

# Gender Differences in Implicit Weight Identity

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**Abstract: Objective:** *This study examined gender differences in explicit and implicit attitudes toward overweight and explicit and implicit weight identity.* **Method:** *Normal weight women (n = 22) and men (n = 20) and overweight women (n = 20) and men (n = 21) completed the Implicit Association Test and portions of the Eating Disorders Questionnaire.* **Results:** *Although explicit and implicit anti-fat attitudes were ubiquitous, gender differences emerged for weight identity. Both men and women provided accurate explicit appraisals of their weight status. However, men implicitly identified themselves as light regardless of actual weight status. Women's implicit weight identity was associated with their actual weight status, explicit weight appraisal, and implicit self-esteem.* **Discussion:** *These findings may provide additional insight into why men are underrepresented among those seeking weight loss and why women are at increased risk for developing eating disorders.* © 2003 by Wiley Periodicals, Inc. *Int J Eat Disord* 34: 125–135, 2003.

**Key words:** *gender; body image; social cognition*

## INTRODUCTION

Women report higher levels of body dissatisfaction and are more likely to diet to lose weight than men, and this is thought to contribute to their increased risk for eating disorders compared with men (Barnett, Keel, & Conoscenti, 2001; Fallon & Rozin, 1985; and Heatherton, Nichols, Mahamedi, & Keel, 1995). These differences have been attributed to the particular emphasis Western culture places on thinness as an ideal of female beauty (Striegel-Moore, Silberstein, & Rodin, 1986). However, body dissatisfaction, weight loss attempts, and eating disorders are likely to be driven both by a cultural idealization of thinness and cultural denigration of fatness. Indeed, one of the diagnostic criteria of anorexia nervosa is an, "intense fear of gaining weight or becoming fat" (APA, 2000, p. 589).

Within our society, fat individuals are judged to be less attractive, less intelligent, less competent, less disciplined, and more lazy compared with thin individuals (Blumberg & Mellis, 1985; Hebl & Heatherton, 1998; Tiggemann & Rothblum, 1997). Overweight

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individuals are not hired as frequently by prospective employers (Roe & Eickwort, 1976), are discriminated against by their employers and coworkers (Rothblum, Brand, Miller, & Oetjen, 1990), and are less likely to be promoted than are their normal weight peers (Larkin & Pines, 1979). Because weight is viewed as being within the scope of an individual's control (Crandall & Martinez, 1996; Paxton & Schulthorpe, 1999), the overweight and obese are both reviled and blamed for their condition.

Although attitudes toward overweight are universally negative in Western cultures, some research suggests that women may be more likely to denigrate the overweight and obese and to be the target of weight stigmatization compared with men (Harris, Walters, & Waschull, 1991; Tiggemann & Rothblum, 1988). This suggests that weight may be viewed as a more central aspect of identity both by and for women. If true, this would further explain the increased risk of eating disorders in women compared with men, because a core cognitive symptom in both anorexia and bulimia nervosa is the undue influence of weight or shape on self-evaluation.

Recent cognitive research has used measures of implicit (or automatic) cognition to examine attitudes and self-concept, demonstrating that these measures: (1) provide data that are less susceptible to self-presentation bias (Greenwald & Banaji, 1995); (2) reveal attitudes that might not be accessible by explicit recall (Greenwald & Banaji, 1995); and (3) predict some behaviors that are not accurately predicted by explicit measures (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997). These methods have been applied to weight attitudes, and research suggests that anti-fat bias exists on an implicit level (Teachman & Brownell, 2001). However, to our knowledge, these methods have not been applied to evaluate implicit weight identity. As a result, important questions remain unanswered. In light of significant differences in body dissatisfaction between men and women, to what extent does gender affect weight attitudes and weight identity at the implicit level?

### Current Study

In this study, we sought to explain both implicit attitudes toward overweight and the internalization of weight as an aspect of identity. Because individuals are consciously aware of and explicitly endorse negative attitudes toward overweight, we believed that both explicit and implicit measures would reveal negative attitudes toward overweight. Because overweight and obese individuals also have been shown to demonstrate explicit negative attitudes toward overweight (Crandall, 1994), we hypothesized that normal weight and overweight individuals would not differ in their explicit or implicit weight attitudes. Finally, consistent with previous research (Harris, Walters, & Waschull, 1991), we expected that women would endorse greater stigmatization of overweight compared with men.

In contrast to our hypotheses concerning explicit and implicit weight attitudes, we predicted a divergence between findings for explicit and implicit measures of weight identity. We recruited participants on the basis of explicit self-appraisals of being normal weight or overweight in accord with their actual weight status. However, we predicted that participants would implicitly identify themselves as thin regardless of actual weight. Because weight is believed to be within the scope of an individual's control (Crandall & Martinez, 1996; Paxton & Schulthorpe, 1999) and thus malleable, one might perceive the self as "a thin person stuck inside a fat person." Furthermore, weight status, unlike gender or race, is not an unchanging physical characteristic established at birth. Accordingly, implicit weight identity may be established early in life before an individual becomes overweight or obese. Because of significant gender differences in body dissatisfaction

and weight loss attempts, we predicted that men would be even less likely than women to identify themselves as overweight on an implicit level.

## METHODS

### Participants

Participants were 83 Caucasian men and women from the greater Boston community. The study group consisted of 20 normal weight men, 22 normal weight women, 21 overweight men, and 20 overweight women. Participants responded to flyers and advertisements in the local newspaper that solicited "Caucasian," "overweight," or "normal weight" individuals. They were invited to participate in the study if they met study criteria for normal weight (body mass index [BMI] between 19 and 24 kg/m<sup>2</sup>) or for overweight (BMI greater than or equal to 27.5 kg/m<sup>2</sup>). To ensure that the two groups were distinct, study criteria for weight categories were slightly more stringent than U.S. federal guidelines for normal weight (BMI between 18 and 25 kg/m<sup>2</sup>) and overweight (BMI greater than or equal to 25 kg/m<sup>2</sup>; Lean, Han, & Seidell, 1999). During their visits to the laboratory, participants' weight and height were measured to obtain objective and standardized values of BMI.

Overweight men had BMIs that were significantly greater than those of normal weight men (34.6 [9.1] vs. 22.6 [1.4] kg/m<sup>2</sup>;  $t(21) = 6.0, p < 0.001$ ). Overweight women were also significantly heavier than were normal weight women (34.7 [8.4] vs. 22.1 [1.6] kg/m<sup>2</sup>;  $t(20) = 6.6, p < 0.001$ ). Normal weight men and women did not differ on BMI, and there was no significant difference in BMI between overweight men and women. Overweight participants were older than were normal weight participants (35.7 [13.1] vs. 29.9 [11.4] years;  $t(79) = 2.2, p = 0.03$ ), consistent with data indicating that weight increases with age (Heatherton, Mahamedi, Striepe, Field, & Keel, 1997; Williamson, Kahn, Remington, & Anda, 1990). However, within gender, age did not differ significantly between overweight and normal weight men (36.3 [12.7] vs. 32.2 [11.4] years;  $t(39) = 1.1, NS$ ), and there was only a trend-level difference between overweight and normal weight women (35.1 [13.8] vs. 27.8 [11.2] years;  $t(37) = 1.9, p = 0.07$ ). Consistent with previous findings (Gortmaker, Must, & Perrin, 1993), normal weight and overweight individuals differed significantly on educational status. Normal weight men were more educated than were overweight men,  $\chi^2(3, n = 41) = 11.2, p = 0.01$ . Similarly, normal weight women were more educated than were overweight women at a trend level of significance,  $\chi^2(3, n = 42) = 7.2, p = 0.07$ . Ten (50%) normal weight men and 18 (81.8%) normal weight women held a bachelors degree or higher. In contrast, only seven (33%) overweight men and nine (45%) overweight women had obtained a bachelors degree or higher. Despite differences in education level, normal weight and overweight men ( $\chi^2(2, n = 33) = 1.1, p = 0.57$ ) and normal weight and overweight women ( $\chi^2(2, n = 38) = 4.1, p = 0.13$ ) did not differ on occupational status. Among men, the most highly represented occupations were student (27.3%), technical/skilled worker (27.3%), and executive/professional (18.2%). Most women described their current employment as administrative (28.9%), student (26.3%), or executive/professional (23.7%).

### Procedure

Participants were asked to complete implicit and explicit measures of weight attitudes and weight identity. Implicit measures were conducted on a Macintosh PowerPC

running PsyScope experimental presentation software (Cohen, MacWhinney, Flatt, & Provost, 1993). Self-report surveys were used to evaluate explicit weight attitudes and weight identity. After the completion of measures, the experimenter asked participants to remove shoes and coats and measured participants' height and weight. An analog bathroom scale was used to measure weight in pounds; height was measured in inches using a ruler affixed to the wall.

### Implicit Measures

To measure implicit cognition, participants completed the Implicit Association Test (IAT), which has been found to have good test-retest reliability and convergent validity with other measures of implicit attitude (Cunningham, Preacher, & Banaji, 2001). The IAT measures the relative strength of association between various categories by requiring participants to make the same key press in response to exemplars from two of the categories. Each IAT trial uses four target categories. For example, in an IAT assessing the relative strength of associations between good versus bad and flower versus insect, the four target categories are good, bad, flower, and insect. In one part of the task, participants must press one key for any word that connotes good or flower (e.g., paradise, triumph, carnation, daisy) and another key for any word that connotes bad or insect (e.g., murder, cancer, mosquito, cockroach). The pairings are switched in the other part of the task, such that participants press one key in response to good or insect words and another key for bad or flower words. The strength of a participant's implicit association between the categories flower/insect and good/bad is indexed as the difference between the mean response time for categorizing items in each configuration. For example, most participants will categorize items more quickly when they are obliged to make the same response to flowers and positive words and another response to insects and negative words, than when the pairings are reversed (Greenwald et al., 1998). Such data are interpreted as a positive implicit attitude toward flowers relative to insects.

Five IAT tasks relevant to this investigation were presented in random order: weight attitude (good/bad and light/heavy), weight identity (self/other and light/heavy), gender attitude (good/bad and female/male), gender identity (self/other and female/male), and self-attitude (good/bad and self/other). The category dimensions and stimuli lists for these tasks are presented in Table 1. The same categories and stimuli lists were used in each of the blocks; however, the order of one of the category pairs was reversed. Thus, whereas the first block of the weight attitude task might pair *good* and *heavy* versus *bad* and *light*, the second block would present *good* and *light* versus *bad* and *heavy*. The

Table 1. Stimuli lists for Implicit Association Test tasks

| Valence      |            | Weight      |            |
|--------------|------------|-------------|------------|
| Good         | Bad        | Light       | Heavy      |
| Wonderful    | Terrible   | Underweight | Overweight |
| Terrific     | Disgusting | Thin        | Plump      |
| Awesome      | Awful      | Skinny      | Chubby     |
| Self-Concept |            | Sex         |            |
| Self         | Other      | Female      | Male       |
| Me           | Their      | Amanda      | Andrew     |
| Mine         | Them       | Ellen       | Joseph     |
| My           | They       | Jennifer    | Steven     |

order in which categories were paired within a task was counterbalanced across participants. For each block, 60 stimuli were presented one at a time in a random order in the center of the computer screen and participants used the "D" (left) and "K" (right) keys to sort the stimuli into the correct category. The program requires participants to sort the stimuli into the correct category to progress to the next stimuli. The latency of each response was recorded in milliseconds.

### Explicit Measures

Study participants completed the demographic and weight history components of the Eating Disorders Questionnaire (EDQ; Mitchell, Hatsukami, Eckert, & Pyle, 1985), modified to assess weight attitudes. An item modeled after the Social Attitudes Toward Appearance Questionnaire (Heinberg, Thompson, & Stormer, 1995) was included to reveal explicit weight attitudes, "How much do you believe being fat is bad? (1 = completely disagree; 5 = completely agree)." The weight history scale measured explicit appraisal of current weight, including current weight perception and selection of a same-gender figure to represent one's current figure from a group of nine figure drawings that ranged from emaciated (1) to obese (9) (Stunkard, Sorenson, & Schulsinger, 1980). Explicit weight identity was calculated by combining three items: "At your current weight do you feel: (1 = extremely thin; 5 = extremely overweight)," "How fat do you currently feel? (1 = extremely fat; 5 = not at all fat)," and the current figure rating. The second item was reverse-scored so higher scores indicated a heavier self-appraisal. The three items were strongly correlated,  $r$  values ranged from 0.72 to 0.83,  $n = 83$ , all  $p$  values were  $<0.001$ .

### Transformation of Implicit Data

The first 20 responses of each block were discarded as practice trials. IAT data were then reciprocally transformed by dividing into 1000 to reduce skewness and yield more homogenous variance. All inferential statistics are based on transformed data. However, for descriptive purposes, untransformed data are used to report means and standard deviations. IAT effects for each task were calculated by subtracting the average reaction time for each trial block and thereby represent how much longer it took for the participant to respond to one block versus another. For our analyses, we construed positive IAT effects to indicate a longer latency for pairing (1) *good* with *heavy* versus *good* with *light* on weight attitude (indicating greater ease in pairing heavy = bad and light = good) (2) *self* with *heavy* versus *self* with *light* for weight identity task (self = light); (3) *good* with *male* versus *good* with *female* on the gender attitude task (female = good); (4) *self* with *male* versus *self* with *female* on the gender identity task (self = female); and (5) *self* with *bad* versus *self* with *good* on the implicit self-esteem task (self = good).

### Data Analyses

Analyses were conducted using SPSS for Macintosh. An alpha level of 0.05 was set for statistical significance. To examine differences between groups, independent  $t$  tests were performed. When relevant, analyses were performed with and without outliers, defined as values more than 1.5 standard deviations from the mean. However, because results of analyses without outliers did not differ from primary analyses in direction or level of significance, only primary analyses are presented.

Table 2. Explicit and implicit weight attitudes

|          | Men                                   |           |                                       |           | Men                    |          |
|----------|---------------------------------------|-----------|---------------------------------------|-----------|------------------------|----------|
|          | Normal Weight ( <i>n</i> = 20)        |           | Overweight ( <i>n</i> = 21)           |           | Normal vs. Overweight  |          |
|          | <i>M</i>                              | <i>SD</i> | <i>M</i>                              | <i>SD</i> | <i>t</i> ( <i>df</i> ) | <i>p</i> |
| Explicit | 3.9                                   | 1.2       | 4.2                                   | 1.0       | 0.83 (39)              | 0.41     |
| Implicit | 157.2                                 | 158.0     | 188.7                                 | 243.0     | 0.59 (39)              | 0.56     |
|          | Women                                 |           |                                       |           | Women                  |          |
|          | Normal Weight ( <i>n</i> = 22)        |           | Overweight ( <i>n</i> = 20)           |           | Normal vs. Overweight  |          |
|          | <i>M</i>                              | <i>SD</i> | <i>M</i>                              | <i>SD</i> | <i>t</i> ( <i>df</i> ) | <i>p</i> |
| Explicit | 3.8                                   | 1.0       | 3.6                                   | 1.2       | 0.73 (39)              | 0.47     |
| Implicit | 163.3                                 | 168.5     | 122.9                                 | 199.3     | 1.52 (40)              | 0.14     |
|          | Normal Weight<br>Men vs. Women        |           | Overweight<br>Men vs. Women           |           |                        |          |
| Explicit | <i>t</i> (39) = 0.25, <i>p</i> = 0.80 |           | <i>t</i> (39) = 1.84, <i>p</i> = 0.07 |           |                        |          |
| Implicit | <i>t</i> (40) = 1.38, <i>p</i> = 0.18 |           | <i>t</i> (39) = 0.26, <i>p</i> = 0.79 |           |                        |          |

## RESULTS

### Weight Attitudes

Table 2 presents data concerning explicit and implicit weight attitudes. Normal weight and overweight men endorsed explicit negative attitudes toward overweight. Similarly, normal weight and overweight women did not differ on explicit weight attitudes, both expressing negative explicit attitudes toward overweight. Normal weight men and women did not differ on explicit weight attitudes, but there was a trend-level difference between overweight men and women, with men expressing greater denigration of overweight. Across weight categories, men and women did not differ in their explicit weight attitudes;  $t(81) = 1.48, p = 0.14$ . Similarly, across gender categories, normal weight and overweight participants did not differ in explicit weight attitudes;  $t(81) = 0.10, p = 0.92$ .

As observed with explicit weight attitudes, participants harbored negative implicit attitudes toward fat. IAT effects presented in the table indicate that individuals required less time to perform IAT tasks pairing good with light and bad with heavy than tasks pairing good with heavy and bad with light. Implicit weight attitudes did not differ between normal weight and overweight men. Implicit weight attitudes of normal weight and overweight women also did not differ significantly. Nor were there differences between genders ( $t[81] = 1.16, p = 0.25$ ) or weight categories ( $t[81] = 1.56, p = 0.12$ ).

Although men expressed explicit and implicit denigration of overweight, explicit and implicit measures of weight attitude did not correlate,  $r(40) = -0.01, p = 0.97$ . Similarly, explicit and implicit measures of weight attitudes did not correlate significantly among women,  $r(41) = 0.10, p = 0.54$ . Nor was there a significant correlation across men and women combined. However, this might be due to the restricted range of variance of explicit weight attitudes, because almost no participants expressed the attitude that being overweight was good.

Table 3. Explicit and implicit weight identity

|          | Men                                    |           |                                       |           | Men                    |          |
|----------|--|-----------|---------------------------------------|-----------|------------------------|----------|
|          | Normal Weight ( <i>n</i> = 20)         |           | Overweight ( <i>n</i> = 21)           |           | Normal vs. Overweight  |          |
|          | <i>M</i>                               | <i>SD</i> | <i>M</i>                              | <i>SD</i> | <i>t</i> ( <i>df</i> ) | <i>p</i> |
| Explicit | 7.4                                    | 1.3       | 13.0                                  | 2.7       | 8.55 (29)              | <0.0005  |
| Implicit | 102.4                                  | 166.1     | 92.9                                  | 156.6     | 0.50 (39)              | 0.62     |
|          | Women                                  |           |                                       |           | Women                  |          |
|          | Normal Weight ( <i>n</i> = 22)         |           | Overweight ( <i>n</i> = 20)           |           | Normal vs. Overweight  |          |
|          | <i>M</i>                               | <i>SD</i> | <i>M</i>                              | <i>SD</i> | <i>t</i> ( <i>df</i> ) | <i>p</i> |
| Explicit | 8.9                                    | 2.0       | 13.4                                  | 2.3       | 6.64 (40)              | <0.0005  |
| Implicit | 104.0                                  | 110.5     | -21.7                                 | 183.0     | 4.11 (40)              | <0.0005  |
|          | Normal Weight<br>Men vs. Women         |           | Overweight<br>Men vs. Women           |           |                        |          |
| Explicit | <i>t</i> (40) = 2.82, <i>p</i> = 0.008 |           | <i>t</i> (39) = 0.52, <i>p</i> = 0.61 |           |                        |          |
| Implicit | <i>t</i> (40) = 0.79, <i>p</i> = 0.44  |           | <i>t</i> (39) = 2.71, <i>p</i> = 0.01 |           |                        |          |

### Weight Identity

Table 3 presents explicit and implicit measures of weight identity. Explicit measures of weight identity for men revealed that normal weight and overweight men differed significantly on measures of weight identity. As expected, overweight men explicitly evaluated themselves as being heavier than did normal weight men. Overweight women also were more likely to endorse heavier explicit weight identity than were normal weight women. Interestingly, normal weight women rated themselves explicitly as being heavier than did normal weight men, but no differences were found between overweight men and women. Overall, men and women did not hold significantly different explicit weight identities;  $t(81) = 1.08, p = 0.28$ . Overweight participants rated themselves as significantly heavier than did normal weight participants;  $t(81) = 10.33, p < 0.0005$ .

In contrast to findings for explicit weight identity in men, normal weight and overweight men did not differ significantly on implicit weight identity. Both normal weight and overweight men showed a preference for pairing self with light on the IAT. Similar to findings for explicit weight identity in women, normal weight and overweight women internalized significantly different implicit weight identities. That is, normal weight women demonstrated a preference for pairing self with light, whereas overweight women showed a preference for pairing self with heavy on the IAT weight identity task. In contrast to findings with the explicit measure, normal weight men and women did not differ on implicit weight identity; however, overweight men and women did. No significant difference between men and women's implicit weight identity was found;  $t(81) = 0.83, p = 0.41$ . Overweight and normal weight participants did differ on implicit weight identity;  $t(81) = 2.95, p = 0.004$ .

As predicted, men demonstrated a dissociation between explicit and implicit weight identity ( $r(40) = -0.14, p = 0.38$ ). Conversely, explicit and implicit measures of weight identity were significantly correlated among women ( $r(41) = 0.36, p = 0.02$ ).

## Gender Attitude and Identity

To demonstrate that explicit and implicit identity could be congruent in both men and women, we examined differences in gender attitudes and identity between men and women in our sample. Women demonstrated positive implicit attitudes toward female ( $M [SD] = 96.8 \text{ ms} [104.3]$ ), whereas men endorsed positive implicit attitudes toward male ( $M [SD] = -18.6 \text{ ms} [100.8]$ ). Mean implicit attitudes between men and women differed significantly,  $t(80) = 5.9, p < 0.001$ . Implicit gender identity differed significantly between men and women, because women implicitly identified themselves as female and men identified themselves as male (women mean [ $SD$ ]:  $86.8 \text{ ms} [84.7]$ ; men mean [ $SD$ ]:  $-36.9 \text{ ms} [96.3]$ ;  $t(80) = 5.7, p < 0.001$ ).

## Implicit Weight Attitude, Weight Identity, and Self-Esteem

We conducted exploratory analyses to determine whether implicit measures of weight identification, weight attitudes, and self-esteem were correlated. Implicit measures of weight identity, weight attitude, and self-esteem were not significantly correlated in men (all  $p$  values  $> 0.10$ ). However, implicit heavy identity did correlate with lower self-esteem in women ( $r(41) = 0.31, p = 0.049$ ). In addition, negative implicit attitudes toward overweight were associated with lower implicit self-esteem in women ( $r(41) = 0.39, p = 0.01$ ). Finally, implicit weight identity was not associated with implicit weight attitudes for women ( $r(41) = 0.20, p = 0.20$ ). When entered in a multiple regression, implicit weight attitudes ( $\beta = 0.33, t = 2.2, p = 0.04$ ) but neither implicit weight identity ( $\beta = 0.16, t = 0.6, p = 0.54$ ) nor the interaction of implicit weight identity with implicit weight attitudes ( $\beta = 0.10, t = 0.4, p = 0.71$ ) predicted implicit self-esteem among women ( $R^2 = 0.21$ ).

## DISCUSSION

On both explicit and implicit measures, negative attitudes toward weight were ubiquitously held. Contrary to our hypotheses, we found no evidence of greater denigration of fat among women. On an explicit measure of weight identity, normal weight women rated themselves as heavier than did normal weight men despite no significant differences in actual body size. This finding likely represents the greater tendency for women to be critical of their weights even when they are normal weight. Interestingly, this gender difference disappeared on the implicit measure of weight identity. Despite explicit weight appraisals that accorded with actual weight status, men implicitly identified themselves as light regardless of actual weight. Conversely, explicit weight identity and implicit weight identity were significantly correlated in women and reflected actual weight status. Furthermore, to the extent that the self was heavy and heavy was bad, women demonstrated an association between the self and bad. Thus, women seemed to accept weight as a defining aspect of their value. Consistent with this interpretation, explicit assessments have found lower levels of self-esteem among overweight women compared with normal weight women (Miller & Downey, 1999).

The internalization of overweight as an aspect of identity in women may stem from the salience of weight issues to women in our culture. Empirical evidence has consistently revealed that weight and body image concerns are more prevalent in women than men (Pilner, Chaiken, & Flett, 1990; Vervaet, van Heeringen, & Jannes, 1998; Wadden, Brown, Foster, & Linowitz, 1991). Furthermore, several studies have found that weight status is



closely tied to judgments of relationship desirability of women but not men (Furnham, Dias, & McClelland, 1998; Singh & Young, 1995; Smith, Waldorf, & Trembath, 1990). Therefore, one might expect that women in our culture would be more attuned to being overweight. The gender difference we found in the association between implicit weight identity and self-esteem provides further evidence that weight is a more salient component of identity in women than in men. Finally, we found that implicit denigration of overweight correlated with lower implicit self-esteem among women. Analogously, women's negative explicit attitudes toward overweight have been shown to be associated with lower explicit self-esteem (Cusumano & Thompson, 1997), suggesting that internalization of a cultural denigration of fat might lead to harsher self-appraisal and thus lower self-esteem among women.

Men seem to be protected from body dissatisfaction by failing to identify themselves with heavy, even when they are objectively overweight. This likely explains why men are underrepresented among those seeking weight loss, despite gender parity in the prevalence of overweight and obesity among Caucasians (Kuczmarski, Flegal, Campbell, & Johnson, 1994). An ability to view the self as light regardless of actual weight would also protect men from developing eating disorders, because this is almost the opposite of the body image disturbance experienced by patients with anorexia nervosa in which they see themselves as fat despite being underweight. Notably, there is an increasing literature on male body image that focuses on the cultural emphasis for men to be muscular (Pope, Olivardia, Gruber, & Borowiecki, 1999; Leit, Pope, & Gray, 2000; and Cohane & Pope, 2001). Because our word anchors for "heavy" included "overweight, plump, and chubby," we ensured that heavy was equated with fatness, not muscularity. Future research could contrast "underweight, skinny, and scrawny" with "muscular, buff, and brawny" to investigate implicit weight attitudes and identity that may be more central to concerns harbored by men.

The results of this study are promising because they examine, for the first time to our knowledge, the combination of weight attitudes and weight identity at the implicit level. This examination broadens our understanding of these phenomena, because implicit measures are able to tap beliefs that are often unavailable to individuals' conscious recall and are believed to be resilient to self-presentation biases. Although our findings with women replicate what has been found using explicit measures, we were able to reveal effects in men that might otherwise have been inaccessible with explicit measures.

One limitation of the study is that the sample consisted of only Caucasian participants. Future research should examine whether ethnic differences exist on implicit weight attitude or identity and the extent to which these may moderate the gender differences found in this investigation. Furthermore, although our findings concerning the relationship between weight internalization and implicit self-esteem are interesting, they must be approached with caution, because we did not include an explicit measure for self-esteem. Our explicit measure of weight attitude was rated on a 5-point Likert scale, which likely contributed to the restriction of range, limiting our ability to determine significant associations between explicit and implicit weight attitudes. A final criticism is that our sample size was small, which may have limited power for detecting statistically significant associations. For example, on implicit weight attitudes, there seemed to be a potential interaction between gender and weight status, with overweight men harboring the most negative attitudes toward overweight and overweight women harboring the least negative attitudes. However, there was inadequate power to test this association.

Despite the limitations delineated, this study may explain why women preponderate in populations seeking weight loss. Although men are as overweight as women are on objective measures, they may not implicitly experience themselves as being overweight

and thus lack motivation to seek weight loss. Our findings also may explain why women are more vulnerable than men to developing eating disorders, because implicit weight identity and self-esteem were more closely related in women than in men, reflecting a predisposition for a cognitive symptom of eating disorders—the undue influence of weight on self-evaluation. Future research might examine implicit weight attitudes and weight identity in cultures that do not stigmatize overweight. In this manner, we might better understand the link between social values concerning weight and implicit internalization of overweight as an aspect of identity and self-worth.

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