The relationship between physical appearance concerns, disgust, and anti-fat prejudice

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Abstract

This study examined relationships between physical appearance concerns (fear of fat, body image disturbance; BIDQ), disgust, and anti-fat prejudice (dislike, blame), and tested whether disgust mediates relationships between physical appearance concerns and anti-fat prejudice. Participants (N = 1649; age = 28 years) provided demographic data and completed measures of anti-fat prejudice, tendency to feel disgust, and physical appearance concerns. Univariate, multivariate, and mediation analyses were conducted. Univariate and multivariate associations were found between fear of fat, BIDQ, disgust, and anti-fat prejudice for women. For women only, mediation analyses showed that disgust partially mediated relationships between physical appearance concerns and dislike of fat people. For men, univariate and multivariate relationships were found between fear of fat, and dislike and blame of fat people, but disgust was not related to anti-fat prejudice. Newer constructs centering on physical appearance concerns and disgust appear promising candidates for understanding anti-fat prejudice.

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Introduction

As global rates of obesity continue to rise, there is an increasing acknowledgment that anti-fat prejudice is a significant social problem (weight bias, obesity stigma; Andreyeva, Puhl, & Brownell, 2008; Puhl & Heuer, 2009; Puhl, Andreyeva, & Brownell, 2008). Indeed, US research suggests that weight-based prejudice has increased 66% over the past decade, placing it at a comparable level to race-based discrimination (Puhl et al., 2008). Similarly, Latner and Stunkard (2003) found an increase in anti-fat prejudice amongst children over the last 40 years.

Research seeking to explicate the reasons for anti-fat prejudice has largely focused on attributions regarding the causes of obesity (e.g., lack of personal control, laziness), and stereotypical characteristics of fat people (e.g., smelly, stupid; Puhl & Heuer, 2009). This line of theoretical and empirical research, although useful, has limitations that are becoming evident. Notably, studies that have sought to reduce anti-fat prejudice through modification of attributions, beliefs, and stereotypes have been shown to be largely unsuccessful in reducing prejudice (Daníelsdóttir, O’Brien, & Ciao, 2010). Theorists have argued that attributions and beliefs about targets (e.g., fat people) represent post hoc reasoning for underlying (automatic) emotional reactions or feelings toward those targets (Haidt, 2001). Others have gone further in suggesting that attributions may function as justifications for prejudice toward a target rather than being the primary drivers of prejudice (Crandall & Eshleman, 2003). Clearly, it is important to better understand the mechanisms underlying anti-fat prejudice in order to improve anti-fat prejudice reduction interventions.

Recent work suggests that constructs such as disgust (Vartanian, 2010), physical appearance concerns (O’Brien, Hunter, & Banks, 2007; O’Brien, Hunter, Halberstadt, & Anderson, 2007), and pathogen/illness avoidance mechanisms (Park, Faulkner, & Schaller, 2003; Park, Schaller, & Crandall, 2007) may underpin anti-fat prejudice. For example, Vartanian (2010) found that disgust was related to dislike of fat people compared to thin people. Moreover, because disgust is associated with morality and fat people have been viewed as immoral (e.g., gluttonous, sloth, greedy; Crandall, 1994; Townend, 2009), the disgust-obesity link may also...
be explained by socio-cultural factors rather than by innate disgust mechanisms.

Other researchers have found that people's own physical appearance concerns and level of investment in physical appearance are associated with anti-fat prejudice (O'Brien et al., 2009). Unsurprisingly, measures assessing body image concerns frequently include items directly related to being fat (e.g., 'I constantly worry about being or becoming fat'). Similarly, research has shown that fat people are perceived to be physically unattractive (Crandall, 1994) and ugly (Maddock & Liederman, 1969).

What is not known is whether there is an interrelationship between physical appearance concerns, disgust, and anti-fat prejudice.

The link between physical appearance concerns, disgust, and anti-fat prejudice may arise from negative cognitions regarding the physical appearance of fat or obese people. Simply put, the physical appearance of a fat person may evoke disgust because it contravenes personal/societal attitudes toward physical appearance, slinniness, and beauty (O'Brien et al., 2009), and/or unconscious drives related to evolutionary fitness (Oaten, Stevenson, & Case, 2009). Any felt disgust arising from this contravention of appearance ideals may then result in negative thoughts about fat people in order to justify or allow expression of negative emotions (i.e., prejudice and discrimination). Explanations for the dislike/avoidance of certain targets (e.g., obese, disabled) do suggest an interplay between the physical appearance of targets and disgust (Oaten et al., 2009; Oaten, Stevenson, & Case, 2011).

Although research has shown a link between physical appearance concerns (body image) and anti-fat prejudice, and between disgust and anti-fat prejudice, there has been no research examining the interrelationships between these constructs. This exploratory study addresses this gap. Based on previous research, we propose that individuals who have greater physical appearance concerns/investment will be more likely to view fat/obese people as physically unattractive because it contravenes personal and societal values regarding physical appearance. These cognitions will in turn evoke feelings of disgust, which may manifest in anti-fat prejudice. Thus, we hypothesized that anti-fat prejudice would be related to both physical appearance concerns and disgust; and that the relationship between physical appearance concerns and anti-fat prejudice would be mediated by disgust.

Method

Participants

Participants were 1649 university students at the University of Iceland (N = 1171, 71% female). Mean (M) age was 28 years (SD = 8.9; range 18–76), and mean BMI was 25.2 (SD = 4.83; range 16.23–50.15). Participants came from a diverse range of university faculties including; School of Social Sciences (34%), School of Health Sciences (20%), School of Engineering and Natural Sciences (17%), School of Education (14%) and School of Humanities (13%).

Materials

Anti-fat prejudice. The anti-fat attitudes (AFA) measure is a 13 item questionnaire that assesses participants' attitudes toward fat people (Crandall, 1994). The AFA contains three subscales (Dislike, Willpower, and Fear of Fat). The dislike subscale (7 items) assesses antipathy toward fat people (e.g., 'I really don't like fat people much'). The willpower subscale has three items assessing belief in personal responsibility for being fat (e.g., 'Some people are fat because they have no willpower'), and functions as a measure of blame for being fat. We refer to it as the 'blame' subscale henceforth. The fear of fat subscale assesses personal concerns about gaining weight and becoming fat rather than antipathy toward fat people (e.g., 'I feel disgusted with myself when I gain weight') and is, thus, a measure of physical appearance concerns (Crandall, 1994; O'Brien, Hunter, & Banks, 2007; O'Brien, Hunter, Halberstadt, & Anderson, 2007). Accordingly, we use the fear of fat subscale alongside a measure of body image disturbance as measures of physical appearance concerns (see below). The dislike and blame scale items were scored on a Likert scale ranging from 1 = very strongly disagree to 9 = very strongly agree where higher scores indicate greater anti-fat prejudice. Cronbach's alphas for dislike and blame subscales were acceptable (α = .88 and α = .70, respectively).

Physical appearance concerns. We used the body image disturbance questionnaire (BIDQ; Cash, Phillips, Santos, & Hrabosky, 2004) and AFA's fear of fat scale (Crandall, 1994) to assess physical appearance concerns. The 12 item BIDQ measures dissatisfaction and distress with one's body and physical appearance, and is comprised of both quantitative and qualitative components. We only used the seven item quantitative scale from the BIDQ which assesses concerns about the appearance of one's body (e.g., 'Are you concerned about the appearance of some part(s) of your body, which you consider especially unattractive?'). The items are scored on a 1 to 5 Likert scale with higher scores indicating greater body image disturbance. Cronbach's alpha for the scale in the present study was good (α = .91). The three item fear of fat scale assesses concerns about personal weight and aversion to weight gain (e.g., 'I worry about becoming fat'). The word 'weight' was removed from the end of one of the items in the fear of fat scale and replaced with the word 'fat', the modified statement reading 'One of the worst things that could happen to me would be if I gained 25 lbs of fat.' This modification avoids confusion over whether the weight gained is 'fat' or 'muscle', the latter being a potentially desirable outcome for men. The fear of fat scale items were scored on a Likert scale ranging from 1 = very strongly disagree to 9 = very strongly agree where higher scores indicate physical concerns regarding weight gain and weight status (Cronbach's α = .80).

Disgust. The Disgust Propensity and Sensitivity Scale-Revised (DPSS-R: van Overveld, de Jong, Peters, Cavanagh, & Davey, 2006) contains 16 items with two purported subscales. The disgust propensity scale (8 items) assesses the degree to which participants experience disgust in different settings (e.g., 'Disgusting things make my stomach turn'). The disgust sensitivity scale (8 items) assesses how distressing certain disgust evoking stimuli or settings are to participants (e.g., 'I think disgusting items could cause me illness/infection'). Items are scored on a Likert scale ranging from 1 = never to 5 = always. The two disgust subscales were highly correlated (r = .78), so we combined the scales to form a single disgust measure (Cronbach's alpha was .88).

Procedure

Invitations to participate in the study (and study website link) were sent to all students who had, at time of enrollment, given permission to be contacted via email by university staff for administrative and research purposes (N = 9109). Follow-up e-mails were sent two and four days after the initial invitation. Participants were provided with brief instructions at the beginning of the survey and informed that individual data would be anonymous with no identifying details required, and that completion of the survey would be interpreted as tacit consent for participation. Participants...
completed the survey online. Ethical approval was granted by the University and the Icelandic Data Protection Authority.

**Statistical Analyses**

Gender differences in anti-fat prejudice and explanatory variables were assessed using ANOVAs. Pearson’s correlation coefficients were calculated for all variables. Variables with significant correlations with anti-fat prejudice were simultaneously entered in multivariate regression models to test for significant associations after accounting for all variables. Confidence intervals (95% CI) are reported for significant betas. To test for mediation of relationships between physical appearance concerns and anti-fat prejudice by disgust, we adopted a bootstrapping method with bias corrected 95% confidence intervals (Preacher & Hayes, 2008). Mediation is said to be present when a significant relationship between the independent and dependent variable is either reduced (partial mediation), or becomes non-significant (full mediation) after controlling for the mediator. We used 5000 bootstrap resamples to produce 95% CIs. Betas (B) for the direct paths between measures of physical appearance concerns and anti-fat prejudice, and confidence intervals for indirect path effects, are reported.

**Results**

Women had lower BMIs, dislike, and blame scores, than men (see Table 1). Men had lower body image disturbance (BIDQ), fear of fat, and disgust scores (all ps < .05). The overall mean anti-fat prejudice scores for this study were M = 2.95, SD = 1.42 for dislike, and M = 6.13, SD = 1.51 for blame, which is comparable to previous work (Lieberman, Tyber, & Latner, 2012).

Table 2 displays correlations between variables for men and women. For women, significant correlations were found between most variables. Of note, statistically significant positive correlations were found between dislike, disgust, and measures of physical appearance concerns (BIDQ, fear of fat). That is, the higher the disgust and physical appearance concerns the greater the anti-fat dislike. Higher BMI was associated with greater BIDQ, fear of fat, but lower disgust scores. In men, higher BMI and age were associated with lower dislike and blame, but higher body image disturbance and fear of fat. Contrary to expectations, disgust was not associated with anti-fat attitudes in men; however, disgust was associated with physical appearance concerns in men.

As significant differences between men and women were found for several variables, and the patterns of correlations differed between genders, we conducted separate multivariate regression analyses for women and men.

**Multivariate Regressions for Women**

As hypothesized, greater dislike of fat people in women was significantly associated (adjusted R² = .13, F(5, 801) = 23.26, p < .0001) with lower BMI (B = −.04, SE B = .02, β = −.016, 95% CI: −.06 to −.02), higher fear of fat (B = .16, SE B = .026, β = .25, 95% CI: .11 to .20), and higher disgust (B = .24, SE B = .09, β = .09, 95% CI: .06-.41). However, contrary to expectations BIDQ was not associated with dislike of fat people after accounting for all variables. Lower age (B = −.01, SE B = .01, β = −.08, 95% CI: −.03 to −.002), BMI (B = −.05, SE B = .01, β = −.16, 95% CI: −.07 to −.03), and greater fear of fat (B = .18, SE B = .03, β = .24, 95% CI: .13 to .23) were related to higher anti-fat blame scores (adjusted R² = .09, F(4, 896) = 23.16, p < .0001).

**Multivariate Regressions for Men**

Contrary to the hypothesis disgust was not related to either dislike of fat people or blame of fat people. However, multivariate regression models for men found that only lower BMI (B = −.08, SE B = .02, β = −.23, 95% CI: −.12 to −.04) and higher fear of fat (B = .21, SE B = .05, β = .25, 95% CI: .11 to .31) were associated with greater dislike after accounting for variables with univariate relationships (adjusted R² = .12, F(3, 346) = 16.58, p < .0001). And, being younger (age: B = −.03, SE B = .009, β = −.18, 95% CI: −.05 to −.01), having a lower BMI (B = −.05, SE B = .02, β = −.14, 95% CI: −.08 to −.01), and having a greater fear of fat (B = .14, SE B = .04, β = .18, 95% CI: .06 to .22) was associated with greater blame scores (adjusted R² = .08, F(3, 347) = 10.96, p < .0001).

**Mediation**

Consistent with expectations, mediation analyses for women showed that the relationship between BIDQ and dislike (B = .20, t(832) = 3.52, p = .0005) was partially mediated (B = .12, t(832) = 2.14, p = .03) by disgust (B = .07, t(346) = 3.04, p = .01). Similarly, the relationship between fear of fat and dislike (B = .17, t(930) = 3.81, p = .0001) was partially mediated (B = .14, t(930) = 2.74, p = .005) by disgust (B = .02, t(346) = 1.03). Mediation analysis was not conducted for men as there were not statistically significant interrelationships between the all variables of interest, a necessary justification for conducting mediation analysis.

**Discussion**

The present study explored relationships between anti-fat prejudice, physical appearance concerns, and disgust. As hypothesized, there were statistically significant univariate - and multivariate relationships between anti-fat prejudice, physical appearance concerns, and disgust, with relationships stronger in women than men. For women only, disgust partially mediated relationships between BIDQ and dislike of fat people, and between fear of fat and dislike of fat people.

The finding that disgust partially mediates relationships between physical appearance concerns and dislike of fat people is new, but fits with existing theories (e.g., disgust, evolutionary fitness, pathogen avoidance: Park et al., 2007; Vartanian, 2010) which propose that specific targets of prejudice activate disgust and/or drive to avoid illness (Oaten et al., 2009, 2011). Feelings of disgust and illness aversion may then result in social distancing and/or derogation of targets with physical characteristics that signal poor evolutionary fitness and illness (e.g., obesity, disability; Park et al., 2007; Vartanian, 2010). Whether disgust is linked to anti-fat sentiment via evolutionary mechanisms is unclear as research suggests that disgust can also be acquired via breaches of socio-culturally derived morality (Lieberman, Tyber, & Latner, 2012). For example, disgust is often seen as a breach of morality (e.g., greed, gluttony, sloth; Townsend, 2009), with disgust and obesity perhaps linked via moralistic reasoning, rather than evolutionary fitness/illness avoidance mechanisms (Oaten et al., 2011).

Multivariate regression models revealed that for women, fear of fat and disgust were associated with dislike of fat people, but BIDQ was not. We additionally found that women with lower BMIs, and higher fear of fat scores, blamed fat people more for their condition. Disgust was not a significant variable in either dislike or blame models for men; however, lower BMIs, and greater fear of fat, were associated with both dislike and blame. The absence of an association in multivariate models between BIDQ and anti-fat prejudice may be due to BIDQ being subsumed by the fear of fat measure. The fear of fat measure is more strongly associated with anti-fat prejudice than the BIDQ, and is better aligned, conceptually, with the issue of fat/obesity. Whereas the BIDQ is a measure of dissatisfaction with general appearance, rather than concerns regarding fat/obesity per se. Similarly, we did not find that disgust mediated
relationships between appearance concerns and blame. This may be because disgust is more closely related to emotional antipathy toward targets (e.g., fat, obese, disabled), which is better captured by the dislike of fat people subscale. Whereas the blame subscale, which assesses perceived personal responsibility for obesity, has a much weaker relationship with disgust (see Table 2).

Although the primary focus of the present study was the inter-relationships between anti-fat prejudice, disgust, and physical appearance concerns, the associations between age, BMI and anti-fat prejudice, along with gender differences in these relationships, also merits mention. Here we found that as age and BMI increased anti-fat prejudice decreased. This finding has been reported by others (O’Brien, Hunter, & Banks, 2007; O’Brien, Hunter, Halberstadt, & Anderson, 2007); however, the relationships between these variables and anti-fat prejudice is complex. For example, higher BMI is also associated with greater body dissatisfaction, and greater body dissatisfaction is associated with anti-fat prejudice in women. Further, age, which is associated with lower anti-fat prejudice, is also associated with less body dissatisfaction. Thus, the relationships between age and BMI, and prejudice, may be explained by their co-occurrence with other appearance-related mechanisms. Given that the size of the associations of these variables are of a similar magnitude to more prominent psychosocial predictors (e.g., personality, attitudes), more research on their links with anti-fat prejudice is warranted.

There are limitations to the study. First, the correlational design of the study prevents us from making causal inferences regarding the direction of relationships between disgust, physical appearance concerns, and anti-fat prejudice. Second, the relationship between one of the measures of physical appearance concerns and the anti-fat prejudice found here is smaller than found in previous research (O’Brien, Hunter, & Banks, 2007; O’Brien, Hunter, Halberstadt, & Anderson, 2007); this is likely due to the use of different measures. Third, we examined prejudicial attitudes rather than actual discriminatory behavior. Finally, the present study, used a convenience sample with a response rate of 18%, and as such our results may not generalize to other populations. That said, the present sample is older (mean age = 28 years) and more diverse (different university majors) than typical university samples.

Notwithstanding these limitations, our research addresses a gap in the literature and provides support for recent research exploring novel predictors (i.e., disgust, physical appearance concerns) of anti-fat prejudice. The study contributes new findings to the field by showing that disgust partially mediates relationships between physical appearance concerns and dislike of fat people in women. It is important that the present findings be replicated in other populations, and examined experimentally. Similarly, we need to consider how we might moderate physical appearance concerns and disgust regarding obesity in order to reduce anti-fat prejudice.

### References


