unfair that some women are slimmer and more defined than me." A Likert scale was used where 1 = strongly disagree and 5 = strongly agree, then the sum of the items for each participant was used to calculate a total score. A higher number indicated a greater body envy tendency. The Cronbach's alpha of the scale in this study was excellent with α = .90.

Weight Loss Dieting. The Diet Intent Scale (DIT) by Stice (1998) was used to operationalize WLD. It consisted of nine items that measured dietary restraint. Two examples from this scale were: "I take small portions (of food) in an effort to control my weight" and "I count calories to try to prevent weight gain." We used a 5-point scale that ranges from 1 = never to 5 = always and the sum of items was calculated to create a total score, in which a higher score indicated more intention to diet to lose weight. The scale has a Cronbach's alpha of .94 and temporal reliability of .92 (Stice, 1998). The Cronbach's alpha in this study was excellent with α = .93.

Upward Social Comparison Tendency. The upward physical appearance comparisons scale (UPACS) was used to operationalize USCT (O'Brien et al, 2009). Two examples of items were: "I find myself comparing my appearance with people who are better looking than me," and "At parties or other social events, I compare my physical appearance to the physical appearance of very attractive people." Ten items were answered on a five-point Likert scale from 1 = never to 5 = always. Then a final score was obtained by adding the scores of each item, where a higher score indicated a higher tendency to compare upwardly. The Cronbach's alpha indicated by the author = .95 (O'Brien et al, 2009), which was close to the statistic that was obtained in this study $\alpha = .96$ — an excellent internal reliability.

Perfectionism. To measure (maladaptive) perfectionism applied to physical appearance the Physical Appearance Perfectionism Scale (PAPS) by Yang and Stoeber (2012) was used. This self-report questionnaire contained 12 items divided into two sub scales: "Worry about Imperfection" (seven items; e.g. "My appearance is far from my expectations") which was considered a maladaptive form of perfectionism, and "Hope for Perfection" which was considered the adaptive form (five items; e.g. "I hope that others find me attractive"). The items were answered on a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree, after which a total score was computed for each subscale. For both subscales, a higher score indicated a higher tendency to be perfectionistic either adaptively or maladaptively. The questionnaire had a good general internal consistency ($\alpha = .83$), with "Worry about Imperfection" having a Cronbach's alpha of .85 and Hope for Perfection a Cronbach's alpha of .80 as indicated by the authors (Yang & Stoeber, 2012). The internal consistency in this study was also good ($\alpha = .87$), with the maladaptive scale having a good consistency as well ($\alpha = .88$), and the adaptive scale having a satisfactory consistency ($\alpha = .78$).

Body Mass Index. Body mass index (BMI) was calculated using self-reported height and weight measurements. These measurements tend to fluctuate between 1%-3.5% in accuracy from one's actual weight and height (Bowman & DeLucia, 1992).

Procedure

The study was approved by the Ethics Committee of the psychology department at the University of Groningen. Before the formal data collection started, a pilot study was conducted with a sample of six participants. The pilot study was conducted to assess typographical and process errors of the online questionnaire. Some grammatical errors were corrected (such as changing the word "helpings" to "portions" and punctuation marks) as well as making the questions asking for the ratings of each questionnaire uniform. No process errors were found. Qualtrics was used as the tool for displaying the questionnaire and collecting responses (Qualtrics, Provo, UT). After the questionnaire was revised, it was published through SONA (i.e., online pool of Bachelor students at University of Groningen participating for course credit) and the researchers also shared the link to the survey through their own social networks. A convenience sample where the researchers asked friends and acquaintances to do the survey and share it with their friends was gathered. The data collection period started on the 19th of April 2024 and ended on 14th of May 2024.

Participants first had to give informed consent to participate. The online questionnaire included demographic information (e.g., gender, age, height, weight, nationality, and ethnicity). In order to avoid any invalid data, all the responses from non-female respondents, from participants that did not have at least a B2 level of English, and from those who were not students at the university or other higher education institution were immediately redirected to the end of the survey. Then, measures of upward social comparison, body-envy tendency, WLD, and

perfectionism were presented. At the end of the survey participants were provided with a list of ten steps that advised them how to turn negative body thoughts into a positive body image.

Statistical Analysis

The hypothesized mediated moderation model (see Figure 1) was assessed through a test of the significance of the direct and indirect effects of the moderator through a bootstrapping procedure (n = 5000) of PROCESS macro, model 7 (Hayes, 2022) in SPSS (version 28). Bootstrapping was used because it is robust in normality and can be used for small sample sizes (Yuan & MacKinnon, 2014). In this study, upward social comparison tendency was the explanatory variable with body envy tendency as a mediator, and weight-loss dieting as the outcome variable. Additionally, the moderator was maladaptive perfectionism. The moderated mediation analysis tested the effect of a moderating variable (i.e. maladaptive perfectionism) on the relationship between a predictor (i.e. upward social comparison tendency), a mediator (i.e. body envy tendency) and outcome variable (i.e. weight loss dieting) (Igartua & Hayes, 2021). Additionally, body mass index and adaptive perfectionism were controlled for. The index of the moderated mediation pathway showed the difference of the indirect effect across the level of the moderator variable: maladaptive perfectionism (Igartua & Hayes, 2021). The moderated mediation is said to be significant when the bootstrapped 95% confidence interval did not contain a zero (Hayes, 2022).

Results

Preliminary Analysis

Before beginning the analysis, any missing data was removed from the sample. One participant was removed due to missing weight data ($N = 205$). No assumptions of homoscedasticity and linearity were severely violated as confirmed by graphical analysis (see

Appendix; Clement & Bradley-Garcia, 2022). However, there were some small deviations from normality, but the bootstrapping procedure used for the moderated mediation analysis is robust for both heteroscedasticity and normality so slight violations may be accepted (Yuan & McKinnon, 2014). Nonetheless, Pearson's correlation analysis, which is usually used in assessing correlations, is sensitive to violations from normality (Rovetta, 2020). Instead, Spearman's rank correlation analysis was used to evaluate the correlations between the proposed variables (see Table 1; Rovetta, 2020). The independence of residuals was confirmed as per the Durbin Watson statistic ($DW = 2.22$) meaning that information form one participant did not influence the results from another participant. Furthermore, no multicollinearity was found ($VIF < 10$), meaning that the independent variables were not related to each other. A case-wise diagnostic ($> \pm 3$ SD) was conducted and no outliers were identified (all values had a Cook's Distance of < 1). Finally, descriptive statistics and correlations between the variables can be found in Table 1.

Table 1

Spearman's Rank Correlations, Means, and Standard Deviations

	1	2	3	4	5	6
1. USCT	-					
2. BET	.70**	-				
3. MP	.63**	.60**	-			
4. WLD	.50**	.54**	.53**	-		
5. BMI	-.02	.07	.20**	.22**	-	

6. AP	.39**	.31**	.30**	.21**	-.05	-
Mean	30.42	18.80	20.14	20.08	22.39	19.76
SD	9.79	7.73	6.52	8.56	4.52	3.14

Note. USCT: Upward Social Comparison Tendency; BET: Body Envy Tendency; MP: Maladaptive Perfectionism; WLD: Weight Loss Dieting; BMI: Body Mass Index; AP: Adaptive Perfectionism.

**p <.01

Moderated Mediation Analysis

A moderated mediation analysis was conducted using model seven according to Hayes (2022) using 5000 bootstraps and controlling for heteroscedasticity with the HC3 (Davidson-MacKinnon). The model was shown to be non-significant because of the non-significant interaction between MP and USCT was (Unstandardized interaction: B = 0.01, *SE* = 0.01, 95% *CI* [-0.002, 0.02], *p* = .12). Therefore, MP did not moderate the relationship between USCT, BET, and WLD. This was again confirmed by the index of moderated mediation (B = .004, 95% *CI* [-0.001, 0.01]). Therefore, the proposed model stating that MP would moderate the pathway from USCT through BET on WLD was rejected. Nonetheless, the correlation analysis (refer to Table 1) showed significant correlations between the variables which might mean that MP and USCT could independently influence the mediation pathway through BET and WLD. Thus, two new ad-hoc predictions were made: first, higher USCT would increase the BET of a person which would increase their WLD attempts. Second, higher MP would increase the BET of a person which would in turn also increase their WLD attempts. To examine these hypotheses two mediation pathways according to Hayes (2022) model four were examined.

Mediation Analyses

First, the significance of the whole mediation model between USCT, BET, and WLD was assessed. The model was found to be significant ($F(202) = 100.19$, $p < .001$) and USCT predicted 48% of the variance of WLD. The direct effect of USCT on BET (B = 0.55, $SE = .04$, 95% CI [0.47, 0.63], $p < .001$) was significant, as was the direct effect of BET and WLD (B = 0.42, $SE = 0.11$, 95% CI [0.20, 0.63], $p < .001$). The direct effect of USCT on WLD was also found to be significant (B = 0.23, SE(HC3) = 0.08, 95% CI [0.07, 0.39], $p = .006$). Finally, the indirect effect of USCT on WLD when mediated by BET was also significant (B = 0.23, $SE = 0.07$, 95% CI [0.11, 0.36]). Therefore, these results showed support for the pathway in which USCT increases one's BET which would lead to more WLD attempts. See Figure 2 for the mediation analysis of USCT on WLD with BET as the mediating variable.

Figure 2

Mediation Model of the Relationship between USCT and WLD with BET as the Mediating Variable
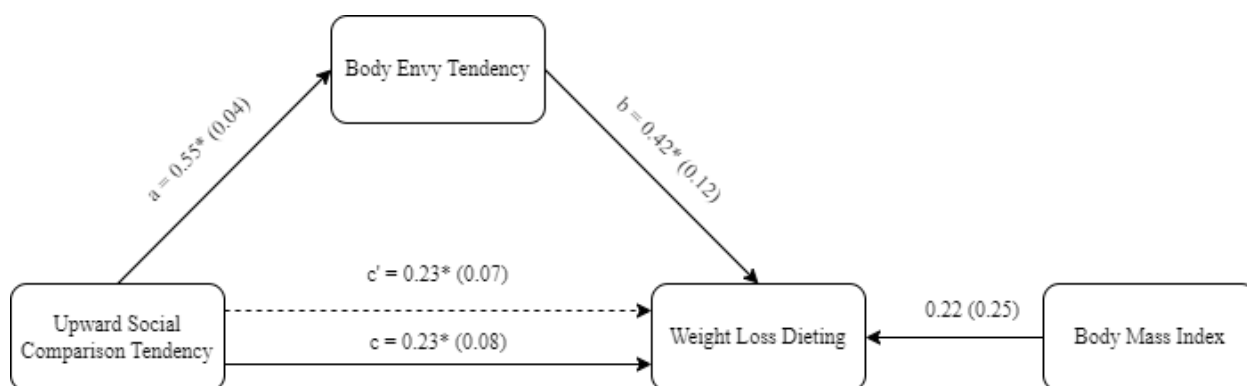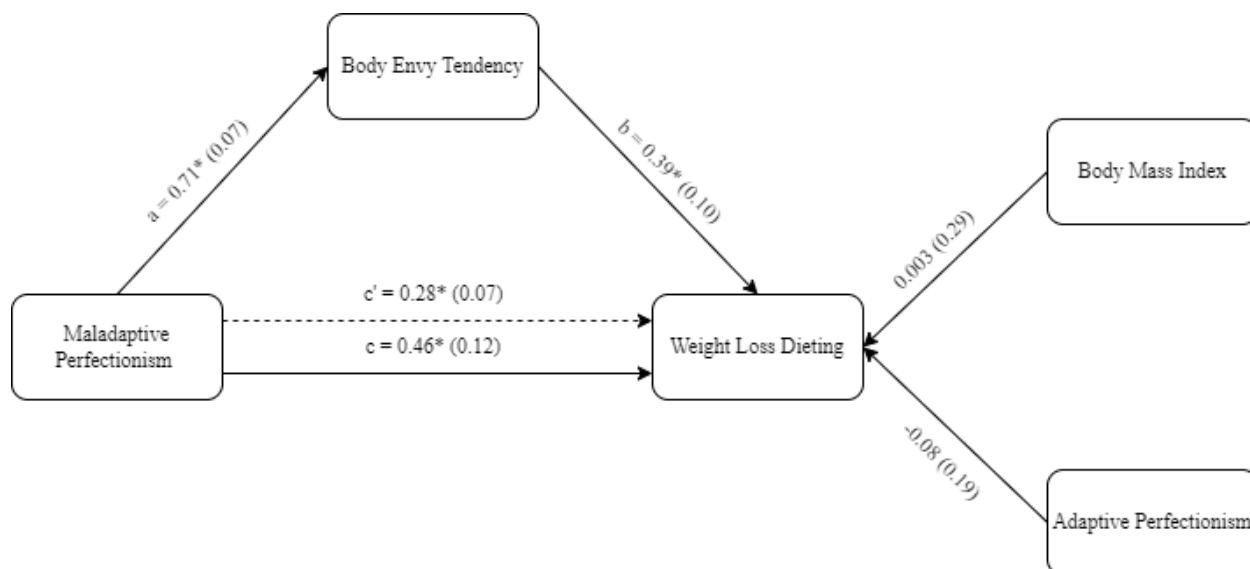

Note. Coefficients of the interaction are presented with their respective standard errors in parentheses. c' represents the direct effect of USCT on WLD when mediated by BET, and c represents the total effects of USCT on WLD when *not* mediated by BET.

*$p < .01$

Another mediation analysis was conducted to evaluate the relationship between WLD, MP, and BET as a mediator. The overall model was significant ($F(201) = 47.23$, $p < .001$). MP accounted for 42% of the variance in WLD. The direct effect of MP on BET (B = 0.71, SE = 0.07, 95% CI [0.57, 0.86], $p < .001$) was found to be significant; and the effect of BET on WLD (B = 0.39, SE = 0.10, 95% CI [0.20, 0.58], $p < 0.001$) was also significant. The direct effect of MP on WLD was also found to be significant (B = 0.46, SE(HC3) = 0.12, 95% CI [0.23, 0.70], $p < .001$). Finally, the indirect effect of MP on WLD when mediated by BET was also found to be significant (B = 0.28, SE = 0.07, 95% CI [0.13, 0.41]). Thus, these results show support for MP increasing one's BET and subsequent WLD. See Figure 3 for the model of the mediating effect of BET on the relationship between MP and WLD.

Figure 3

Mediation Model of the Relationship between MP and WLD with BET as a Mediating Variable

Note. Coefficients of the interaction are presented with their respective standard errors in parentheses. c' represents the direct effect of MP on WLD when mediated by BET, and c represents the total effects of MP on WLD when *not* mediated by BET.

*p < .01

Discussion

In this study, I predicted a mediation pathway in which the relationship between upward social comparison tendency and weight loss dieting in college-age women would be mediated by body-envy tendency, where maladaptive perfectionism would be a moderator. However, no support was found for this prediction. Nonetheless, since the high correlations between the variables suggested that a relationship may exist between them, two exploratory analyses were conducted in which USCT and MP were tested as separate independent variables mediated by BET. Support was found for both mediation analyses.

The originally predicted moderated mediation model may have been non-significant because the effects were not strong enough. This study was conducted on a non-clinical sample, and it is possible that women from a clinical sample are more prone to feeling body-envy, comparing upwardly, or to have more elements of perfectionism in their personalities. For example, Morrison and colleagues (2003) found that those suffering with an eating disorder were more likely to compare upwardly in general than those in a non-clinical sample — something also supported by Rentzsch and Gross (2015). It has also been found that maladaptive perfectionism is associated with eating pathology (Bardone-Cone, 2007; Davis, 1996; Pearson & Gleaves, 2006; Stice 2002). Finally, it was found that patients with anorexia nervosa have a higher tendency to experience envy (Grynberg et al., 2020; Rentzsch & Gross, 2015). Therefore, future research should focus on replicating this study on a clinical sample. It may also be that this predicted model was not significant because USCT and MP are related in a different way than what was predicted. Etherson and colleagues (2022) found that USCT moderated the link between perfectionism and body unappreciation. Thus, in their study, USCT strengthened the

relationship between perfectionism and body unappreciation. Hence, future research should also explore how these variables interact in different ways. USCT may be a moderator, rather than an explanatory variable when it comes to its relationship with WLD.

After having found non-significant results for the predicted moderated mediation model, a mediation model was tested with USCT as the predictor variable, BET as the mediator, and WLD as the dependent variable. This mediation model was found to be significant. The mechanism behind this might be that first, within our society, the ideal of beauty for women is thinness, therefore being thin means enjoying a higher status in society (Tiggemann, 2012). To gauge how close one is to this ideal, women are likely to compare upwardly to those close to said ideal (Buunk et al., 1990; Nabi & Keblusek, 2014). When these comparisons turn out to be negative (i.e. she realizes that she is not close to the ideal) she is likely to feel inferior and thus experience negative emotions such as body-envy (Arnocky et al., 2016; Buunk & Gibbons, 2007; Buunk et al., 1990; O'Brien et al., 2009; Smith & Kim, 2007; van de Ven et al., 2011). To remedy these feelings and gain the status she feels that other more conventionally attractive women have, she is likely to attempt to lose weight through WLD to come closer to the thin ideal (Crusius et al., 2020). Hence, this model is consistent with previous research in that having a higher USCT would be connected to having a higher BET and this would relate to more WLD in university women. Given that both the direct and indirect pathways were significant, it might be that USCT may be influencing WLD through mechanisms other than BET. Future research could focus on other emotions after USCs. Current research suggests that admiration may be another emotion elicited after an USC so it would be interesting to replicate this study but with the variable of body-admiration as a mediator (Nabi & Keblusek, 2014; van de Ven et al., 2011).

Then, another mediation model was tested with MP as an explanatory variable, BET as a mediator, and WLD as the dependent variable; this model was also found to be significant. An explanation behind the significance of this model is that women high in MP place their self-worth in being perfect (i.e. being close to the ideal of beauty) (Lyman & Luthar, 2014; Rentzsch & Gross, 2015). The ideal (i.e. thinness) is perfection and when they fail to reach it, their perfectionistic tendencies exacerbate the unworthiness and inferiority they feel and thus the instances of body-envy they experience towards those that are close to the ideal (Davis, 1998; Lyman & Luthar, 2014). Therefore, they are more likely to attempt WLD to come close to the perfect thin ideal. In this study, only maladaptive perfectionism was explored as an explanatory variable, but perfectionism can also be adaptive in terms of motivating people to aspire to be like the ideal in a healthy way — one where it's not insecurity driving this motivation, but a desire to improve oneself (Yang & Stoeber, 2012). Future research might want to explore how those with features of adaptive perfectionism may react to the thin ideal. For example, with an exploration on how vulnerable they may be to WLD and BET, or if they feel BET at all when confronted by the beauty ideal. It may be that those with more adaptive features feel other emotions such as admiration when confronted by the beauty ideal, or that this kind of perfectionism is a protective factor when it comes to WLD (Yang & Stoeber, 2012).

In this study, BMI and adaptive perfectionism were controlled for. BMI was controlled to discern whether concerns about BET and subsequent WLD were dependent on someone's weight. However, the mean BMI of participants in my sample was within the range of a normal, healthy weight. Because the relationships mentioned previously existed even when controlling for BMI, one can appreciate the strength of the ideal. In other words, the ideal is so strong in shaping women's body perceptions, that even those with a normal and healthy weight, wish to be

thinner. Furthermore, adaptive perfectionism was also controlled for in the second mediation model to ensure that the effects that were obtained were only from MP (Stoeber and Otto, 2006). This lessens the amount of confusion in the relationship, and it also gives information about who to target when trying to prevent WLD behaviors. First, it points out that one must discern between adaptive and maladaptive perfectionism, and that only those with maladaptive perfectionism may be at risk of BET and subsequent WLD. Nonetheless, it is true that BMI might not be the best measure of body size, as it does not account for body composition (Bhurosy & Jeewon, 2013). Two people can be the same weight and be considered overweight but one may have a lot of fat from an unhealthy lifestyle and another may have a lot of lean muscle from being a weightlifter for example. This metric has also been found to have a gender, age, and ethnic bias (Bhurosy & Jeewon, 2013). Instead, other measures such as waist circumference, or skin-fold thickness may be more appropriate to measure whether someone has a healthy weight, which could be something to explore in future research (Bhurosy & Jeewon, 2013).

Practical implications

Given the results of this study, the target groups to focus on in terms of prevention and treatment are women high in both MP and USCT. The focus should be on preventing USCs or managing the body-envy that results from them. A solution would be to implement a media literacy program in schools for example, in which it is explained to young girls that many of the images and even videos that one can find online are edited (Vendemia & DeAndrea, 2018). A study by Vendemia and DeAndrea (2018) showed that the more an image was perceived as edited, the less they internalized the thin ideal; therefore, it has been shown that increasing awareness of image editing may be beneficial to reduce WLD. This media literacy intervention

could also be supplemented with an emotion regulation intervention targeting the regulation of envy. Finally, another possible prevention tactic would be to make it mandatory to disclose when an image is edited when posted online — something which some countries like France have already implemented (Eggert, 2017).

Limitations

This study, while informative, did have some limitations one must consider. First, this was a correlational study which means that it is not possible to imply causal effects from the results. Future research should focus on experimental studies measuring the effects of USCT and MP on BET and WLD behaviors in women. One way of doing this would be to elicit USCs and body-envy by showing pictures of women close to the ideal. One experiment that could be inspiring in terms of their methodology would be the one by Arnocky and colleagues (2016). Additionally, this study was cross-sectional in nature, which means that no temporal precedence could be established. An interesting future direction would be to do a longitudinal study in which one may be able to discern how attitudes towards the thin ideal may change over time as a woman ages. The mean age of the sample in this study was 21 years, which would be the peak age in which women seem to display disordered eating behaviors (Santana et al, 2023). It could be argued that younger women are more vulnerable to the beauty standards of society because they are still competing for a partner and opportunities at work, and in which being beautiful may increase the chances of being successful (Arnocky et al, 2016). It would be interesting to investigate how patterns of USCT, BET, and WLD change over the course of a woman's lifetime.

Furthermore, there are some limitations when it comes to the sample of this study. First, it was a convenience sample which leads to generalizability issues. Future replications of this study

should be done in other universities and in other parts of the world if possible. Also, the sample was predominantly white, which also affects the generalizability of the results. In their review, Warren and Akoury (2020) found that it is possible that different ethnicities and races react differently to the thin ideal, especially because this ideal tends to conform to Western beauty standards. Therefore, future research should focus on studying USCT, the emotions associated with it and their effects on eating behaviors on different ethnicities.

Moreover, the body-envy scale that was used was self-constructed. While it was based on research by Smith and colleagues (1999) and Crusius (2020), it must be replicated and validated against other envy measures. Finally, this study focused on the general feeling of envy. However, previous research suggests that it could be separated into benign and malignant envy, where benign envy pushes people to get better to get what they envy, and malignant envy seeks to take down the envied person (van de Ven, 2016). It seems like the definition of envy that was used in this study matched that of benign envy in that a person that feels envious of another will try to better themselves to get closer to the envied person (van de Ven, 2016). Nonetheless, future research should confirm this.

Conclusion

To summarize, this study aimed to explore the role of BET as a mediator between USCT and WLD, and whether this relationship would be stronger for women high in MP. Research suggested that when it came to body image, women would tend to compare upwardly more to the ideal and experience more episodes of body-envy as a result. This would drive them to attempt WLD to come closer to the ideal. Additionally, possessing the personality trait of MP would enhance this relationship. Unfortunately, this moderated mediation pathway was found to be non-significant, however USCT and MP turned out to have significant relationships with WLD

when mediated by BET separately. This suggests that it is important to target women high in both MP and USCT when it comes to interventions regarding the prevention and management of BET. Future research should focus on replicating this study on different populations of women, expanding the generalizability of the results found in this study. Also, more longitudinal and experimental research should be done to assess the causality of the relationship investigated here.

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Appendix

**Moderated Mediation Assumption Check**

Independence of the Residuals

Independence of the residuals confirms that data from one participant does not influence the data from another participant (Clement & Bradley-Garcia, 2022). The Durbin Watson statistic was used to test this assumption generating several 2.25. A number between one and three is considered acceptable.

Linearity

The relationship between USCT, BET, MP and WLD must be linear. To check this assumption collectively, the plot of the studentized residuals and unstandardized predicted values can be used (Clement & Bradley-Garcia, 2022). If the plot shows a that the data is horizontal, it means that the relationship between all the variables is linear (See Figure 4).

Figure 4

Graph of the Unstandardized Predicted Values and Studentized Residuals
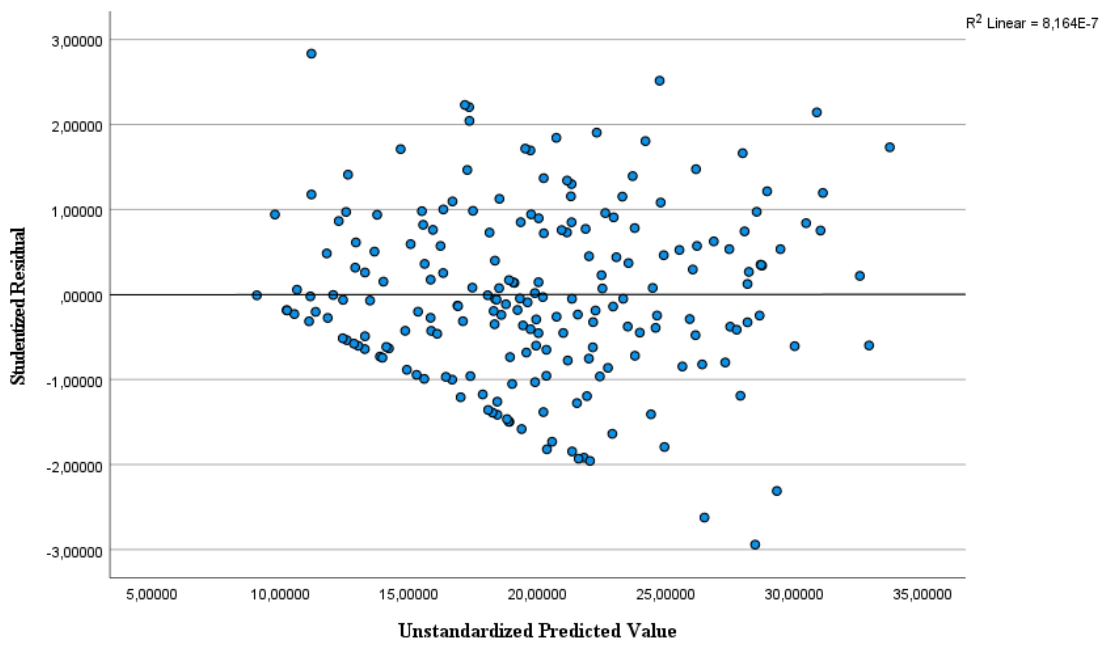
Homoscedasticity

Homoscedasticity refers to the property in which the error of the scores in the association between the IVs and DV is consistent across scores of the IVs (Clement & Bradley-Garcia, 2022). To test this assumption, one can use the graph shown in Figure 4. If it shows a random distribution of the data points, then homoscedasticity is met. In this case, it seems like this assumption is met, but there is some kind of trend in the lower left quadrant of the graph. Nonetheless, this should not be a problem since bootstrapping is robust for slight deviations of heteroscedasticity (Yuan & MacKinnon, 2014).

Multicollinearity

Multicollinearity is present when the IVs are related to each other which means that one cannot determine the unique effects of each one on the DV (Clement & Bradley-Garcia, 2022). For this, the variance inflation factor (VIF) or tolerance statistic can be checked. A VIF < 10 and a tolerance > 0.1 mean that multicollinearity is not found between the IVs. These statistics can be found in Table 2.

Table 2

Multicollinearity statistics

Independent Variables	Tolerance	VIF
MP	.56	1.78
BET	.47	2.15
USCT	.47	2.15

Note. MP: Maladaptive perfectionism; BET: Body envy tendency; USCT: upward social comparison tendency.

Normality

This assumption refers to ensuring that the residuals follow a normal distribution. This assumption can be checked through the analysis of a histogram or a P-P plot. If the histogram follows a bell shape distribution, it can be said that normality is met. Also, if the P-P plot follows a straight diagonal line, then the distribution is normal (Clement & Bradley-Garcia, 2022). Both plots can be found in figures 5 and 6. They were found to have some violations of normality, which is acceptable for the moderated mediation analysis due to the bootstrapping, but not for the correlation analysis.
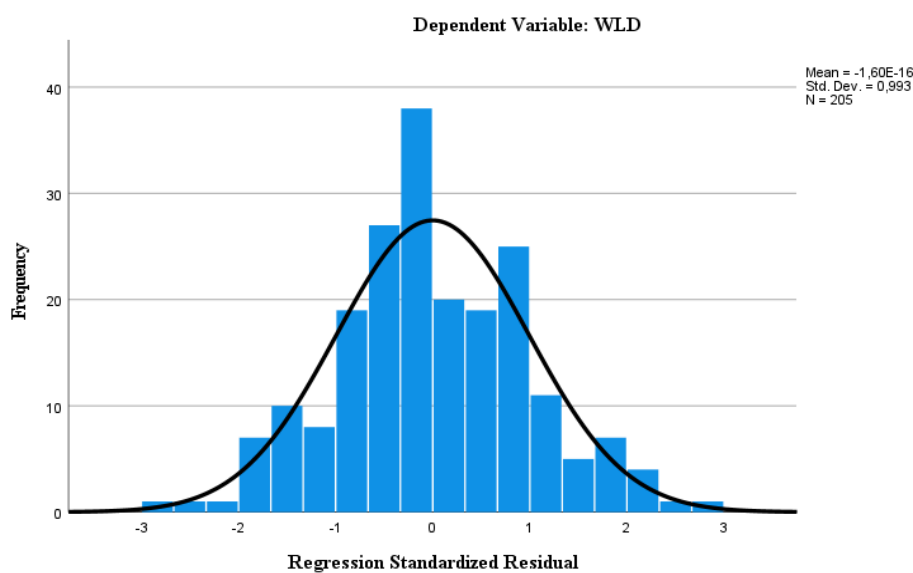
Figure 5

Histogram of the Residuals

Figure 6

P-P Plot of the Residuals