Title page

Weight-based discrimination, body dissatisfaction and emotional eating: the role of perceived social consensus

Running Title: Discrimination, eating and group cognitions

Claire V Farrow, Ph.D[1] & Mark Tarrant, Ph.D[2]

[1] Department of Human Sciences, Loughborough University.

[2] School of Psychology, Keele University, UK

All correspondence should be addressed to Claire Farrow: Department of Human Sciences, Loughborough University Centre for Research into Eating Disorders, Loughborough University, Leicestershire. LE11 3TU. U.K.

Tel +44(0)1509228487, Fax + 44(0)1509223940. Email: c.v.farrow@lboro.ac.uk

Author note: the authors are grateful to Dale Weston for his assistance with data collection and entry for the current research.

Abstract

Objective: Discrimination can have a negative impact on psychological well-being, attitudes and behavior. This research evaluates the impact of experiences of weight-based discrimination upon emotional eating and body dissatisfaction, and also explores whether people's beliefs about an ingroup's social consensus concerning how favorably overweight people are regarded can moderate the relationship between experiences of discrimination and negative eating and weight-related cognitions and behaviors. *Research Methods and Procedures:* 197 undergraduate students completed measures about their experiences of weight-based discrimination, emotional eating and body dissatisfaction. Participants also reported their beliefs concerning an ingroup's attitude towards overweight people. *Results*: Recollections of weight-based discrimination significantly contributed to emotional eating and body dissatisfaction. However, the relationships between experiencing discrimination and body dissatisfaction and emotional eating were weakest amongst participants who believed the ingroup held a positive attitude towards overweight people. *Discussion:* Beliefs about ingroup social consensus concerning overweight people can influence the relationships between weight-based discrimination and emotional eating and body dissatisfaction. Changing group perceptions to perceive it to be unacceptable to discriminate against overweight people may help to protect victims of discrimination against the negative consequences of weight-based stigma.

Key words: discrimination, obese, overweight, body-dissatisfaction, eating, ingroup social consensus.

Introduction

Recent years have seen a rapid increase in the prevalence of overweight and obesity (World Health Organization, 2004). Obesity is associated with higher mortality and morbidity, including elevated risks for certain cancers, cardiovascular disease and type 2 diabetes (Haslam & James, 2005; Stark, Atkins, Wolff & Douglas, 1981). Obesity is also linked with psychological distress, with obese people reporting greater social isolation and loneliness (Strauss & Pollack, 2003), and less reliable and intimate personal relationships (Horchner, Tuinebreijer, Kelder & van Urk, 2002). In a recent study, 46% of participants reported that they would rather lose one year of their life than be obese, and 30% would rather divorce than be obese (Schwartz, Vartanian, Nosek & Brownell, 2006). Given the negative physical and psychological consequences of obesity, it is important to understand the factors that predict weight gain and the negative psychological consequences associated with being overweight. Social cognitive processes are one such group of factors that can impact upon eating and weight-related cognitions and behaviors. The current study focused on one specific factor—perceived discrimination—and its relationship with weight-related cognitions and behaviors. Previous research has demonstrated a relationship between experiencing weight-related discrimination and maladaptive outcomes including binge eating and body dissatisfaction (Puhl, Moss-Racusin & Schwartz, 2007; Vartanian & Shaprow, 2008). The aim of the current research was to test a potential moderator of this relationship. We examined whether people's group-based cognitions concerning how overweight people are consensually regarded can influence the relationship between their experiences of weight-based discrimination and negative eating and weight-related cognitions and behaviors.

Several studies have established that overweight and obese people are subjected to negative stereotypes and discrimination in various areas, including employment, education and the health care system (Carr & Friedman, 2005; Puhl & Brownell, 2001). These stereotypes are evident from childhood (Bell & Morgan, 2000; Latner & Stunkard, 2003), and research suggests that the stigmatization of obese children is increasing (Latner & Stunkard, 2003). Notably, obese people appear to be chronically aware of these negative stereotypes that exist, and these can influence their judgments about others' actions: obese women for example are more likely to attribute negative feedback from a male evaluator to their weight than to other factors attributed to by non-obese participants (Crocker, Cornwell & Major, 1993). Moreover, unlike other minority groups, there is evidence that obese people themselves often have negative stereotypes about obesity, suggesting that they have internalized these characterizations (Wang, Brownell & Wadden, 2004).

Of particular relevance to the current research are studies showing that experiences of weight-based discrimination influence negative eating and weight-related behaviors. In one study, Puhl & Brownell (2006) found that eating more food to cope with weight-based stigma was one of the 5 most common responses reported by adults in a weight-loss support program. Further research by Puhl and colleagues has suggested that rather than motivating overweight people to lose weight, the experience of weight-based discrimination actually predicts refusal to diet (Puhl, et al., 2007). More generally, exposure to weight-based discrimination is associated with a more negative body image, body dissatisfaction, lower self-esteem and a greater prevalence of mental health symptoms (Friedman, Reichmann, Costanzo, Zelli, Ashmore & Musante, 2005; Myers & Rosen, 1999; Vartanian & Shaprow, 2008).

Given its negative impact upon psychological health and eating and weight behaviors and cognitions that may exacerbate weight gain, it is imperative to understand the processes that can reduce weight-based discrimination. Previous studies on discrimination reduction have attempted to change the negative stereotypes that people hold about overweight people by manipulating controllability beliefs about the causes of obesity. Supporting attribution theory (Heider, 1958), people have been shown to attribute greater blame and prejudice against obese people when they believe that there are behavioral explanations for their condition which are under personal control, compared to when they believe there is a biological or genetic explanation for obesity (e.g., DeJong, 1993; Musher-Eizenmann, Holub, Miller, Goldstein & Edwards-Leeper, 2004). Other research has highlighted the important influence of social consensus information on people's attitudes towards overweight and obese people. Across three experiments, Puhl, Schwartz, and Brownell (2005) provided participants with false information concerning other people's perceptions of obese people. When participants were led to believe that these perceptions were more favorable than their own perceptions, their attitudes towards obese people became more favorable. Further, attitude change was more pronounced when this consensus information related to perceptions of the participants' own social groups (so-called "ingroups") than when it related to perceptions of other groups ("outgroups") (see also Stangor, Sechrist, & Jost, 2001).

To the extent that perceptions of overweight and obese people become more positive, interventions based on controllability beliefs and social consensus effects should also help reduce the occurrence of weight-based discrimination. Ultimately, if the occurrence of discrimination can be reduced, then this should transfer to a reduction in the prevalence of maladaptive eating behaviors in response to discrimination. Unfortunately, however, the

prevalence of weight-based discrimination has actually risen in recent years (Andreyeva, Puhl & Brownell, 2008) and thus in addition to challenging people's negative attitudes toward overweight and obesity, there is a clear need to develop procedures through which the damaging effects of weight-based discrimination on those people who experience discrimination can be minimized. As a first step towards this goal, the aim of the current study was to evaluate the impact of perceived ingroup social consensus upon people's responses to their own experiences of weight-based discrimination. In doing so, we draw on recent research which has examined the influence of group membership and social support on people's responses to stress.

Based on the principles of social identity and self-categorization theories (Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), several recent studies by Haslam and colleagues (e.g., Haslam, 2004; Haslam, O'Brien, Jetten,Vormedal, & Penna, 2005; Haslam & Reicher, 2006) have indicated that people's appraisals of and responses to stressful events are influenced by their membership of social groups. In one study (Haslam et al., 2005), employees reported experiencing lower levels of work stress and greater job satisfaction when they felt a sense of psychological attachment (or identification) with their work group. This effect was mediated by perceptions of social support provided by the group: patients who identified with their work group experienced *lower* levels of stress and *higher* levels of life satisfaction to the extent that they perceived the group as a source of social support (see also Levine & Reicher, 1996). Haslam et al. (2005) concluded that identification with a group can protect people against the negative effects of stressors by providing them with a "psychological basis for receiving and benefiting from the support of other ingroup members" (p. 365). Consistent with this conclusion, other research has shown that group members benefit most from

social support which derives from an ingroup source (as opposed to an outgroup source: Haslam, Jetten, O'Brien, & Jacobs, 2004).

Like other forms of discrimination, weight-related discrimination is likely to be experienced by victims as stressful, and the current research develops the idea that group membership can similarly protect victims of weight-related discrimination against the maladaptive consequences of that stressor (e.g., emotional eating and body dissatisfaction). Our investigation focused on the eating-related cognitions and behaviors of a sample of undergraduate university students. For participants in such samples, "university student" is likely to be a highly salient and important social identity and as such is likely to play an influential role in structuring participants' cognitions and behaviors (cf. Branscombe & Miron, 2004). Consequently, we reasoned that membership of the student group would potentially buffer victims against the maladaptive consequences of experiencing weight-based discrimination. However, while previous research has shown that ingroups can be an important source of social support for members who have experienced a stressful event, we argue that the role of group membership in ameliorating responses to weight-based discrimination will depend upon victims' beliefs about the ingroup's attitude towards overweight people. Specifically, we suggest that when victims believe that the ingroup holds a relatively favorable attitude towards overweight people the benefits of group membership should be most marked. Following Haslam et al. (2005) and others, because such consensus beliefs likely lead victims to regard the ingroup as a source of social support, experiencing weight-related discrimination should be less strongly related to maladaptive eating cognitions and behaviors relative to those victims who do not perceive the ingroup consensus in such terms. For the latter victims, the negative relationship

between experiencing weight-based discrimination and maladaptive eating cognitions and behaviors should be most apparent.

Summary of the current research

Our study examined the role of perceived social consensus in university students' responses to their own discrimination experiences. We test the novel idea that the relationships between personal experiences of weight-based discrimination and maladaptive eating-related cognitions and behaviors will depend upon victims' beliefs about the student ingroup's attitudes towards overweight people. Based on previous research by Puhl and Brownell (2006) and Myers & Rosen (1999) it was hypothesized that recollections of personal experiences of weight-based discrimination would be associated with more maladaptive eating and weight-related behaviors and attitudes, specifically emotional eating and body dissatisfaction. However, following recent research on the effects of group membership on responses to stress (e.g., Haslam et al., 2005; Levine & Reicher, 1996), it was further hypothesized that perceptions of ingroup social consensus concerning overweight people would moderate the relationships between personal experiences of weight-based discrimination and negative eating-related attitudes and behaviors. Specifically, it was hypothesized that body dissatisfaction and emotional eating would be less strongly associated with personal experiences of weight-related discrimination amongst participants who believed that the student ingroup held a relatively positive attitude towards overweight people than amongst participants who believed that the ingroup regarded overweight people more negatively.

Method

Participants and Procedure

One-hundred and ninety-eight undergraduate students from Keele University took part in this study. In order to activate their student social identity, participants were told at the outset of the study that the study was concerned with "university students'" attitudes towards weight. Participants who provided informed consent then completed a series of measures as described below which were presented in a counterbalanced order. Participants either assisted on a voluntary basis or were given course credit for taking part. Ethical permission for this study was provided by Keele University's Psychology Research Ethics Committee. All participants were fully debriefed at the end of the study.

Materials

Eating and weight measures: Participants completed the 13-item Dutch Eating Behavior Questionnaire (van Strein, Frijters, Berger & Defares, 1986) emotional eating subscale which assesses eating in response to emotions such as anger, sadness and boredom. Participants were asked to report how often they desire to eat in response to each one. Questions were answered on a 5-point scale (1 = never and 5 = very often; Cronbach's $\alpha = .93$). Higher scores indicated greater emotional eating. This scale has been shown in previous research to have good external validity, internal consistency, and factorial validity (van Strein et al., 1986; Wardle, 1987). In addition, the 9-item body dissatisfaction subscale from the Eating Disorders Inventory-2 was administered (EDI-2; Garner, 1991). This scale assesses participants' dissatisfaction with their body generally and also in relation to specific body parts such as the stomach, hips and thighs. Items were answered using the following scale: Always, Usually, Often, Sometimes, Rarely and Never, and were scored as 3-2-1-0-0-0 respectively as in Garner (1991). Higher scores on this questionnaire indicated higher levels of body dissatisfaction ($\alpha = .91$). The EDI-2 is a valid and reliable measure of eating psychopathology in non-clinical groups and this subscale has good

internal consistency and good test-retest reliability with coefficients above .80. (Garner, 1991). Lastly, in order to gain an index of the distribution of the weight of the current sample and to be able to control for participants' weight category in further analyses all participants also self-reported their height and weight, which were converted into Body Mass Index (BMI) scores (kg/ m^2).

Experience of weight-based discrimination: Participants were asked to rate the extent to which they felt that they personally had been the victim of weight-based discrimination using a 6-item measure based on that developed by Schmitt, Branscombe, Kobrynowicz and Owen (2003). Schmitt et al.'s measure was employed to examine people's experience of gender-based discrimination ("I consider myself a person who has been deprived of opportunities because of my gender", "I have personally been the victim of sexual harassment"), and was shown in their research to possess good psychometric properties. In the current study we re-worded the items so that they targeted participants' perceptions of weight-related discrimination ("I have personally been a victim of weight-related discrimination", "I consider myself a person who has been deprived of opportunities because of my weight", "I feel like I am personally a victim of society because of my weight", "I have personally been a victim of weight-related harassment", "I regularly encounter weight-related discrimination", "Prejudice against overweight people has affected me personally"). Participants responded to each item using a 7 point Likert scale ranging from 1 (totally disagree) to 7 (agree very much). The scale had good internal consistency in the current sample with Cronbach's α being .89.

Beliefs about ingroup social consensus: Beliefs about the ingroup's consensus concerning overweight people were assessed using an 8-item attitude measure designed for this study. Participants rated the extent to which an overweight person would be respected, popular,

valued, liked, have friends, treated as equal, fully accepted and elected to a position of leadership by other university students. Questions were answered using a 7 point Likert scale ranging from 1 (Not at all) to 7 (Very much). The characteristics captured by these items have been shown in previous attitude research to reflect qualities of normative, or "typical" group members (e.g., Marques, Abrams, & Serôdio, 2001; Abrams, Marques, Bown, & Henson, 2000): as such, a high score on this scale was taken to indicate that participants perceived that the student ingroup held a positive attitude towards overweight people. Cronbach's α for this scale was .82.

Social Support: The Social Support Questionnaire (short version: Sarason, Sarason, Shearin & Pierce, 1987) was used to assess participants' perceptions of general levels of social support. This measure assesses participants' perceptions of social support for 6 hypothetical situations or circumstances by asking participants to list and describe the exact people that they can rely on for support in each case (e.g., "who can you count on to console you when you have been very upset?", "who can you count on to really care about you, regardless of what has been happening to you?"). Participants first provide the initials of, and indicate the nature of the relationship with potentially supportive others, giving an index of social support availability. They then rate their satisfaction with the support provided by each nominated person on a 6 point scale (1 = very dissatisfied and 6 = very satisfied). The social support questionnaire is a widely used measure to assess social support (Bal, Crombez, Van Oost & Debourdeaudhuij, 2003; Furukawa, Yokouchi, Hirai, Kitamura & Takahashi, 1999) and has good psychometric properties (Sarason et al., 1987; Rascle, Bruchon-Schweitzer & Sarason, 2005). Cronbach's α was .84 and .90 for availability and satisfaction with support respectively. This measure was included in order to test our idea that the relationships between experiences of weight-related

discrimination and maladaptive eating behaviors and cognitions are moderated by specific beliefs about the ingroup. Consistent with research showing that the beneficial effects of social support are derived mainly from ingroup sources (Haslam et al., 2004), we did not expect participants' general perceptions of social support to moderate the relationships between experiences of discrimination with body dissatisfaction and emotional eating.

Results

Analysis summary

Descriptive statistics were first computed for all variables. Independent sample t-tests were then performed to explore whether there were significant differences between normal weight and non-normal weight (including underweight, overweight or obese) participants, and significant differences between male and female participants in their responses to each of the measures. Following this a series of two-tailed Pearson's correlations were used to investigate the relationships between experiences of weight-based discrimination, emotional eating, body dissatisfaction, social support and beliefs about the ingroup's attitude towards overweight people. Hierarchical regression analyses were then used to establish whether the experience of weight-based discrimination contributed to emotional eating and body dissatisfaction. Given that previous research has identified differences in the relationships between obesity and well-being across gender and weight category (e.g., Wardle & Cooke, 2005), these variables were controlled for in the regression analyses.

Finally, moderated regression was used to test our central hypothesis that the relationships between experiences of discrimination with emotional eating and body dissatisfaction would be moderated by participants' beliefs about the ingroup's attitude towards overweight people. A second analysis tested whether these relationships were moderated by

more general social support. The moderating role of these relationships was tested by examining the main effects and interaction effects of the moderator in contributing to emotional eating and body dissatisfaction. Full regression models were used to test moderation which included both the main effect of variables in step 1 of the regression and the interaction effects in step 2. All variables were centered prior to calculating interactions. The moderator effect is shown if the product term of the independent variable and moderator are significant when their main effects are controlled for (Baron & Kenny, 1986). The effects of the independent variable at different levels of the moderator were tested using simple slope analysis (Aiken & West, 1991).

Descriptive Statistics

The mean BMI was 22.95 (*SD* = 4.11), corresponding to "normal" weight (World Health Organization, 2004). Using these World Health Organization cut offs 12 participants (6%) were underweight (BMI ≤ 18.49), 128 participants (65%) were normal weight (18.5 ≤ BMI ≥ 24.9), 31 participants (16%) were overweight (25 ≤ BMI ≥ 29.9) and 13 participants (7%) were obese (BMI ≥ 30). These data are broadly similar to figures from the general population of adults aged 16-24 where approximately 18.5% have a BMI less than 20, approximately 20% are overweight, and 8% obese (Office of National Statistics, 1999). BMI data was missing for the remaining 14 participants. Table I displays the mean, standard deviation and ranges for all variables.

Table I about here

Independent sample t-tests

Independent sample t-tests indicated that there were no significant differences between male and female participants in their experiences of weight-based discrimination, their social support availability or satisfaction, or their beliefs about the ingroup's attitude towards overweight people (all ts<1.58). However, consistent with previous research (Fallon & Rozin, 1985; Kenardy, Butler, Carter & Moor, 2003), female participants reported significantly greater emotional eating [$t(195)=-4.29$, $p<.01$; female mean = 2.62 (*SD* = .83); male mean = 2.03 (*SD* = .79)] and body dissatisfaction [t(126)=-5.33, p<.01; female mean = 1.20 (*SD* = .89); male mean = .64 (*SD* = .51)] than male participants. Independent sample t-tests also indicated that there were no significant differences between normal weight and non-normal weight participants in their emotional eating, social support, or in their beliefs about the ingroup's attitude towards overweight people (all ts<1.38). However, replicating previous findings (Annis, Cash & Hrabosky, 2004; Roehling, Roehling & Pichler, 2007), non-normal weight participants reported significantly greater body dissatisfaction than normal-weight participants [t(178)=-2.24, p<.05; normal weight mean = .97 (*SD*= .82); non-normal weight mean =1.28 (*SD* = .93)] and also reported significantly greater experiences of weight-based discrimination than participants with a normal weight BMI [t(74)=-4.33, p<.01; normal weight mean = 1.74 (*SD*= *.94*); non-normal weight mean = 2.71 (*SD* = 1.55].

Correlation analyses

As Table II indicates, students who reported experiencing less weight-based discrimination reported greater social support satisfaction, less emotional eating, and less body dissatisfaction. They also reported that the ingroup held a more positive attitude towards overweight people.

Table II about here

Hierarchical regressions

Female participants reported higher levels of body dissatisfaction and greater emotional eating than did males, and non-normal weight participants reported higher levels of body dissatisfaction and stronger experiences of discrimination than did normal weight participants. Given these effects, two hierarchical regressions were conducted to establish whether experiences of discrimination were significantly associated with emotional eating and body dissatisfaction after controlling for participant gender and weight status. Using hierarchical regression models with participant weight category and gender entered in step 1, the experience of weight-based discrimination in step 2 was a significant contributor to emotional eating [R^2=.16, F(3,177)=11.16, p<.001, R^2 change=.07, p<.001], and body dissatisfaction [R^2=.23, F(3,173)=17.30, p<.001, R^2 change=.12, p<.001]. These findings suggest that, after controlling for a participant's weight status or gender, the experience of weight-based discrimination is associated with greater levels of body dissatisfaction and emotional eating.

Moderation analyses

Finally, moderated regression (Aiken & West, 1991) was used to establish whether beliefs about the ingroup's social consensus concerning overweight people and/ or the availability and satisfaction with social support moderated the relationships between experiences of discrimination and body dissatisfaction and emotional eating.

Ingroup social consensus. For the analysis of social consensus, there was a significant interaction between beliefs about the ingroup's attitude towards overweight people and experiences of weight-based discrimination as a contributor to both body dissatisfaction (β=-.11,

Beta =-.14, t=-2.09, p<.05) and emotional eating (β=-.12, Beta =-.15, t=-2.12, p<.05). These interactions were further investigated using simple slope analyses. Slopes for the regression analyses were computed at three levels of the moderator: the mean, one standard deviation above the mean (+1SD, corresponding to the belief that the ingroup holds a positive attitude towards overweight people), and one standard deviation below the mean (-1SD, indicating the belief that the ingroup holds a more negative attitude towards overweight people).

The interaction between the experience of weight-based discrimination and social consensus beliefs was significant at contributing to body dissatisfaction when the moderator was at the mean (B=.27, t(186)=5.65, p<.001), one standard deviation below the mean (B=.37, t(186)=6.34, p<.001), and one standard deviation above the mean (B=.18, t(186)=2.40, p<.05). Although the interaction was significant at all 3 levels, the relationship was strongest when the moderator was one standard deviation below the mean, corresponding to the belief that the ingroup holds a relatively negative attitude towards overweight people. This finding suggests that the experience of discrimination is significantly associated with higher levels of body dissatisfaction, but that the strength of this relationship is greatest when participants believe that the ingroup consensus is to *not* regard overweight people favorably. In contrast, and consistent with the hypothesis, experiences of discrimination were linked with relatively lower levels of body dissatisfaction when participants believed that the ingroup holds a relatively positive attitude towards overweight people.

For emotional eating, the interaction between the experience of weight-based discrimination and perceptions of the ingroup consensus significantly contributed to emotional eating when the moderator was at the mean (B=.17, t(190)=3.38, p<.01), and one standard deviation below the mean (B=.27, t(190)=4.45, p<.001), but not when the moderator was one

standard deviation above the mean (B=.07, t(190)=.87, p>.05). This shows that the relationship between perceiving discrimination and emotional eating is significant when participants believe that the ingroup holds a somewhat neutral or more negative attitude towards overweight people. The relationship between discrimination experiences and emotional eating is not significant when participants believe that their ingroup regards overweight people in more favorable terms.[1]

Social support. In contrast to the above evidence for a moderating role of perceptions of ingroup social consensus, there was no evidence that the relationships between perceived discrimination, emotional eating and body dissatisfaction were moderated by more general social support perceptions. Specifically, moderated regression analyses revealed no significant interaction between *availability* of social support and experiences of weight-based discrimination in the regressions with body dissatisfaction (β=.02, Beta =.06, t=.81, p>.05) or emotional eating as the dependent variables (β=-.01, Beta =-.02, t=-.29, p>.05). Similarly, there was no significant interaction between *satisfaction* with social support and experiences of weight-based discrimination in the regressions with body dissatisfaction (β=.04, Beta =.07, t=.86, p>.05) or emotional eating as the dependent variables (β=-.04, Beta =-.07, t=-.92, p>.05). These findings suggest that the moderating effect of participants' beliefs about social consensus concerning overweight people is specific to group-level factors and is not accounted for by perceptions of more general social support.

Discussion

[1] The correlational nature of this study allows for the testing of alternative causal models; as such we assessed whether the relationship between discrimination experiences and perceptions of the ingroup consensus regarding overweight people was moderated by participants' own body dissatisfaction. The interaction between body dissatisfaction and discrimination experiences in the alternative model tested was not a significant correlate of the perceptions of the ingroup consensus regarding overweight people.

Body dissatisfaction and emotional eating are maladaptive behaviors and cognitions that can perpetuate overweight and psychological ill-health (Paxton, Neumark-Sztainer, Hannan & Eisenberg, 2006; Rogers & Smit, 2000). The findings of this study support previous research which has shown that experiences of weight-based discrimination are associated with greater levels of emotional eating and body dissatisfaction (e.g., Vartanian & Shaprow, 2008; Myers & Rosen, 1999; Puhl, Moss-Racusin & Schwartz, 2007). While female participants reported higher levels of body dissatisfaction and emotional eating than males, and normal weight participants reported less body dissatisfaction and experienced less weight-based discrimination than non-normal weight participants (see also Annis et al., 2004; Fallon & Rozin, 1985; Kenardy et al., 2003; Roehling et al., 2007), the relationships between experiences of discrimination with emotional eating and body dissatisfaction remained significant when gender and weight status were controlled for in the analyses. These findings highlight the potential negative consequences of weight-based discrimination, even in this non-clinical undergraduate sample of participants with a relatively normal distribution of weight.

Uniquely, the current research demonstrates the impact that group processes can have in moderating the links between experiencing weight-based discrimination and body dissatisfaction and emotional eating. While previous research has documented the benefits of group membership for dealing with stressful life events (e.g., Haslam et al., 2004, 2005), the findings reported here show that beliefs about an ingroup's social consensus regarding overweight people can moderate the relationship between perceiving discrimination and maladaptive eating-related cognitions and behaviors. More specifically, the findings revealed that experiencing discrimination was associated with these maladaptive outcomes most strongly when participants believed that the ingroup held a relatively negative attitude towards overweight people.

However, when participants believed that the ingroup held a more positive attitude towards overweight people—when the ingroup was felt to regard overweight people with respect, and as equals, and so on—experiencing weight-based discrimination was less strongly associated with maladaptive behavioral and cognitive outcomes. In fact, discrimination experiences were unrelated to emotional eating when participants believed that the ingroup consensus was to regard overweight people in favorable terms. These findings support the social consensus model of discrimination (Stangor et al., 2001) which suggests that people's attitudes can be changed by their perceptions of their ingroups attitudes. When participants were led to believe that these perceptions were more favorable than their own perceptions, their attitudes towards obese people became more favorable, indicating that what is important is not just that victims of weight-based discrimination *belong* to a social group, but that they believe their group holds a positive attitude towards them.

In the absence of direct evidence to the contrary it could have been argued that the relationship between perceptions of ingroup consensus and the outcome variables is merely an artifact of the general support that people may perceive from their social network. To counter this possible limitation, in this study we measured participants' perceptions of support from their more general social network as well as their perceptions of the ingroup social consensus. While the results showed evidence for a correlational relationship between social support satisfaction and discrimination experiences, emotional eating and body dissatisfaction, evidence for moderation only emerged for perceptions of ingroup consensus. These findings point strongly to the conclusion that it is not general perceptions of social support which moderate the effects of discrimination experiences, but rather victims' specific beliefs concerning their ingroup's attitudes. These findings concur with other research which has shown that the relationship

between perceived social consensus and behavioral outcomes is most strongly related to perceptions of ingroup beliefs (Puhl et al., 2005; Stangor et al., 2001).

The research findings reported here have begun to demonstrate that beliefs concerning ingroup social consensus can impact upon the consequences of weight-based discrimination. However, further research is necessary to evaluate more specifically *why* these perceptions of social consensus are related to these eating-related attitudes and behaviors. One possible explanation is that perceiving the ingroup consensus as one which regards overweight people in equal terms leads victims of weight-based discrimination to regard that group as a source of support and empowers them to draw on the different types of support that it provides, including informational, instrumental, companionship and emotional support (see House, 1981). Perceiving the ingroup in supportive terms also likely leads victims to appraise discrimination in a less threatening way (e.g., Lazarus & Folkman, 1984), and in turn reduces the likelihood of a maladaptive response. Conversely, when the ingroup consensus is believed to regard overweight people in less equal terms, that group is unlikely to be seen in a supportive way, and so victims are unlikely to solicit support from the group. Ultimately, believing that the ingroup does not hold a positive attitude towards overweight people may strengthen the likelihood that victims of weight-based discrimination will appraise the discrimination in threatening terms and as a result render them more vulnerable to negative eating and weight-related cognitions and behaviors.

Although building on previous research that has demonstrated causal relationships between group processes, social support and stress (Haslam et al., 2004), it is important to note that the current research was cross-sectional and so further work is necessary with experimental and longitudinal data to establish causality. Further, the focus of this study was on a non-clinical sample, assessing people with a normal spread of weight in society; given this the findings are

limited to a population which is not primarily overweight or obese. While the effects reported here emerged even after controlling for participants' weight category, further research is required to ascertain whether our findings can be generalized to overweight or obese populations where experiences of weight-based discrimination are likely to be greater. In addition, the present study reports findings exploring the focus population as an ingroup of primarily female students and, as such, these results could be different in other groups where attitudes towards weight may be different. A further limitation of this study is the lack of assessment of the nature of discrimination experienced by participants: whether it is ongoing, how long it was experienced for, whether it is verbal or physical, as well as who perpetrated the discrimination. For example, the role of beliefs about ingroup consensus in moderating the effects of discrimination may depend upon whether discrimination has been experienced from members of that ingroup compared to members of outgroups.

Despite these caveats, our finding that beliefs about ingroup consensus concerning overweight people moderates the relationship between perceiving discrimination and negative eating and weight-related cognitions can have important implications for interventions to combat the consequences of weight stigma. While initiatives which focus on promoting messages that it is anti-normative to discriminate against people on the basis of their weight should improve stereotypes of overweight people and, over time, reduce the occurrence of discrimination, our data suggest that such messages may have the benefit of also reducing the likelihood that ill-health will result in those overweight and obese people when discrimination does occur.

References

Abrams, D., Marques, J. M., Bown, N., & Henson, M. (2000). Pro-norm and anti-norm deviance within and between groups. *Journal of Personality and Social Psychology, 78*, 906-912.

Aiken, L. S., & West, S. G. (1991). *Multiple Regression: Testing and interpreting interactions*. London: Sage.

Andreyeva, T., Puhl, R.M., & Brownell, K.D. (in press). Changes in Perceived Weight Discrimination Among Americans, 1995-1996 Through 2004-2006, *Obesity*.

Annis, N.M., Cash, T., & Hrabosky, J.I. (2004). Body image and psychosocial differences among stable average weight, currently overweight, and formerly overweight women: the role of stigmatizing experiences, *Body Image*, 1, 155-167..

Bal, S., Crombez, G., Van Oost, P., & Debourdeaudhuij, I. (2003). The role of social support in well-being and coping with self-reported stressful events in adolescents. *Child Abuse and Neglect,* 27, 12, 1377-95.

Baron, R., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.

Bell, S. K., & Morgan, S. B. (2000). Children's attitudes and behavioral intentions toward a peer presented as obese: does a medical explanation for the obesity make a difference? *Journal of Pediatric Psychology,* 25, 137-145.

Branscombe, N. R. & Miron, A. M. (2004). Interpreting the ingroup's negative actions towards another group: Emotional reactions to appraised harm. In L. Z. Tiedens & C. W. Leach (Eds.), *The social life of emotions* (pp. 314-335). New York: Cambridge University Press.

Carr, D., & Friedman, M. A. (2005). Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. *Journal of Health and Social Behavior,* 46, 244-259.

Crocker, J., Cornwell, B., & Major, B. (1993). The stigma of overweight: affective consequences of attributional ambiguity. *Journal of Personality and Social Psychology,* 64, 60-70.

DeJong, W. (1993). Obesity as a characterological stigma: the issue of responsibility and judgments of task performance, *Psychological Reports*, 73, 963-70.

Fallon, A. E., & Rozin, P. (1985). Sex differences in perceptions of body shape. *Journal of Abnormal Psychology*, 94, 102–105.

Friedman, K. E., Reichmann, S. K., Costanzo, P. R., Zelli, A., Ashmore, J. A., & Musante, G. J. (2005). Weight stigmatization and ideological beliefs: relation to psychological functioning in obese adults. *Obesity Research*, 13, 907-16.

Furukawa, T., Yokouchi, T., Hirai, T., Kitamura, T., & Takahashi, K. (1999). Parental loss in childhood and social support in adulthood among psychiatric patients. Group for Longitudinal Affective Disorders Study (GLADS). *Journal of Psychiatric Research,* 33, 2, 165-9

Garner, D. M. (1991). *Eating Disorder Inventory- 2 Professional Manual*. Odessa, Florida: Psychological Assessment Resources.

Haslam, S. A. (2004). *Psychology in organizations: The social identity approach* (2nd ed.). London: Sage.

Haslam, D. W. & James, W. P. (2005). Obesity. *Lancet,* 366, 1197-1209.

Haslam, S. A., Jetten, J., O'Brien, A. T., & Jacobs, E. (2004). Social identity, social influence, and reactions to potentially stressful tasks: Support for the self-categorization model of stress. *Stress and Health*, 20, 3 - 9.

Haslam, S. A., O'Brien, A., Jetten, J., Vormedal, K., & Penna, S. (2005). Taking the strain: Social identity, social support, and the experience of stress. *British Journal of Social Psychology, 44*, 355-370.

Haslam, S. A. & Reicher, S. (2006). Stressing the group: Social identity and the unfolding dynamics of responses to stress. *Journal of Applied Psychology, 91*, 1037-1052.

Heider, F (1958). *The psychology of interpersonal relations*, New York: Wiley

Horchner, R., Tuinebreijer, W. E., Kelder, H., & Van, U. E. (2002). Coping behavior and loneliness among obese patients. *Obesity Surgery,* 12, 864-868.

House, J. S. (1981). *Work, stress and social support*. Reading, MA: Addison-Wesley.

Kenardy, J., Butler, A., Carter, C., & Moor, S. (2003). Eating, mood, and gender in a noneating disorder population, *Eating Behaviors*, 4, 2, 149-158.

Latner, J. D., & Stunkard, A. J. (2003). Getting worse: the stigmatization of obese children. *Obesity Research,* 11, 452-456.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer Publishing Company.

Levine, R. M., & Reicher, S. D. (1996). Making sense of symptoms: Self-categorization and the meaning of illness and injury. *British Journal of Social Psychology, 35*, 245–256.

Marques, J. M., Abrams, D., & Serôdio, R. G. (2001). Being better by being right: Subjective group dynamics and derogation of in-group deviants when generic norms are undermined. *Journal of Personality and Social Psychology, 81*, 436-447.

Musher-Eizenman, D.R., Holub, S.C., Miller, A.B., Goldstein, S.E., & Edwards-Leeper, L. (2004). Body size stigmatization in preschool children: the role of control attributions. *Journal of Pediatric Psychology*, 29, 8, 613-20.

Myers, A & Rosen, J.C. (1999). Obesity stigmatization and coping: relation to mental health symptoms, body image, and self-esteem, *International Journal of Obesity*, 23, 221-230.

Office of National Statistics (1999). *Obesity among people aged 16 and over: by social class of head of house hold and gender, 1998: Social trends 32*. Health Survey for England, Department of Health.

Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys, *Journal of Clinical and Child Adolescent Psychology*, 35, 4, 539-49.

Puhl, R. & Brownell, K. D. (2001). Bias, discrimination, and obesity. *Obesity Research,* 9, 788-805.

Puhl, R. & Brownell, K.D. (2006). Confronting and coping with weight stigma: An investigation of overweight and obese adults, *Obesity,* 14, 10, 1802-1815.

Puhl, R., Moss-Racusin, C. A., & Schwartz, M (2007) Internalization of weight bias: Implications for binge eating and emotional well being. *Obesity*, 15, 1, 19-23.

Puhl, R. M., Schwartz, M. B., & Brownell, K. D. (2005). Impact of perceived consensus on stereotypes about obese people: a new approach for reducing bias. *Health Psychology,* 24, 517-525.

Rascle, N., Bruchon-Schweitzer, M., & Sarason, I. G. (2005). Short form of Sarason's Social Support Questionnaire: French adaptation and validation. *Psychological Reports*, 97, 1, 195-202.

Roehling, M. V., Roehling, P. V., & Pichler, S. (2007). The relationship between body weight and perceived weight-related employment discrimination: The role of sex and race, *Journal of Vocational Behavior*, 71, 300-318.

Rogers, P., & Smit, H. (2006). Food craving and food "addiction": A critical review of the evidence from a biopsychosocial perspective. *Pharmacological Biochemistry and Behavior*, 66, 3–14

Sarason, I., Sarason, B., Shearin, E., & Pierce, G. (1987). A Brief Measure of Social Support: Practical and Theoretical Implications. *Journal of Social and Personal Relationships,* 4, 4, 497-510.

Schmitt, M. T., Branscombe, N. R., Kobrynowicz, D., & Owen, S. (2003). Perceiving discrimination against one's gender group has different implications for well-being in women and men. *Personality and Social Psychology Bulletin, 28*, 197-210.

Schwartz, M. B., Vartanian, L. R., Nosek, B. A., & Brownell, K. D. (2006). The influence of one's own body weight on implicit and explicit anti-fat bias. *Obesity,* 14, 440-447.

Stangor, C., Sechrist, G. B., & Jost, J. T. (2001). Changing beliefs by providing social consensus information, *Personality and Social Psychology Bulletin*, 27, 486-496.

Stark, O., Atkins, E., Wolff, O. H., & Douglas, J. W. (1981). Longitudinal study of obes ity in the National Survey of Health and Development. *British Medical Journal,* 283, 13-17.

Strauss, R. S. & Pollack, H. A. (2003). Social marginalization of overweight children. *Archives of Pediatric and Adolescent Medicine,* 157, 746-752.

Tajfel, H. & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33-47). Monteray, CA: Brooks/Cole.

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). A self-categorization theory. In J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher, & M. S. Wetherell (Eds.), *Rediscovering the social group: a self-categorization theory*. (pp. 42-67). Oxford, UK: Blackwell.

Van Strien, T., Frijters, J. E. R., Berger, G. P. A. & Defares, P. B. (1986). The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behaviour. *International Journal of Eating Disorders*, 5, 295-315

Vartanian, L. R., & Shaprow, J. G. (2008). Effects of weight stigma on exercise motivation and behaviour: a preliminary investigation among college-age females, *Journal of Health Psychology*, 13,131-138.

Wang, S. S., Brownell, K. D., & Wadden, T. A. (2004). The influence of the stigma of obesity on overweight individuals. *International Journal of Obesity and Related Metabolic Disorders*, 28, 1333-1337.

Wardle, J. (1987). Eating style: a validation study of the Dutch Eating Behaviour Questionnaire in normal subjects and women with eating disorders, *Journal of Psychosomatic Research*, 31, 2, 161-9.

Wardle, J. & Cooke, L. (2005). The impact of obesity on psychology well-being, *Best Practice and Research Clinical Endocrinology and Metabolism,* 19, 3, 421-440.

World Health Organisation (2004). WHO Report: Obesity: preventing and managing the global epidemic. *Report of a WHO Consultation*, Geneva: World Health Organization

Table I: Descriptive statistics for the questionnaire measures.

	Mean (SD)	Range (Min-Max)
Experience of weight discrimination	2.03 (1.24)	5.17 (1-6.17)
Emotional eating	2.48 (.86)	3.91 (1-4.91)
Body dissatisfaction	1.07 (.86)	3.00 (0-3)
Norm of discrimination	4.76 (.88)	4.25 (2.38-6.63)
Social support availability	4.53 (1.95)	8.5 (5-9)
Social support satisfaction	5.00 (.96)	4.83 (1.17-6)

Table II: Relationships between experiences of discrimination, emotional eating, body dissatisfaction, perceptions of normality of discrimination, and social support.

	1.	2.	3.	4.	5.	6.
1. Experience of weight discrimination	--	.29**	.41**	-.20**	-.02	-.19*
2. Emotional eating	.29**	--	.40**	-.07	-.07	-.17*
3. Body dissatisfaction	.41**	.40**	--	.01	-.09	-.21**
4. Discrimination norm	-.20**	-.07	.01	--	.11	.07
5. Social support availability	-.02	-.07	-.09	.11	--	.51**
6. Social support satisfaction	-.19*	-.17*	-.21**	.07	.51**	--

*$p<.05$, **$p<.01$