Body image and explicit and implicit anti-fat attitudes: The mediating role of physical appearance comparisons

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Abstract

Prejudice against overweight people is rife. However, there is a paucity of research on the underlying reasons for it. In two studies the relationship between body image, the tendency to make physical appearance-related comparisons (PACS), and both explicit and implicit anti-fat attitudes was examined. In Study 1 (n = 227) people with a high tendency to make physical appearance-related comparisons (high PACS scorers) reported lower self-appearance evaluation, but higher appearance orientation and explicit anti-fat attitudes. The PACS fully mediated the relationship between appearance orientation and explicit anti-fat attitudes. Study 2 (n = 134) found that the PACS also mediated the relationship between appearance orientation and implicit anti-fat attitudes. Thus, individual differences in factors such as body image and the tendency to make appearance-related comparisons, appear to play a central role in both explicit and implicit anti-fat attitudes.

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Introduction

Anti-fat attitudes and negative behaviours toward overweight and obese people (i.e., discrimination) are widespread (see Brownell, Puhl, Schwartz, & Rudd, 2005; Puhl & Brownell, 2001), pervading educational (Crandall, 1991; Neumark-Sztainer, Story, & Harris, 1999), employment (Roehling, 1999), and health care settings (Bagley, Conklin, Isherwood, Pechulis, & Watson, 1989; Rand & MacGregor, 1990). Further, research examining anti-fat attitudes in children found that bias against overweight and obese people has increased over time (Latner & Stunkard, 2003), with children reporting more negative associations with overweight and obese people than in the past. Latner and Stunkard’s (2003) findings are particularly worrying because children’s anti-fat attitudes are likely shaped by their parents (Davison & Birch, 2004), and thus may reflect broader societal attitudes. Although there is a developing body of research cataloguing the prevalence of anti-fat attitudes and discrimination, there is very little research examining their aetiology.

The meagre literature examining factors underlying anti-fat attitudes has typically focused on attributions, personality factors, and ideological beliefs (Crandall, 1994; Crandall et al., 2001). However, alternative theoretical approaches to understanding anti-fat prejudice, such as comparison-based theories (Festinger, 1954; Heinberg & Thompson, 1992; Wills, 1981) have not been explored, despite the clear strength of these approaches in explaining other forms of prejudice (Buunk & Mussweiler, 2001; Duckitt, 1992).

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Festinger’s (1954) original conceptualisation of social comparison theory held that people have an innate drive to evaluate dimensions (e.g., abilities, attributes, attitudes) of the self. Where objective means for evaluation of the self are not available, people will seek to make comparisons against similar others. Research in the intervening half century has seen social comparison theory evolve considerably with a general acknowledgement that people do not always seek similar others as targets for comparison, sometimes making upward or downward comparisons against perceived superior or inferior targets, respectively.

Research on upward comparisons suggests that people with a high tendency to make physical appearance-related comparisons, typically with societal ideals (e.g., fashion models), experience greater body dissatisfaction, and more disordered eating (Heinberg & Thompson, 1992; Thompson, Heinberg, & Tantleff, 1991), and that such comparisons mediate the relationship between socio-cultural influences and body dissatisfaction and eating disorders (Keery, van den Berg, & Thompson, 2004; Thompson, Coovert, & Stormer, 1999). In contrast, research on downward comparisons (Wills, 1981) suggests that people experiencing negative feelings or cognitions about themselves (e.g., low self-esteem) can, and often do, enhance their self-regard by comparing themselves to people they perceive to be less valued, or worse off than themselves (Duckitt, 1992; Major, Testa, & Bylsma, 1991; Wills, 1981). However, there is no research examining the relationship between the tendency to make physical appearance-related comparisons and anti-fat attitudes, nor any research that examines whether physical appearance comparisons play a mediating role in the relationship between body image (physical self-esteem) and anti-fat attitudes.

There is good evidence that prejudice toward others is related to feelings about the self (i.e., self-esteem; see Duckitt, 1992, for a review), and it may be that the same will be true for feelings based on body image (i.e., physical self-esteem). In two recent studies where dimensions of body image were assessed alongside anti-fat attitudes (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997; O’Brien, Hunter, & Banks, 2007), significant associations were found between the two. Although the relationship between anti-fat attitudes and body image was small in Lewis et al.’s (1997) study, O’Brien et al. (2007) found moderate to large relationships between dimensions of body image and both implicit and explicit anti-fat attitudes.

Clearly, a better understanding of the underlying reasons for this prejudice is needed in order to ameliorate or prevent it. Although ideological/socio-cultural beliefs and associated attributions have been found to play a role in anti-fat attitudes, with some societies clearly more prejudiced than others (Crandall et al., 2001), individual differences such as body image and the tendency to compare oneself physically with others may also play an important role. The tendency to make comparisons with perceived superior and inferior others has been shown to decrease and increase psychological wellbeing, respectively. And indeed, there is good evidence that the tendency to make physical appearance-related comparisons mediates the relationship between socio-cultural factors, body image and disordered eating (Thompson, Coovert, & Stormer, 1999). One way of maintaining a positive physical self-image in the face of the sometimes overwhelming images of physical ideals transmitted via the mass media is to compare oneself with those perceived as physically inferior (i.e., fat people). These comparisons are not only likely to result in enhanced feelings about the physical self (body image), but also in negative cognitions (anti-fat attitudes) about those perceived as physically inferior (e.g., overweight and obese people).

Here, two studies were conducted to examine the relationship between the tendency to make physical appearance-related comparisons (Studies 1 and 2), body image, and explicit and implicit (Study 2) anti-fat attitudes. It was expected that those with a high tendency to make physical appearance-related comparisons would display greater levels of anti-fat attitudes than those with a low tendency to make appearance comparisons. Additionally, it was expected that the tendency to make physical appearance-related comparisons would mediate the relationship between body image and explicit and implicit anti-fat attitudes, suggesting that such comparisons are used to maintain self-esteem at the expense of overweight and obese others.

**Study 1**

The present study examined the relationship between the tendency to make physical appearance comparisons, two dimensions of body image (appearance evaluation and appearance orientation) and explicit anti-fat attitudes.

**Methods**

**Participants**

Two hundred and twenty-seven students (females, $n = 140; 61.7\%$) from the University of Otago, New Zealand, participated in the study as part of a course.
requirement. Mean age was 19.98 (SD = 2.91) years. BMI was calculated from self-reported weight and height (weight in kg/height in m$^2$) with mean BMI 23.29 (SD = 2.84) in this sample.

**Materials**

A paper and pencil questionnaire was used to gather demographic details (i.e., age, gender, height, weight) and to measure multidimensional body image, anti-fat attitudes, and the tendency to make physical appearance-related comparisons with others.

The five-item Physical Appearance Comparison Scale (PACS; Thompson et al., 1991) measures ones’ tendency to make personal physical appearance-related comparisons with others in various social situations. Participants indicate on a scale from 1 to 5 (1 = never, 5 = always) the frequency with which they carry out specific physical comparisons with others (e.g., “In social situations, I sometimes compare my figure to the figures of other people”). Cronbach’s alpha for the PACS was .78 in our sample.

The appearance orientation and evaluation scales from the Multidimensional Body-Self Relations Questionnaire-Appearance Scales (MBSRQ-AS; Cash, 2000) were used to assess participants’ body image. The appearance evaluation subscale measures overall feelings of physical attractiveness and satisfaction with the physical self (e.g., “Most people would consider me good looking”). The appearance orientation scale assesses how important physical appearance is to the individual (e.g., “It is important that I always look good”). Participants indicate on a 1–5 scale their agreement with each item. Cronbach’s alphas for the scales were .86 and .90, respectively.

Crandall’s (1994) 13-item anti-fat attitudes questionnaire was used to assess explicit anti-fat attitudes. This measure is comprised of three subscales, Dislike, Fear of Fat, and Willpower. The Dislike subscale assesses an individual’s antipathy toward fat people (e.g., “I don’t like fat people much”). The Fear of Fat subscale, which assesses personal concern about becoming fat, rather than prejudice toward fat people per se, was excluded from analysis. The Willpower subscale assesses the belief that being overweight is a matter of personal control or lack thereof (e.g., “Fat people tend to be fat pretty much through their own fault”). Items were scored on a 10-point Likert scale (0 = very strongly disagree, 9 = very strongly agree). Cronbach’s alphas for the Dislike and Willpower subscales were .85 and .82, respectively.

Participants were seated approximately 1 m apart in laboratory rooms and signed consent forms which were kept separate from the questionnaires in order to maintain anonymity. The questionnaires took approximately 35 min to complete, during which time no talking was permitted. Questionnaires were then deposited en masse into a large box as participants departed.

**Preliminary analyses**

Data were analysed using SPSS for Windows version 13.0. The continuous variable PACS scores were split into tertiles representing low ($n = 69$), medium ($n = 84$), and high ($n = 74$) tendency for making physical appearance-related comparison. This tertile split allowed us to test the hypothesis that high PACS scorers would have greater anti-fat attitudes and beliefs than low PACS scorers, but also facilitated interpretation of the data. Because there were uneven numbers of males in the low, medium, and high PACS groups, and because previous research suggests gender differences in body image (males more positive), and anti-fat attitudes (males sometimes higher), ANCOVAs were conducted controlling for gender. Post hoc tests were conducted using Tukey’s HSD test.

**Correlation and mediation analyses**

Pearson’s correlation coefficients were used to assess relationships between demographic variables, PACS, appearance evaluation and orientation, and anti-fat attitudes (Dislike and Willpower). To test for mediation Baron and Kenny’s (1986) multiple regression technique was used. In this procedure mediation was said to be present when (a) the independent variable is significantly correlated with the potential mediator and dependent variable; (b) the potential mediator is significantly correlated with the dependent variable; and (c) when the mediating variable is controlled the previously significant relationship between the independent and dependent variable is completely or significantly reduced. Sobel’s $t$ test (see Jose, 2003; Sobel, 1982) was used to test the significance of the reduced relationship.

**Results**

Mean scores and standard deviations for age, BMI, Dislike and Willpower subscales, and appearance evaluation and orientation were calculated for the low, medium, and high PACS scorers (see Table 1). Preliminary analysis (one-way ANOVA) supported the use of ANCOVAs controlling for gender. Males reported significantly greater Dislike of fat people than females ($M = 2.41, SD = 1.45$ versus $M = 1.88, SD = 1.20$, $F$
Table 1
Mean (SD) BMI, age, anti-fat attitudes, and appearance evaluation and orientation scores for low, medium, and high PACS scorers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low (n = 69) (male, n = 37)</th>
<th>Medium (n = 84) (male, n = 33)</th>
<th>High (n = 74) (male, n = 17)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (kg/m²)</td>
<td>23.51 (3.29)</td>
<td>23.22 (2.84)</td>
<td>23.14 (2.35)</td>
<td>.95</td>
</tr>
<tr>
<td>Age (years)</td>
<td>20.47 (4.5)</td>
<td>19.68 (2.02)</td>
<td>19.48 (1.23)</td>
<td>.06</td>
</tr>
<tr>
<td>Dislike</td>
<td>1.73 (1.29)a</td>
<td>2.08 (1.29)ab</td>
<td>2.41 (1.33)b</td>
<td>**</td>
</tr>
<tr>
<td>Willpower</td>
<td>4.97 (1.58)a</td>
<td>5.57 (1.56)b</td>
<td>6.36 (1.49)c</td>
<td>**</td>
</tr>
<tr>
<td>Appearance evaluation</td>
<td>3.42 (.58)</td>
<td>3.30 (.53)</td>
<td>3.09 (.76)</td>
<td>.13</td>
</tr>
<tr>
<td>Appearance orientation</td>
<td>2.85 (.68)</td>
<td>3.33 (.49)b</td>
<td>3.72 (.50)c</td>
<td>**</td>
</tr>
</tbody>
</table>

a Anti-fat attitudes Dislike and Willpower scales. Higher scores equal greater anti-fat attitudes.

b The Multidimensional Body-Self Relations Questionnaire-Appearance Scales. Scored on five-point Likert scales. Participant scores are averaged, generating a mean score ranging from 1 to 5. Lower scores indicate negative appearance evaluation, and lower appearance orientation.

Level of significance for ANCOVAs (controlling for gender), *p < .05. Within rows, mean scores with different letters are significantly different.

(1, 226) = 8.76, p < .01), and females reported significantly lower self-appearance evaluation (M = 3.09, SD = .62 versus M = 3.56, SD = .56, F(1, 226) = 33.09, p < .001), but greater appearance orientation than males (M = 3.38, SD = .61 versus M = 3.19, SD = .71, F(1, 226) = 4.39, p < .05).

Low, medium, and high PACS scorers

Significant differences emerged between low, medium, and high PACS scorers on a number of measures taken (see Table 1 for group differences). The high PACS group reported significantly higher Dislike of fat people than the low PACS scorers, and a greater belief that being overweight is a matter of personal control (Willpower), than the low or medium PACS groups. High PACS scorers also reported a higher appearance orientation than the other groups. Additionally, high PACS scorers reported a lower appearance evaluation, although the effect was not significant when controlling for gender.

Correlation and mediation analyses

Pearson’s correlation coefficients for each of the variables are displayed in Table 2. As can be seen in the table, appearance orientation significantly predicted both the Dislike and Willpower anti-fat subscales, and the PACS was correlated with all three variables, thereby justifying a mediational analysis. Furthermore, partialling the PACS out of the appearance orientation effects significantly reduced them, and the resulting partial correlations were non-significant (Dislike: Sobel’s t = 2.58, p < .01, partial r = .04; Willpower: Sobel’s t = 2.59, p < .01, partial r = .08). Appearance evaluation was also correlated with Dislike, but although the PACS predicted both variables, it failed to reduce this relationship.

Discussion

Both the prejudice literature and the eating disorders literature suggest that the tendency to compare oneself with others, whether upward or downward, is a critical predictor of how we then feel about ourselves. The aim of the present study was to examine the relationships among the tendency to make appearance-related comparison, dimensions of body image (appearance evaluation and orientation), and explicit (Dislike and Willpower) anti-fat attitudes. It was found that appearance-related comparison processes play a central role in the relationship between body image and explicit anti-fat attitudes.

Between group differences emerged for PACS, with high PACS scorers reporting a greater Dislike of fat people and a greater belief that fat people lack Willpower and self-control. Similar to previous body image research, those with high PACS scores reported a higher appearance orientation or investment in personal appearance and accompanying behaviours.

As in previous anti-fat attitudes research (Lewis et al., 1997; O’Brien et al., 2007), significant correlations were found between dimensions of body image (i.e., appearance evaluation and orientation) and explicit anti-fat attitudes (i.e., Dislike and Willpower subscales). Notably, appearance evaluation was positively associated
with the Dislike anti-fat subscale, while appearance orientation was positively associated with both the Dislike and Willpower anti-fat scales. Those people reporting a greater tendency to compare their physical appearance with others reported lower satisfaction with their appearance, but a greater investment in personal appearance. Additionally, clear gender differences emerged between males and females on the Dislike subscale, with males reporting a greater Dislike. Most important for the current study, mediational analysis revealed that PACS was a full mediator of the relationship between appearance orientation and Dislike subscale scores, and appearance orientation and the Willpower subscale scores. In other words, the tendency for people with low body image to be biased against the overweight and obese can be at least partially explained by their greater tendency to make appearance-related comparisons.

**Study 2**

The present study extended upon Study 1 by examining whether the tendency to make appearance-related comparisons also mediated the relationship between body image and implicit anti-fat attitudes. It also sought to replicate the findings of Study 1 for the relationships between body image, PACS, and explicit anti-fat attitudes (Dislike and Willpower).

**Method**

**Participants**

One hundred and thirty-four students (females, \( n = 99; \) 73.9%) from the University of Otago, New Zealand, participated in the study as part of a course requirement. Mean age was 20.09 (\( SD = 4.19 \)) years, and mean BMI (self-reported weight in kg/height in \( m^2 \)) was 22.89 (\( SD = 3.67 \)).

**Materials, procedures, and analyses**

The materials, procedures, and analyses used in the present study were largely identical to those described in Study 1. Cronbach’s alphas for each of the measures in the present study were adequate and ranged from .76 to .85. In addition to these measures, the present study included a measure of implicit anti-fat attitudes by employing a variation of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998).

The IAT is a widely used tool in prejudice research that measures unconscious or implicit attitudes and beliefs about specific targets. Operationally, the IAT measures the time it takes people to correctly categorise positive or negative attributes when paired with a specific category or target. A paper and pencil version of the anti-fat IAT has shown good utility and acts as a surrogate for the computerised version by assessing how many correct categorisations people can make within 20 s (timed). Previous work on implicit anti-fat attitudes (O’Brien et al., 2007; Schwartz, Chambliss, Brownell, Blair, & Billington, 2003; Teachman & Brownell, 2001) has shown that participants respond quicker (correctly categorise more words) when positive attributes (e.g., good and excellent) are paired with thin/slim people as targets and when negative attributes (e.g., bad or terrible) are paired with obese/fat people as targets. That is, congruent with one’s automatic associations held in memory. Conversely, reaction times are slower (fewer correct categorisations) when negative attributes (e.g., bad or nasty) are paired with thin/slim people as targets and positive attributes are paired with obese/fat people as targets. That is, incongruent with associations held in memory. To score the IAT, the number of words correctly categorised when positive and negative attributes are paired with fat and thin identifiers, respectively, are subtracted from the number of correct categorisations when negative and positive attributes are paired with fat and thin identifiers, respectively. Higher scores on the IAT indicate greater implicit anti-fat bias.

The anti-fat IAT uses ‘fat people’ and ‘thin people’ as target categories that are then paired with attribute categories of interest. The categories of interest within the present study were chosen to specifically assess the attitudes toward (‘good’ versus ‘bad’) fat/obese versus thin/slim people (see O’Brien et al., 2007; Teachman & Brownell, 2001, for a more thorough description of this measure and accompanying procedures). The external validity of the measure has been established with IAT scores shown to be predictive of prejudiced behaviour (Bessenoff & Sherman, 2000; McConnell & Leibold, 2001).

**Results**

In one-way ANOVAs, males again reported significantly greater Dislike for fat people than females (\( M = 3.12, SD = 1.76 \) versus \( M = 2.44, SD = 1.44, F(1, 133) = 5.18, p < .05 \)), and females reported significantly greater appearance orientation than males (\( M = 3.51, SD = .62 \) versus \( M = 3.14, SD = .81, F(1, 133) = 8.07, p < .01 \)). There were no gender differences on implicit anti-fat attitudes or appearance evaluation. Mean scores and standard deviations for age, BMI, Dislike and Willpower subscales, and appearance evaluation and
orientation were again calculated using ANCOVAs controlling for gender, for the low, medium, and high PACS scorers (see Table 3).

**Low, medium, and high PACS scorers**

Significant differences emerged between low, medium, and high PACS scorers on a number of the measures taken (see Table 3 for group differences). Consistent with Study 1, the high PACS group had significantly higher Dislike of fat people than the low PACS scorers, and a greater belief that being overweight is a matter of personal control or lack thereof (Willpower) than the low or medium PACS groups. High PACS scorers also reported a higher appearance orientation than the other groups. Additionally, although not significant when controlled for gender, high PACS scorers reported lower appearance evaluation.

**Correlation and mediation analyses**

Correlations among all variables appear in Table 4. As in Study 1, appearance orientation significantly predicted both explicit anti-fat subscales, and correlated with the implicit measure (IAT score) as well. Also as in Study 1, the PACS significantly correlated with all variables and fully mediated the relationships between body appearance orientation and attitudes (Dislike: Sobel’s $t = 2.48$, $p < .05$, partial $r = .14$; IAT: Sobel’s $t = 1.98$, $p < .05$, partial $r = .13$), and approached significance for Willpower (Sobel’s $t = 1.85$, $p = .06$, partial $r = .15$). Appearance evaluation was correlated with the Willpower attitude measure, but although the PACS predicted both variables, it failed to reduce this relationship.

**Discussion**

The present study replicated and extended the findings of Study 1 by showing that high PACS scorers had higher levels of explicit anti-fat attitudes (Dislike and Willpower), appearance orientation, but lower appearance self-evaluation than people reporting a lesser tendency to compare themselves physically with others (PACS). Additionally, high PACS scorers controll...
displayed greater implicit anti-fat attitudes than low PACS scorers.

In terms of mediation, a slightly different pattern of effects emerged in comparison to Study 1. PACS scores were found to mediate the relationship between appearance orientation and the Dislike anti-fat subscale and implicit anti-fat attitudes, but just failed to mediate the relationship between appearance orientation and the Willpower anti-fat subscale. Similarly, the relationship between appearance evaluation and the Willpower subscale was not mediated by the PACS.

In line with recent research (Schwartz, Vartanian, Nosek, & Brownell, 2006), BMI was inversely related to implicit anti-fat attitudes, with those with higher BMI displaying lower levels of implicit anti-fat attitudes, and lower appearance self-evaluation. However, the level of explicit (Dislike and Willpower) and implicit anti-fat attitudes was relatively high regardless of weight status.

The finding that the PACS mediated the relationship between appearance orientation and implicit anti-fat attitudes is particularly interesting. If one has a greater tendency to repeatedly compare ones’ physical self with others, this should also result in repeated cognitions about the target for comparison. Where the comparison target is overweight or obese, physical comparisons will likely result in negative cognitions about the target, thus building stronger implicit associations between fat identifiers and negative attributes.

General discussion

The present studies explored whether the tendency to make appearance-related comparisons is related to anti-fat attitudes, and in particular whether such comparisons can help explain the relationship between those attitudes and low body esteem. Our data showed that the tendency to make appearance-related comparisons is positively related to both explicit and implicit anti-fat attitudes, and mediates the relationship between dimensions of body image and both explicit and implicit anti-fat attitudes.

Although appearance evaluations were significantly related to anti-fat attitudes (Dislike subscale in Study 1, and Willpower subscale in Study 2) and PACS scores, the associations were considerably smaller than those observed between appearance orientation, PACS scores, and both implicit and explicit (Dislike and Willpower subscales) anti-fat attitudes. We speculate that those with a high appearance orientation, which represents a strong investment in appearance and associated behaviours to look ones best, also expect that others should be taking similar care of their physical appearances. Thus, overweight and obese targets may be seen as deviating from these ideals and therefore are justifiably subject to greater disparagement.

Consistent with other research (Crandall, 1994; Lewis et al., 1997), gender differences were found for explicit anti-fat attitudes in both Studies 1 and 2, with males reporting greater dislike of fat people. It is unclear whether this finding represents a gender bias in explicit reporting (truthful responses) or whether some other factor accounts for this difference. It may be because females might have a greater empathy for overweight people. Females do tend to bear the brunt of societal anti-fat attitudes to a greater extent than males, with overweight females being less likely to be given access to education resources (Crandall, 1991), and earning lower incomes (Roehling, 1999), than similarly qualified but normal weight women. This anti-fat discrimination is not experienced to the same extent by overweight males. Given that there was no gender difference in implicit anti-fat attitudes, however, it is more likely an explicit reporting bias.

Naturally, there are limitations to the present work. Because the study was carried out in university students the findings may not be indicative of the general population. Further, the results were not completely consistent across the two studies, and this may be due to differences in sample sizes between the two studies reported here. Additionally, the work was correlational in nature and therefore is unable to make conclusive statements about causation. Finally, the present work was not able to examine whether upward or downward physical appearance comparisons were influencing the relationship between body image and anti-fat attitudes. Development of a measure that builds upon the PACS, and can detect the direction of physical appearance comparisons (upward and/or downward) is critical for addressing this limitation.

Nevertheless, these studies are the first to examine the relationship between the tendency to make physical appearance-related comparisons, body image, and anti-fat attitudes. The tendency to make appearance-related comparisons appears to play a central role in anti-fat attitudes, which is consistent with other group-based prejudice research. Experimental research is required to further explicate the role of physical appearance-related comparisons and body image in supporting and maintaining anti-fat attitudes. It could be that the psychological methods currently being used to decrease body dissatisfaction and disordered eating behaviours (see Thompson & Smolak, 2001), may also reduce be effective in reducing anti-fat attitudes.
References


