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Internalized weight bias: ratings of the self, normal weight, and obese individuals and psychological maladjustment

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Abstract

Current measures of internalized weight bias assess factors such as responsibility for weight status, mistreatment because of weight, etc. A potential complementary approach for assessing internalized weight bias is to examine the correspondence between individuals' ratings of obese people, normal weight people, and themselves on personality traits. This investigation examined the relationships among different measures of internalized weight bias, as well as the association between those measures and psychosocial maladjustment. Prior to the beginning of a weight loss intervention, 62 overweight/obese adults completed measures of explicit and internalized weight bias as well as body image, binge eating, and depression. Discrepancies between participants' ratings of obese people in general and ratings of themselves on both positive and negative traits predicted unique variance in measures of maladjustment above a traditional assessment of internalized weight bias. This novel approach to measuring internalized weight bias provides information above and beyond traditional measures of internalized weight bias and begins to provide insights into social comparison processes involved in weight bias.

Keywords

Internalized weight bias; Weight stigma; Body image; Binge eating; Depression

Introduction

Weight stigma towards overweight and obese individuals is widespread and is related to unfair and harmful treatment in nearly all domains of life (Cramer & Steinwert, 1998; Crandall, 1994; Klesges et al., 1990; Puhl & Heuer, 2009; Teachman & Brownell, 2001). Unlike other stigmatized groups, who often demonstrate in-group favoritism (Crandall, 1994), overweight and obese individuals typically evidence strong weight bias (e.g., Wang et al., 2004), and a significant internalization of negative social messages about being overweight (i.e., internalized weight bias; e.g., Durso & Latner, 2008). Explicit weight bias is negative weight-based attributions made about the "other" whereas internalization of weight bias consists of attributions made about the "self" (Durso & Latner, 2008). Internalized weight bias is significantly associated with poor body satisfaction, depression, and eating disturbances (Durso & Latner, 2008; Puhl et al., 2007).

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Two current measures of internalized weight bias, the Weight Bias Internalization Scale (WBIS; Durso & Latner, 2008) and the Weight Self-Stigma questionnaire (WSSQ; Lillis et al., 2010) assess a variety of factors relevant to internalized weight bias (e.g., responsibility for weight status, mistreatment because of weight, acceptance or rejection of weight status, desire for change, effect of perceived weight status on mood, perceived personal value, ease of life, etc.; Durso & Latner, 2008; Lillis et al., 2010). Even with the important information provided by these measures, another facet of internalized weight bias may be the way in which an individual sees him/herself as possessing personality traits similar to other overweight (i.e., how much they identify with overweight stereotypes) or conversely, to normal weight people. This may be relevant to research on social identity and comparison (Tajfel, 1981; Festinger, 1954), which suggests that how similarly we see ourselves to others or how we compare ourselves to others can have a profound impact on well-being (Taylor & Brown, 1988).

People not only identify with groups and/or group stereotypes in the act of creating a social identity (e.g., Tajfel, 1981), but they compare themselves and their group to people in different groups (e.g., social comparison; Festinger, 1954). In fact, several researchers have suggested that downward social comparisons between groups (i.e., comparisons to people or others who are worse off on some relevant dimension; e.g., stigmatized others) facilitate self-enhancement (Karpinski, 2004; Suls & Martin, 2001; Taylor & Brown, 1988). It is plausible that greater identification with stigmatized group stereotypes (i.e., obese) may have negative psychological consequences, whereas stronger identification with nonstigmatized groups (i.e., normal weight) may have psychological benefits. In addition, people who identify themselves as normal weight might compare themselves favorably to obese people on traits, such as attractiveness, laziness, and self-control. The more likely an individual is to favorably contrast him or herself to a stigmatized group, the greater the psychological benefits.

Taking into consideration the potential importance of social identity and comparison processes, in this investigation, we were interested in examining an alternative method for assessing internalized weight bias. Participants completed an established measure of explicit weight bias, the Obese Persons Trait Survey (Puhl et al., 2005) which asks for ratings of obese persons on lists of negative and positive traits. Next, participants completed the Obese Persons Trait Survey with the instructions slightly modified asking them to assess normal weight rather than obese people. Finally, participants then completed the measure again with the instructions modified asking them to assess themselves. This novel usage of the Obese Persons Trait Survey (Puhl et al., 2005) allowed for meaningful comparisons between self ratings and ratings of others (i.e., obese people and normal weight people). By focusing on positive and negative attributions made about the “self,” this method limits redundancy with constructs assessed with current internalized weight bias measures, such as responsibility for weight status, mistreatment because of weight, desire for change, effect of perceived weight status on mood, etc. (Durso & Latner, 2008; Lillis et al., 2010). Finally, the approach of comparing ratings for the self and obese on positive and negative traits has the potential to provide additional insights and further clarify the role of social identity and social comparison in internalized weight bias.

The current study was designed to examine the relationships among explicit and internalized anti-fat attitudes, as well as the association between those measures and psychosocial maladjustment (i.e., depression, binge eating, and poor body satisfaction) in a convenience sample of overweight/obese adults prior to beginning a behavioral weight loss program. As previous research suggests, we anticipated that overweight/obese weight loss participants would express some degree of explicit and internalized anti-fat attitudes on traditional measures of weight bias (Puhl et al., 2007; Wang et al., 2004; Crandall, 1994; Carels et al.,

2009). Also, we were interested in examining whether obese people's ratings of themselves were more consistent with their ratings of obese people or normal weight people. We hypothesized that the more strongly obese individuals identified with normal weight individuals on a measure of positive and negative personality traits, the better their psychological adjustment. In contrast, the more strongly an obese individual identified with other obese individuals on a measure of positive and negative personality traits, the greater his or her psychological maladjustment. Finally, we wanted to examine whether self ratings on negative and positive personality traits were associated with a traditional measure of internalized weight bias, and whether those ratings contributed unique variance to the prediction of psychological maladjustment among weight loss treatment seeking adults.

Methods

Participants

This investigation assessed 62 overweight and obese adults prior to their participation in a 12-weeks weight loss intervention. Individuals were recruited from communities in Northwest Ohio via local newspaper advertisements, community bulletin boards, and emails sent to university faculty, staff, and students offering a free 12-weeks group weight loss intervention. Participants met the study inclusion criteria (i.e., were overweight/obese [BMI ≥ 27 kg/m^2] and free from major medical conditions) and provided written permission from their doctor to participate. This investigation received full human subjects review board approval.

Participants' mean age was 43.7 (SD = 13.3; range: 18–65) years. The majority of the participants were Caucasian (85.5%), female (79.1%), and married or living with a partner (64.5%). Annual income exceeded $30,000 for approximately 59.7% of participants, and approximately 50% had at least a baccalaureate degree. Mean weight at the time of assessment was 237.2 pounds (SD = 59.0; range: 142.0–400.8), and mean BMI was 38.3 (Mdn = 36.9; SD = 7.7; range: 27.7–58.1; Overweight [BMI ≥ 27 and <30]: $N = 6$; Class I Obesity ([BMI ≥ 30 and <40]: $N = 23$, Class II Obesity ([BMI ≥ 40]: $N = 14$).

Study design

For the current study on weight bias, analyses were conducted using data collected prior to beginning the weight loss program from 62 participants who met inclusion criteria for a behavioral weight loss program. Participants completed assessments of height, weight, and body fat, as well as measures of explicit and internalized weight bias, depression, binge eating, and body satisfaction. Treatment outcomes were not examined in relation to the data presented here.

Measures

Explicit and internalized weight bias—The Obese Persons Trait Survey (Puhl et al., 2005) consists of 20 items listing stereotypical traits, including 10 negative (e.g., lazy) and 10 positive (e.g., sociable) characteristics. Participants estimated the percentage (from 0 to 100%) of obese persons who possess these traits. In this investigation, participants were also asked to indicate the percentage of normal weight persons who possess these traits. Finally, participants were asked to indicate on a scale of 0–100% how accurately these particular traits represented him or her. For this investigation, comparisons between self ratings and ratings of normal weight and obese individuals represent a unique method to assess internalized weight bias. For this study, Cronbach's α's were adequate with Obese Negative = .77, Obese Positive = .87, Normal Weight Negative = .88, Normal Weight Positive = .86, Self Negative = .86, and Self Positive = .85.

Internalized weight bias—The Weight Bias Internalization Scale (Durso & Latner, 2008) consists of 11 self-report items designed to assess internalized weight bias in overweight and obese individuals. Items address several content areas: acceptance or rejection of weight status, desire for change, effect of perceived weight status on mood, perceived personal value, ease of life, public appearance and social interaction, and recognition of the existence and unfairness of weight stigma. The Weight Bias Internalization Scale utilizes a 7-point Likert scale ranging from "strongly disagree" to "strongly agree." Participants are asked to rate their agreement with items such as "As an overweight person, I feel that I am just as competent as anyone." Validity testing on the Weight Bias Internalization Scale suggests that internalized weight bias is a construct that is related to but distinct from antifat attitudes ($r = .31$), and that it correlates with additional measures thought to relate to antifat attitudes, such as body image ($r = .74$), and drive for thinness ($r = .47$; Durso & Latner, 2008). For this study, Cronbach's α was .83.

Depression—The Center for Epidemiological Studies-Depression Scale (Radloff, 1977) measures levels of depressive symptoms on four dimensions (i.e., depressed mood, psychomotor retardation, lack of well-being, and interpersonal difficulties). Participants report how often they have experienced each of the 20 items with the following answer choices: "rarely/none of the time," "some/a little of the time," "occasionally/moderate amounts of time," and "most/all of the time." Scores that are greater than 16 generally indicate the presence of significant depressive symptoms. The scale has been found to have adequate reliability and validity (Radloff, 1977). In the current investigation, Cronbach's α was .93.

Binge eating—The Binge Eating Scale (Gormally et al., 1982) is a 16-item, self-report measure designed to identify binge eating behaviors. Scores range from 0 to 46, with scores of 27 or above indicative of severe binge eating pathology, whereas a score of 17 or below is indicative of little to no binge eating (Marcus et al., 1988). The Binge Eating Scale has good test–retest reliability ($r = .87$), and in comparisons with other measures of disordered eating, the Binge Eating Scale has performed satisfactorily as an initial screener for the diagnosis of binge eating disorder with a sensitivity value of .85 and a specificity value of .20 (Celio et al., 2004). In the current study, Cronbach's α was .85.

Body image—The Multidimensional Body Self-Relations Questionnaire (Cash, 2000) is a 69-item, self-report questionnaire comprised of ten subscales designed to measure the cognitive, behavioral, and affective components of body image. In the current investigation, we administered the Body Areas Satisfaction Scale, which assesses satisfaction with discrete aspects of appearance with higher scores indicating contentment with more areas of one's body. The subscales have demonstrated adequate reliability and validity (Cash, 2000). In the current investigation, Cronbach's α for the BASS was .81.

Weight and body mass index—Participants' weight was measured using a digital scale (BF-350e; Tanita, Arlington Heights, IL) and height was measured to the closest .5 inch using a height rod on a standard spring scale. Body mass index (BMI) was calculated as kg/m^2 from those measurements.

Data analyses

Pearson correlations and *t* tests were used to test for significant relationships between demographic variables and key dependent measures. Similarly, Pearson correlations were used to measure relationships between weight bias and measures of psychosocial maladjustment. To evaluate differences between participants' ratings of themselves, normal weight, and obese persons, paired samples *t* tests were used. Finally, linear regression

analyses were conducted to measure the ability of trait ratings and various discrepancy scores to predict psychological maladjustment.

Results

Demographic characteristics, weight bias, and psychological maladjustment

With the exception of gender and age, demographic characteristics (including BMI) were unrelated to weight bias and psychological maladjustment. Older individuals had lower depressive symptoms ($r = -30$, $P = .02$), internalized weight bias ($r = -.33$, $P < .01$), and self negative ratings ($r = -.30$, $P = .02$). Females ($M = 2.3$, SD = .5) had significantly poorer body satisfaction than males ($M = 2.7$, SD = 6.3; $t(59) = 2.1$, $P = .037$) and females ($M = 23.5$, SD = 8.1) had significantly greater binge eating than males ($M = 17.8$, SD = 9.1; $t(59) = 2.2$, $P = .034$).

Comparisons between obese, normal weight and self ratings on the Obese Persons Trait Survey

There was a significant difference between the scores for Obese Positive ($M = 58.8$, SD = 13.1) and Self Positive ($M = 72.1$, SD = 13.9) ratings ($t(59) = -7.5$, $P < .001$). These results suggest that participants saw themselves as possessing more positive traits than obese people in general. Participants also rated themselves as having fewer negative traits ($M = 48.4$, SD = 17.8) compared to obese people in general ($M = 59.7$, SD = 16.6; $t(59) = 4.7$, $P < .001$). When participants' self ratings were compared to their ratings of normal weight people, similar results were found. Participants rated themselves as having significantly more positive traits ($M = 72.1$, SD = 13.9) than normal weight people ($M = 61.8$, SD = 10.5; $t(59) = 6.5$, $P < .001$). Participants' ratings of positive traits for obese people ($M = 58.8$, SD = 13.1) were not significantly different from their ratings for normal weight people ($M = 61.8$, SD = 10.5; $t(59) = -1.9$, $P = .065$).

Although participants did rate themselves as having more negative traits ($M = 48.4$, SD = 17.8) than normal weight people ($M = 43.3$, SD = 14.8; $t(59) = 2.3$, $P = .023$), they rated both themselves (reported above) and normal weight people as having fewer negative traits than obese people ($M = 59.7$, SD = 16.6; $t(59) = 7.2$, $P < .001$). These results suggest that although participants were themselves overweight or obese, they held a positive bias favoring themselves compared to other obese people and there was evidence of negative bias against overweight.

Associations among Obese Persons Trait Survey ratings and internalized weight bias

The relationships among Obese Persons Trait Survey ratings were examined. Moderate correlations were found between obese positive and self positive ($r = .496$, $P < .001$), obese positive and normal weight positive ($r = .501$, $P < .001$), obese negative and self negative ($r = .437$, $P < .001$), obese negative and normal weight negative ($r = .380$, $P = .003$), self positive and self negative ($r = -.321$, $P = .012$). Self positive and normal weight positive ($r = .531$, $P < .001$), and self negative and normal weight negative ($r = .473$, $P < .001$). Results suggest that participants who rated themselves more positively were more likely to rate obese and normal weight others more positively as well. Similarly, participants who rated themselves more negatively were also likely to rate obese and normal weight others more negatively. The moderate correlations among the subscales suggest that the constructs of explicit and internalized weight bias are related, but distinct.

Further, the relationships between the various positive and negative trait ratings with internalized weight bias were examined. Results show that only ratings of negative traits about oneself are related to internalized weight bias as measured by the Weight Bias

Internalization Scale ($r = .491$, $P < .001$). Negative trait ratings of obese people were not significantly related to the internalized weight bias ($r = .216$, $P = .094$). This suggests that the Weight Bias Internalization Scale and ratings of negative traits about the self are assessing a construct different from explicit weight bias, but that the two approaches to assessing internalized weight bias (i.e., Weight Bias Internalization Scale and self ratings of negative traits) are associated.

Associations among obese persons trait survey ratings, internalized weight bias, and psychological maladjustment

The associations between measures of psychological maladjustment, including the Center for Epidemiological Studies Depression scale, the Binge Eating Scale, and the Multidimensional Body-Self Relations Questionnaire Body Areas Satisfaction Scale and internalized weight bias and trait ratings were examined. Negative self ratings were related positively to depression ($r = .419$, $P = .001$), binge eating ($r = .554$, $P < .001$) and negatively related to body satisfaction ($r = -.373$, $P = .003$). Positive self ratings were negatively correlated with depression ($r = -.301$, $P = .019$). Internalized weight bias was related positively to depression ($r = .659$, $P < .001$) and binge eating ($r = .575$, $P < .001$) and negatively related to body satisfaction ($r = -.633$, $P < .001$). These results suggest that not only are measures of maladjustment strongly correlated with internalized weight bias, but also with negative ratings of the self on traits stereotypically associated with obese people.

Obese Persons Trait Survey, discrepancy scores, and psychological maladjustment

We created new variables to assess whether useful information could be derived from evaluating the discrepancies between participants' ratings of themselves and others for both positive and negative traits. We created the additional set of variables by calculating the differences between (a) participant-rated obese person traits and self traits, (b) normal weight person traits and self traits, and (c) obese person traits and normal weight person traits. Variables were created for ratings of both positive and negative traits. Discrepancy variables were related to measures of maladjustment (see Table 1). These correlations suggest that participants who rated themselves more positively than obese people were less likely to experience depression and binge eating. Similarly, when participants rated themselves as having fewer negative traits than obese people in general, they were less likely to report depressive symptoms, binge eating, and more likely to report body satisfaction. Participants who rated themselves more positively and less negatively than normal weight people in general were less likely to report depression, binge eating, and more likely to report body satisfaction.

Regression of obese persons trait survey scales, internalized weight bias, and psychological maladjustment

Linear regression analyses were conducted to explore whether positive and negative trait ratings predicted depression, binge eating, and poor body satisfaction. Ratings of positive traits for obese persons, normal weight persons, and for the self were entered simultaneously. In a separate regression, ratings of negative traits for obese, normal weight, and the self were entered simultaneously. Regression analyses were conducted both unadjusted and adjusted for demographic factors. In the adjusted regression, because of significant relationships with demographic variables, age and gender were controlled for in analyses predicting binge eating and body satisfaction, and age was controlled for in analyses predicting depression. The findings were identical with one exception. For positive traits, higher positive self ratings predicted depression in the unadjusted regression ($\beta = .015$, $t(59) = 2.04$, $P = .046$), but failed to meet conventional standards of statistical significance when predicting depression in the adjusted regression ($\beta = .015$, $t(59) = 1.77$, $P = .082$). The regression analyses adjusted for demographic factors are reported.

Perhaps not surprisingly, negative ratings of the self significantly predicted depression scores (β = .02, $t(59) = 3.64$, $P < .001$). Interestingly, more negative ratings of obese persons predicted less depression (β = −.01, $t(59) = -2.33$, $P = .023$). For positive traits, higher positive ratings of the self were predictive of lower depression (β = −.024, $t(59) = -3.83$, $P < .001$). More negative ratings of one's self also predicted binge eating (β = .327, $t(59) = 5.17$, $P < .001$) and poorer body satisfaction (β = −.014, $t(59) = -2.98$, $P = .004$). Higher positive ratings of the self predicted lower binge eating (β = −.305, $t(59) = -3.35$, $P = .002$).

Further analyses were conducted to test whether the various trait ratings could predict unique variance in measures of maladjustment above that predicted by internalized weight bias as measured by the Weight Bias Internalization Scale (see Table 2). Several variables were predictive of depression or binge eating above and beyond internalized weight bias. No variables were able to predict unique variance in body image. Interestingly, discrepancy scores between participants' ratings of obese people in general and ratings of themselves on both positive and negative traits predicted between 4.6 and 10% unique variance in depression and binge eating above internalized weight bias.

Discussion

Obese individuals are devalued and stigmatized by society (Puhl & Heuer, 2009). When this devaluation and stigmatization is internalized, psychological distress and maladjustment commonly co-occur. Recent investigations of internalized weight bias have clearly demonstrated that to feel diminished as a human being because of one's weight is associated with greater psychological distress and maladjustment (Durso & Latner, 2008). The current investigation builds on prior research on weight bias by examining a complementary approach to assessing the internalization of weight bias. In this investigation, the correspondence between ratings of one's self and others (i.e., obese and normal weight individuals) on positive and negative personality traits was examined. Given that individuals commonly report that obese people possess more negative personality traits than normal weight people, we hypothesized that psychological well-being would be related to the extent to which an individual sees one's self as possessing traits similar to normal weight people (i.e., nonstigmatized group) or obese people (i.e., a stigmatized group). For example, if an individual rates him/herself similarly in personality to members of a non-stigmatized group (e.g., normal weight people) s/he may benefit psychologically. Likewise, if an individual rates him/herself similarly in personality to a stigmatized group (e.g., obese people) s/he may suffer psychologically. Therefore, the associations among explicit and internalized anti-fat attitudes, as well as the association between those measures and psychosocial maladjustment (i.e., depression, binge eating, poor body satisfaction) were examined in this investigation.

Consistent with previous research (Teachman & Brownell, 2001; Carels et al., 2009; Puhl & Heuer, 2009), participants in this investigation evidenced considerable explicit weight bias. They assigned more negative stereotypic obesity-related traits to obese people (e.g., laziness) compared to normal weight people. As reported previously, there was no difference in positive stereotypic obesity-related traits to obese people (e.g., sociability) compared to normal weight people (Carels et al., 2009).

Unique to this investigation, participants also provided ratings of themselves on positive and negative personality traits enabling comparisons between ratings of the self, obese, and normal weight others. Interestingly, the overweight/obese participants rated themselves as having significantly more positive personality traits than either normal weight or obese individuals. These findings are consistent with previous research on self-enhancement (i.e., Taylor & Brown, 1988), which demonstrates that people tend to rate themselves higher than

others on a variety of skills, tasks, etc. as a way to improve psychological well-being and self-esteem. However, with regards to ratings of negative personality traits, the findings were quite different. Participants rated themselves as having more negative traits than normal weight people, but fewer negative traits than obese people. A closer examination of this difference revealed that the gap between ratings of the self and obese people on negative traits was more than twice as great as the gap between the ratings of self and normal weight people (11.3 vs. 5.1; $P < .01$).

Although group identity was not formally assessed in this investigation (and the authors are unaware of any weight-based group identity measures that have been previously validated), these findings might suggest that the overweight/obese individuals in this study more closely identified with normal weight individuals than with overweight/obese individuals on negative personality traits. These findings would be consistent with prior research examining implicit appraisals of identity where overweight/obese individuals more strongly viewed themselves as thin, compared to imagined "Other" people (Carels et al., 2011). Other research has also noted the lack of group identity among obese individuals (e.g., Degher & Hughes, 1999; Crandall et al., 2000; Quinn & Crocker, 1998). Given that group membership among obese people is assumed to be highly permeable (i.e., the prevailing notion is that weight can be lost at any time through hard work and will-power), it is not surprising that some obese individuals might view themselves as "different" than the "typical" obese individual. For example, in a study examining attributions for obesity, Degher and Hughes (1999) found that participants gave reasons for both becoming and remaining overweight that were more socially acceptable external attributions (i.e., overweight resulting from uncontrollable events).

Perhaps not surprisingly, negative ratings of self and not ratings of obese people in general (i.e., explicit weight bias) were associated with internalized weight bias as measured by the Weight Bias Internalization Scale. These findings suggest that ratings of negative traits about the self and the Weight Bias Internalization Scale are assessing a construct that is associated with, but separate from, explicit weight bias. Also, negative ratings of self and not negative ratings of obese people in general were associated with psychological maladjustment. Therefore, regarding explicit weight bias, maligning a group of which one would appear to be a member, at least on the basis of weight alone, appeared to have a relatively modest psychological impact. Again, this may indicate that many obese individuals share little group identity with other obese individuals, and it is the feelings about one's self that ultimately predict psychological well-being.

An important goal of the present study was to examine whether comparisons between the self, obese persons, and normal weight persons on negative and positive personality traits were associated with psychological maladjustment among overweight/obese adults. The findings were quite robust and consistently related to maladjustment. Participants who rated themselves more positively than obese people in general were less likely to experience depression and binge eating. Similarly, when participants rated themselves as having fewer negative traits than obese people in general, they were less likely to report depressive symptoms, binge eating, and poor body satisfaction. Participants who rated themselves more positively and less negatively than normal weight people were less likely to report depression, binge eating, or poor body satisfaction. It is likely that group identity, social comparison, and positivity bias are influencing the findings. However, without additional research it is difficult to determine the exact mechanism.

In this investigation, the analyses where ratings of traits of obese individuals, normal weight individuals, and self were entered simultaneously into the regression analyses predicting depression suggest that internalized weight bias and social comparison contribute to

psychosocial maladjustment. Specifically, negative ratings of the self predicted significantly higher depression scores, and positive ratings of self predicted lower depression scores. However, higher negative ratings of obese people and lower positive ratings of normal weight people predicted lower depression scores (unadjusted: $P = .046$; adjusted: $P = .082$). It would appear that when comparing self to others on negative traits, obese individuals become the relevant comparison group. Conversely, when comparing self to others on positive traits, normal weight individuals become the relevant comparison group. However, lower positive ratings of normal weight people predicted lower depression scores only in the unadjusted regression suggesting caution in interpreting these findings. The findings from this investigation suggest that the more obese people are viewed unfavorably on negative personality traits, the more the self is built up. Conversely, the more normal weight people are viewed unfavorably on positive personality traits, the more the self is built up. Generally speaking, these social comparisons appear to serve a protective function.

Whereas both negative self ratings and internalized weight bias were strongly correlated to measures of psychological maladjustment, including measures of depression, binge eating, and poor body image, discrepancy scores between participants' ratings of obese people and ratings of self on both positive and negative traits predicted depression and binge eating above and beyond internalized weight bias. In this investigation, they predicted between 4.6 and 10% unique variance in measures of maladjustment above internalized weight bias. It appears that having a favorable bias towards the self, by rating the self as more positive and less negative compared to the obese on stereotypically weight related traits, is uniquely predictive of less psychological maladjustment, beyond what has been found with the Weight Bias Internalization Scale alone. As previously discussed, these findings appear to provide further support for social comparison processes. It also appears that using the comparison of self and obese person ratings on both positive and negative traits complements the assessment of internalized weight bias by traditional means. Depending on the construct one wants to measure, utilizing this novel approach to measure internalized weight bias may help capture additional facets of the internalization process, such as aspects of social identity and social comparison processes.

Although findings suggest the utility of such a novel approach, these conclusions should be viewed as warranting further investigation. The sample in the present study was modest in size and composed of weight loss treatment-seeking adults that were predominately Caucasian females, suggesting that replication with a larger, more diverse, community sample is warranted. Further investigation using the OPTS self, obese, and normal weight person ratings is also warranted. An examination of how ratings of self relative to obese and normal weight people are associated to group identity, social comparison processes, and stereotype endorsement may prove critical to understanding the role of internalized weight bias. Finally, we cannot rule out social desirability's potential influence on overweight/obese respondents' positive ratings of self. Additionally, it may be possible that respondents who rated themselves poorly had negative self-views because they were in some other discriminated category, had depression or low self-esteem, or considered themselves failures in other domains such as employment, etc. However, it is important to note that whereas some associations included only self ratings and psychological adjustment, many analyses examined positive and negative self ratings relative to ratings of obese and normal weight individuals, thereby reducing the likelihood of these extraneous influences on psychological adjustment.

Using comparisons of positive and negative trait ratings of obese persons, normal weight persons, and the self appears to offer a novel approach to measuring internalized weight bias. One strength of this approach is that by using discrepancy scores derived from the Obese Persons Trait Survey, internalized weight bias can be readily compared to scores of

explicit weight bias. This approach also allows one to succinctly measure weight biased attitudes towards the self—compared to obese and normal weight individuals—and limits redundancy with constructs present in traditional measures of internalized weight bias, such as measuring responsibility for weight status, mistreatment because of weight, desire for change, effect of perceived weight status on mood, etc. (Durso & Latner, 2008; Lillis et al., 2010). Also, as noted earlier, the current approach may tap into constructs of social identity, as it appears that comparable ratings between one's self and normal weight individuals may indicate a stronger identification with normal weight individuals, whereas comparable ratings between one's self and obese individuals indicates stronger identification with obese individuals. Further, this approach may begin to provide insights into social comparison processes, as this study suggests, greater identification with the stigmatized group of obese persons appears to be related to psychological maladjustment. Thus, an avenue for future research would be to examine associations between this approach and established measures of social comparisons. In conclusion, it appears that internalized weight bias is in part a function of group identity and social comparison. As such, comparisons of ratings for the self and the obese on positive and negative traits may offer an alternative approach to measuring internalized weight bias and provide additional insight into the understanding of weight bias.

References

Carels RA, Hinman N, Oehlhof MW, Gumble A, Koball A, Young KM. The self protective nature of implicit identity and its relationship to weight bias and short-term weight loss. Obesity Facts. 2011; 4:278–283. [PubMed: 21921650]

Carels RA, Young KM, Coit C, Harper J, Gumble A, Wagner M, et al. Internalized weight stigma and its ideological correlates among treatment-seeking adults. Eating and Weight Disorders. 2009; 14:92–97.

Cash, T. MBSRQ User's Manual. Norfolk, VA: Old Dominion University; 2000. The multidimensional body self-relations questionnaire; p. 1-12.

Celio AA, Wilfley DE, Crow SJ, Mitchell J, Walsh BT. A comparison of the binge eating scale, questionnaire for eating and weight patterns-revised, and eating disorder examination questionnaire with instructions with the eating disorder examination in the assessment of binge eating disorder and its symptoms. International Journal of Eating Disorders. 2004; 36:434–444. [PubMed: 15558644]

Cramer P, Steinwert T. This is good, fat is bad: How early does it begin? Journal of Applied Developmental Psychology. 1998; 19:606–611.

Crandall CS. Prejudice against fat people: Ideology and self-interest. Journal of Personality and Social Psychology. 1994; 66:882–894. [PubMed: 8014833]

Crandall CS, Tsang J, Harvey RD, Britt TW. Group identity-based protective strategies: The stigma of race, gender, and garlic. European Journal of Social Psychology. 2000; 30:355–381.

Degher, D.; Hughes, G. The adoption and management of "fat" identity. In: Sobal, J.; Maurer, D., editors. Interpreting weight: The social management of fatness and thinness. New York: Aldine de Gruyter; 1999. p. 11-27.

Durso LE, Latner JD. Understanding self-directed stigma: Development of the weight bias Internalization scale. Obesity. 2008; 16:s80–s86. [PubMed: 18978768]

Festinger L. A theory of social comparison processes. Human Relations. 1954; 7:117–140.

Gormally J, Black S, Dastin S, Rardin D. The assessment of binge eating severity among obese persons. Addictive Behaviors. 1982; 7:47–55. [PubMed: 7080884]

Karpinski A. Measuring self-esteem using the implicit associations test: The role of the other. Personality and Social Psychology Bulletin. 2004; 30:22–34. [PubMed: 15030640]

Klesges RC, Klem ML, Hansoon CL, Eck LH, Ernst J, et al. The effects of applicant's health status and qualifications on simulated hiring decisions. International Journal of Obesity. 1990; 14:527–535. [PubMed: 2401589]

Lillis J, Loumo JB, Levin ME, Hayes SC. Measuring weight self-stigma: The weight self-stigma questionnaire. Obesity. 2010; 18:971–976. [PubMed: 19834462]

Marcus BH, Wing RR, Hopkins J. Obese binge eaters: Affect, cognitions, and response to behavioral weight control. Journal of Consulting and Clinical Psychology. 1988; 56:433–439. [PubMed: 3397436]

Puhl RM, Heuer CA. The stigma of obesity: A review and update. Obesity. 2009; 17:1–24.

Puhl RM, Moss-Racusin CA, Schwartz MB. Internalization of weight bias: Implications for binge eating and emotional well-being. Obesity. 2007; 15:19–23. [PubMed: 17228027]

Puhl RM, Schwartz M, Brownell KD. Impact of perceived consensus on stereotypes about obese people: A new approach for reducing bias. Health Psychology. 2005; 24:517–525. [PubMed: 16162046]

Quinn, DM.; Crocker, J. Vulnerability to the affective consequences of the stigma of overweight. In: Swim, JK.; Stangor, C., editors. Prejudice: The target's perspective. San Diego, CA: Academic Press; 1998. p. 125-143.

Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. Applied Psychological Measurement. 1977; 1:385–401.

Suls, J.; Martin, R. Social comparison processes in the physical health domain. In: Baum, A.; Revenson, TA.; Singer, JL., editors. Handbook of health psychology. Mahwah, NJ: Lawrence Erlbaum Associates; 2001. p. 195-208.

Tajfel, H. Human groups and social categories. Cambridge: Cambridge University Press; 1981.

Taylor SE, Brown JD. Illusion and well-being: A social psychological perspective on mental health. Psychological Bulletin. 1988; 103:193–210. [PubMed: 3283814]

Teachman BA, Brownell KD. Implicit anti-fat bias among health professionals: Is anyone immune? International Journal of Obesity. 2001; 25:1525–1531. [PubMed: 11673776]

Wang SS, Brownell KD, Wadden TA. The influence of the stigma of obesity on overweight individuals. International Journal of Obesity. 2004; 28:1333–1337. [PubMed: 15278101]

Table 1

Trait rating discrepancy variables' correlations with psychological adjustment

Discrepancy (trait type)	CES-D	BES	MBSRQ-BASS
Obese—self (positive trait ratings)	.381**	.336**	−.152
Higher scores indicate a more positive view of obese people compared to one's self			
Obese—self (negative trait ratings)	−.464**	−.454**	.310*
Higher scores indicate a more negative view of obese people compared to one's self			
Normal weight—self (positive trait ratings)	.434**	.320*	−.266*
Higher scores indicate a more positive view of normal weight people compared to one's self			
Normal weight—self (negative trait ratings)	−.378**	−.461**	.396**
Higher scores indicate a more negative view of normal weight people compared to one's self			
Obese—normal weight (positive trait ratings)	−.009	.056	.098
Higher scores indicate a more positive view of obese people compared to normal weight people			
Obese—normal weight (negative trait ratings)	−.120	−.030	−.058
Higher scores indicate a more negative view of obese people compared to normal weight people			

CES-D Center for epidemiological studies—depression scale (higher scores indicate greater depression), *BES* Binge eating scale (higher scores indicate more binge eating behavior), *MBSRQ-BASS* Multidimensional body-self relations questionnaire—body areas satisfaction scale (higher scores indicate higher body satisfaction), *Obese-Self* discrepancy between ratings of obese people and one's self, *Normal Weight-Self* discrepancy between ratings of normal weight people and one's self, *Obese-Normal Weight* discrepancy between ratings of obese people and one's self

*$P < .05$,

**$P < .001$

Table 2

Summary of hierarchical regression analyses

DV	Block	R^2 change	IV	Standardized β
CES-D	1	.461	WBIS	.666
	2	.040	WBIS	.625
			Self (pos)	−.203
CES-D	1	.452	WBIS	.648[a]
	2	.048	WBIS	.688
			Obese (neg)	−.235
CES-D	1	.442	WBIS	.666
	2	.053	WBIS	.641
			Obese-self (pos)	.238
CES-D	1	.461	WBIS	.666
	2	.086	WBIS	.588
			Obese-self (neg)	−.304
CES-D	1	.461	WBIS	.666
	2	.045	WBIS	.579
			NW-self (pos)	.228
BES	1	.309	WBIS	.526
	2	.132	WBIS	.334
			Self (neg)	.423
BES	1	.295	WBIS	.526
	2	.066	WBIS	.440
			Obese-self (pos)	.269
BES	1	.309	WBIS	.526
	2	.121	WBIS	.431
			Obese-self (neg)	−.363

[a]This beta weight is lower than those in the adjacent analyses because of a slightly lower N (61 versus 62) due to missing data. For all models reported $P < .05$; Age was controlled for in analyses predicting CES-D, Age and Gender were controlled for in analyses predicting BES; *DV* Dependent variable, *IV* Independent variable, *CES-D* Center for epidemiological studies—depression scale, *BES* Binge eating scale, *WBIS* Weight bias internalization scale, *NW* ratings of normal weight people in general on stereotypical weight-related traits, *Self* ratings of one's self on stereotypical weight-related traits, *Obese* ratings of obese people in general on stereotypical weight-related traits, *Pos* positive traits, *Neg* negative traits, *Obese-Self* discrepancy between ratings of obese people and one's self, *NW-Self* discrepancy between ratings of normal weight people and one's self