DISCRIMINATION AS A RISK FACTOR FOR BINGE EATING
IN STIGMATIZED GROUPS

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Abstract

Objective: The present study examined the relationship between experiences of discrimination and occurrence of binge eating among members of two traditionally stigmatized groups – obese persons and gay, lesbian, and bisexual (GLB) persons - which have previously shown elevated rates of binge eating. Method: Participants completed a series of questionnaires presented on the Internet which measured frequency of overt and subtle acts of discrimination as well as the impact of that discrimination. Participants also completed measures of eating-related beliefs and behaviors, including drive for thinness, bulimic symptomology, body satisfaction, binge eating frequency and emotional eating. Previously identified risk factors for binge eating - childhood weight, maternal and paternal body types, childhood teasing, and perceived stress – were measured to compare the relative effect of discrimination on occurrence of binge eating. Additional questionnaires were given to measure the level of internalized homophobia among the GLB participants and the level of internalized weight bias among the overweight/obese participants. Results: Results demonstrated a significant positive relationship between the occurrence of discrimination and the frequency of binge eating and emotional eating. Group membership was associated with having faced a major discriminatory event and with endorsing at least one binge episode in the last 6 months. Pearson correlation analyses demonstrated modest but significant positive relationships between the measures of discrimination and measures of eating behaviors ($r = 0.19-0.37$); nearly all coefficients remained significant when controlling for Body Mass Index or perceived stress. Regression models which included previously identified risk factors for binge eating and discrimination frequencies as independent variables all significantly predicted between 9
and 30% of the variance of emotional eating scores, bulimic symptomology, and frequency of binge eating. Perceived stress and day-to-day discrimination emerged as the only significant independent predictors in the regression models. The theoretical model laid out in this study demonstrated good fit to the data for the overweight participants, explaining 57% of the variance in eating disturbance. Weight bias internalization was found to be a partial mediator of the relationship between discrimination and eating disturbance. **Discussion:** Results demonstrate the importance of discrimination as a risk factor for binge eating. Internalization is identified as an important mechanistic pathway and potential treatment target; therapeutic interventions are suggested on both the individual and societal level. The implications suggested by the data about the unique features of weight-related bias are drawn out and discussed.
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Introduction

Binge eating episodes, discrete periods of overeating characterized by consumption of a large amount of food and a sense of loss of control over one’s eating (American Psychiatric Association, 1994), are phenomena common to eating disorders as well as obesity. The prevalence of binge eating is particularly high among obese persons, with estimates of 20%-46% in treatment-seeking populations (Marcus & Wing, 1987) and 21% in non-treatment-seeking populations (French, Jeffery, Sherwood & Neumark-Sztainer, 1999). Rates of binge eating appear to be disproportionately high in certain non-psychiatric populations as well, such as the gay and lesbian community. In the only study of its kind, Heffernan (1996) found that 5.4% of a sample of lesbian women met diagnostic criteria for binge eating disorder, a proportion nearly twice the rate found for women in a community sample (Spitzer et al., 1993). Similarly, gay high school and college students have been shown to binge eat at rates higher than their heterosexual counterparts (Austin, Ziyadeh, Kahn, Camargo, Colditz, & Field, 2004; French, Story, Remafedi, Resnick & Blum, 1996; Yager, Kurtzman, Landsverk, & Weismeier, 1988) with one sample (French et al.) reporting the difference at 25% to 10.6%.

Proposed Risk Factors and Models of Binge Eating

Risk factors for binge eating. Little is understood about the causes of binge eating in these and other populations and few risk factors have been identified. Results from community-based studies (Fairburn et al., 1997; Fairburn et al., 1998) have suggested that risk factors for binge eating in bulimia nervosa and binge eating disorder include general risk factors for disordered eating, such as dieting and negative self-evaluation, and more specific factors such as being obese as a child, having obese parents, and facing persistent
negative comments about weight and shape. More recent research has lent support to these findings (Jackson, Grilo & Masheb, 2000; Striegel-Moore et al., 2002) and others have proposed that stress may also function as an antecedent of binge eating episodes (Bennett & Cooper, 1999; Crowther, Sanftner, Bonifazi & Shepherd, 2001; Freeman & Gil, 2004; Wolff, Crosby, Roberts & Wittrock, 2000). Recently, Streigel-Moore and colleagues (2007) found that among women with a history of bulimia nervosa or binge eating disorder, elevated levels of perceived stress experienced before the age of 14 preceded the onset of binge eating disorders.

The Escape Model and Affect Regulation Model. Research into risk factors for disordered eating cannot directly articulate any causal mechanisms. Several theories, however, have been proposed to understand the etiology and/or maintenance of binge eating. Risk factor research can lend support to one or more of the proposed causal pathways. An escape model of binge eating has been put forth by Heatherton and Baumeister (1991) which argues that binge eating is an escape from self-awareness. The authors suggest that to deal with the unpleasantness of not living up to a personal set of high standards, individuals will binge eat to narrow focus to their immediate and controllable environment. Hawkins and Clement (1984) and Herman and Polivy (1988) have posited that binge eating is a coping mechanism to deal with negative changes in mood states.

Stress models. Several additional models have been proposed that conceive of stress as a reliable triggering mechanism for episodes of binge eating. It is theorized that stress may make people more externally focused and attentive to food in their environment (Heatherton, Polivy & Herman, 1991) or may reduce the perceived
importance of maintaining self-control (Davis, Freeman, & Garner, 1988). There is recent empirical evidence to suggest that the experience of stress may be greater for individuals who exhibit symptoms of bulimia nervosa (Crowther, Sanftner, Bonifazi & Shepherd, 2001; Wolff, Crosby, Roberts & Wittrocks, 2000) and that higher stress is associated with increased risk of same-day binge eating (Freeman & Gil, 2004). Stress may also play a role in both the affect-regulation and escape models of binge eating described above.

All of these theories require the specification of particular stressors in order to explain the initiation or maintenance of binge eating in certain contexts. For example, a “stressful environment” may be argued to contribute to the onset of a binge episode. Yet what elements exist within that environment that make it “stressful” and serve as specific triggering mechanisms for overeating? The present study conceives of discrimination and stigmatization as specific forms of stress that may put individuals at risk for episodes of binge eating. Their effects will be examined in two populations that are subject to increased rates of discrimination in Western society, individuals who are obese and gay men and women.

The Effects of Discrimination on Mental Health

Data from the National Survey of Midlife Development in the United States indicate that of a sample of 3,032 adults in the U.S. a full third have experienced some form of discrimination over the course of their lifetime (Kessler, Michelson & Williams, 1999). Results from that survey also showed that approximately 42% of individuals who identify as gay or lesbian had experienced discrimination based on their sexual orientation (Mays & Cochran, 2001). Compared to non-obese persons, those classified as
obese were 40 to 50 percent more likely to experience major discrimination as a result of their weight status (Carr & Friedman, 2005). Additional research makes it clear that discrimination has an effect on the mental health of those who experience it.

Weight bias has been shown to negatively affect overweight and obese persons in a variety of settings, including employment practices, medical and health settings, educational settings, and even in housing markets and public accommodations (Puhl & Brownell, 2001). A recent review by Meyer (2003) compiles evidence that gay, lesbian, bisexual (GLB) adolescents and adults are at increased risk for harassment and assault in school environments, are discriminated against in workplace environments, and have faced or continue to face institutionalized discrimination from governments across the world. Herek, Gillis and Cogan (1999) have reported that out of a sample of more than 2,200 GLB adults from the Sacramento, California-area, approximately one fifth of the women and one fourth of the men had been the victim of a sexual-orientation-based hate-crime, ranging from property damage to sexual assault.

There is ample evidence that discrimination is associated with negative psychological consequences for these groups. Exploring the effects of the high rate of discrimination reported among the gay, lesbian and bisexual community, Mays and Cochran (2001) found a positive association between the occurrence of discrimination and major depression, generalized anxiety disorder and panic disorder. Discrimination faced by this group has also been associated with anxiety, depression, interpersonal sensitivity, somatization, and obsessive compulsive symptoms (Szymanski, 2005) depression, anger, anxiety, and posttraumatic stress (Herek, Gillis & Cogan, 1999) and suicide ideation and attempts (Meyer, 1993).
For obese persons, Friedman et al. (2005) found that in a sample of 93 individuals with a Body Mass Index higher than 30 kg/m², seven of eleven stigmatizing situations (ranging from being avoided or receiving nasty comments to being physically attacked) were experienced by more than 75% of the participants at some point in their life. The authors found that the incidence of weight-based discrimination in the sample was positively associated with depression, general psychiatric symptoms, and body image disturbance, and negatively associated with self-esteem. Weight bias has also been positively associated with scores on the Brief Symptom Inventory (Meyers & Rosen, 1999) and with increased negative mood (Crocker, Cornwell & Major, 1993).

Ethnic and Gender Discrimination and Disordered Eating

The aforementioned studies have begun to describe the relationship between discrimination and a number of major psychiatric conditions, such as depression and anxiety; however, at present there is little research connecting experiences of discrimination with disordered eating. Empirical studies in this area have thus far focused mainly on the effects of racial and gender discrimination. In a 2001 review, Lovejoy argues that living in a racist society may require a special degree of strength, confidence and self-acceptance, and that for some Black women the resulting positive body image “may be an expression of denial of psychological and physical health problems, such as obesity and compulsive overeating (Lovejoy, 2001, pp. 255).” Quantitative studies addressing racial discrimination as it relates to overeating and binge eating, however, have thus far produced mixed results.

Perez, Voelz, Pettit and Joiner (2002) reported that only for Hispanic and African-American women who reported high levels of acculturative stress (defined as stress due
to assimilation to American culture) were body dissatisfaction and bulimia highly correlated. The authors suggest that the combination of acculturative stress and body dissatisfaction puts these women at risk for bulimic symptoms. Discrimination has been associated strongly with the concept of stress (Allison, 1998) and as a result may have a similar effect on eating behavior.

Moradi and Subich (2002) have found that in a sample of undergraduate and university faculty women, perceived sexist events accounted for variance in scores on the General Severity Index of the Brief Symptom Inventory. In addition, Moradi, Dirks and Matteson (2005) reported that sexual objectification experiences, a form of discrimination where a woman (or man) feels that her identity has been reduced to only her body as an object, were significantly related to eating disorder symptoms in a sample of undergraduate women. The data also showed that internalization of sociocultural standards of beauty was a mediating variable in the relationship between the two.

In a study examining abuse, bullying and discrimination as risk factors for binge eating disorder (BED), Striegel-Moore and colleagues compared the abuse histories of African-American and Caucasian women who were healthy control subjects, had a non-eating disorder-related psychiatric illness or had BED (Striegel-Moore, Dohm, Pike, Wilfley, & Fairburn, 2002). Interestingly, white women with BED were statistically more likely to report a history of discrimination and bullying when compared to both the healthy subjects and the psychiatric controls. Black women with BED reported more incidences of discrimination than healthy controls, but this difference did not reach statistical significance. The authors suggest that “self-reported discrimination is neither a specific nor a general risk factor for binge eating disorder among black women.
however, they note that the incidents of discrimination were only assessed for the period prior to onset of disordered eating or the age of 18. Limiting assessment of discrimination to this early period does not allow for a complete exploration of the effects of discrimination on eating behavior. Acts of discrimination after the onset of disordered eating may be risk factors for the continued maintenance of binge episodes. Furthermore, the statistical analyses conducted in this study were within group comparisons of white women with BED compared to healthy white women and to white psychiatric controls, and black women with BED compared to healthy black women and to black psychiatric controls. As even the healthy comparison group of black women reported an objectively high rate of discrimination (31.8%), the true functional relationship between discrimination and binge eating may have been washed out in the statistical comparisons.

The authors note that among those reporting discrimination, the white women related the discrimination to appearance-related physical attributes while the black women related it to membership in a minority group. Further illustrating the complexity of these issues, Neumark-Sztainer, Story and Faibisch (1998) found that among overweight African-American adolescent females, one third report having faced more discrimination because of their race, one third because of their weight, and one third reported discrimination due to both race and weight. These distinct and not necessarily predictable attributions point to the need for careful assessment of perceived discrimination and continued analysis of its effects.

*Bullying as a Risk Factor for Binge Eating*

Being bullied or teased, either in childhood, in adolescence or as an adult, has been identified as a possible risk factor for binge eating. Using The Childhood Trauma
Questionnaire, which assesses childhood maltreatment in five separate areas (such as emotional abuse or neglect,) Grilo and Masheb (2001) found that in an outpatient sample of patients with binge eating disorder, 83% reported some form of childhood maltreatment. Addressing the construct of bullying more specifically, in a study of more than 8,000 girls and boys ages 14-16, Kaltiala-Heino, Rissanen, Rimpela and Rantanen (1999) found that among the subjects who had been bullied frequently at school, 25% of the girls and 17.4% of the boys reported engaging in bulimic behavior. In the adolescent sample, bullying was a significant predictor of bulimic behavior for both sexes. Further, in a community sample of 808 obese men and women, Womble et al. (2001) tested a psychosocial model of binge eating which included teasing as a contributing factor. Using the Perception of Teasing Scale-Revised Weight-Related Teasing subscale (Thompson et al., 1995), the authors found that the model which included weight-related teasing as a factor explained 70% of the variance in scores on the Binge Eating Scale for women and 61% of the variance in scores for men. The authors also tested their model using path analysis and found that for women, teasing was significantly related to binge eating through negative affect, where for men teasing was significantly related through negative affect as well as relating directly to binge eating itself.

In the Striegel-Moore, Dohm, Pike, Wilfley and Fairburn (2002) study examining abuse, bullying and discrimination as risk factors for binge eating in Caucasian and African-American women, the authors assessed acts of physical bullying experienced by participants in childhood. Both the sample of white women with binge eating disorder and the sample of black women with binge eating disorder reported significantly more instances of physical bullying than the samples of psychiatric and normal controls. In
this study the authors excluded those acts of bullying which were racially motivated, providing evidence of general bullying as a risk factor for binge eating; however, random acts of physical aggression, as measured in the Striegel-Moore et al. study, are distinct from acts of discrimination only by the motivation of the perpetrator or the perception of the victim. It therefore seems logical that bullying may be seen as an alternate form of discrimination and that bullying which is perceived as being motivated by racial, weight, anti-gay or other biases (indeed, almost the very definition of discrimination) may be a risk factor for binge eating.

*Binge Eating in Obese Persons, Gay Men and Lesbian Women*

**Binge eating and obesity.** In an often-cited study, Marcus and Wing (1987) reported that the rate of binge eating among obese persons in treatment-seeking settings ranged from 20% to 46%. More recently, French, Jeffery, Sherwood and Neumark-Sztainer (1999) found that among respondents in a non-clinical sample the prevalence of binge eating was 21% for overweight women. Hsu et al. (2002) have found that 25% of a sample of extremely obese persons met diagnostic criteria for Binge Eating Disorder. Research suggests that obese binge eaters are clinically distinct from obese persons who do not binge eat. A study by Wilson, Nonas and Rosenblum (1993) found that obese binge eaters and obese non-binge eaters showed significant differences in their responses to items from the Eating Disorders Examination, such as fear of losing control over eating. Striegel-Moore, Wilson, Wilfley, Elder and Brownell (1998) have found that obese binge eaters report greater weight dissatisfaction, lower self-esteem, and greater levels of sadness and stress than their non-binge eating counterparts. The 1999 French et al. study also found that binge eaters reported more dieting practices, more extreme
attitudes about weight and shape, and higher levels of depression and stressful life events than obese non-binge eaters. A recent study on the quality of life of obese binge eaters versus obese non-binge eaters demonstrated that obese binge eaters have impairments in aspects of psychosocial functioning, such as work performance, self-esteem, and sexual desire (Rieger, Wilfley, Stein, Marino, & Crow, 2005). This evidence suggests that binge eating in the context of obesity is associated with greater levels of psychopathology and lower quality of life and thus understanding the mechanisms for initiation and maintenance of the behavior becomes imperative.

**Binge eating and sexual orientation.** Research suggests that rates of binge eating may also be higher in gay, lesbian and bisexual persons as compared to heterosexuals. In a population-based survey comparing body satisfaction and weight control behaviors in heterosexual and homosexual adolescents in grades 7-12, it was found that gay boys were more likely to report binge eating than their heterosexual counterparts, with 25% of the homosexual male adolescents reporting episodes compared to 10.6% of the heterosexual male adolescents (French, Story, Remafedi, Resnick, & Blum, 1996). Austin et al. (2004) examined data from over 10,000 adolescents and also found that gay or bisexual boys were more likely to have binged in the last year as compared to heterosexual boys. Similarly, gay college students have been found to be significantly more likely to report previous or current binge episodes than heterosexual male comparison subjects (Yager, Kurtzman, Landsverk, & Weismeier, 1988). Gay men are also believed to be overrepresented in clinical samples of men with bulimia nervosa, at rates ranging from 7.1% to 82.4% (Heffernan, 1994), and tend to score higher on measures of bulimia nervosa, such as the Bulimia Test-Revised (Russell & Keel, 2002).
There has been comparatively less research addressing eating disturbance and weight control behaviors in lesbian women. The large-scale National Lesbian Health Survey conducted between 1984 and 1985 found that two-thirds of the sample (n=1,925) reported “sometimes” or “often” overeating (Bradford, Ryan, & Rothblum, 1994). This trend held across age and racial demographic groups (African-American, Latina, or Caucasian). Heffernan (1996) surveyed 203 lesbian women on their eating and exercise habits, body esteem, attitudes towards attractiveness, and attitudes towards women and compared their results to a sample of heterosexual women. She found comparable rates of current bulimia nervosa (lesbian sample = 0.98%) and current anorexia nervosa (0.49%) but found that 5.4% of the lesbian sample met criteria for binge eating disorder, a higher percentage than found among their heterosexual counterparts. In a test of several models of binge eating, Heffernan found that “eating to take one’s mind off negative thoughts and feelings or to console oneself was the only significant predictor of binge eating (pp. 132).” These results, coupled with research documenting the discrimination faced by lesbians and gay men, suggest that the negative thoughts and feelings that can result from the experience of discrimination may serve to trigger episodes of binge eating in this population.

The Present Study: Perceived Discrimination as a Risk Factor for Binge Eating

This study will focus on the effects of discriminatory experiences on obese persons and individuals who are gay or lesbian. With reported rates of perceived discrimination in these populations being so high (Carr & Friedman, 2005; Mays & Cochran, 2001,) it becomes imperative to ascertain the full extent of its effects. Several authors have suggested that the increased rates of eating pathology seen in gay men and
lesbians may be a method of coping with negative affect following discriminatory experiences (Heffernan, 1996; Meyer, Blissett & Oldfield, 2001; Yancey et al., 2003). There has been no research to date that suggests a relationship between weight discrimination and binge eating in obese persons. Given evidence from other minority groups, such as ethnic minorities and women, and research demonstrating the psychological correlates of discrimination it is possible that these effects include increased rates of binge eating.

Research hypotheses. As binge eating is a low base-rate behavior in the general, non-clinical population and because this is among the first studies to explore the relationship between discrimination and binge eating, the construct of emotional eating will be included in the study to augment the more diagnostic construct of binge eating. It is hoped that this will serve as an analogue to binge eating and capture problematic eating behaviors in a non-clinical population that may in fact be precursors to binge eating episodes. This study tested several hypotheses relating to the relationship between discrimination and binge eating by examining both stigmatized groups (gay and obese) and non-stigmatized groups (normal weight, heterosexual persons).

First, it was hypothesized that those individuals who report more occurrences of discrimination will show higher levels of emotional eating (the urge to eat following an emotional experience) and binge eating. Mean scores on these measures were hypothesized to be higher among the stigmatized groups as compared to the heterosexual, not overweight participants. Second, it was hypothesized that discrimination will account for the occurrence of binge eating above and beyond additional known risk factors for binge eating.
It has been suggested that internalization of negative beliefs about obesity by obese persons may be a vulnerability factor for negative psychological consequences of the stigma of overweight (Quinn & Crocker, 1998). In support of this assertion, Durso and Latner (2007) have found that internalized weight bias predicts body image concern, self-esteem, and binge eating among overweight and obese persons. Similarly, Syzmanski, Chung, and Balsam (2001) reported that among lesbian women internalized homophobia was positively associated with depression, demonstrating that internalized negative beliefs about one’s group status can have psychological consequences.

In a sample of gay men, Rudd and Reilly (2006) have found that internalized homophobia is predictive of body image concern, self-esteem, and bulimic behaviors. It has also been suggested that for gay individuals, internalization of negative beliefs about homosexuality may be a better predictor of binge eating behavior than discriminatory experiences (Williamson, 1999). Puhl, Moss-Racusin, and Schwartz (2007) reported that obese women who believed that weight-based stereotypes were true endorsed more frequent binge eating and refusal to diet in response to stigma experiences compared to those who reported stereotypes to be false. Therefore a third hypothesis of the current study will be that an individual’s level of internalization of cultural stereotypes about their stigmatized group (i.e. internalized homophobia or weight bias) will mediate the relationship between discrimination and binge eating.

**Methods**

**Participants**

Participants for this study were 415 self-selected individuals over the age of 18 who completed an anonymous online survey. Methods of their recruitment are described below.
Procedure

The survey included a demographics questionnaire and the measures described below. Questionnaire items were uploaded to an Internet survey website called Survey Monkey for data collection (for information please see http://www.surveymonkey.com or a review by Gordon, 2002). Participants were recruited via email announcement to GLBT- and obesity-related discussion groups on Yahoo.com and Google.com and to colleagues of the researcher asking them to forward it to their classes and/or social networks. Discussion groups were selected for size (over 100 members) and, to reduce potential biases in sample characteristics, could not be a political or advocacy group for either weight or sexual orientation issues. Information about the survey was also posted on the Hanover College Department of Psychology's “Psychological Research on the Net” which is the top webpage when the search terms “online” “psychological” and “research” are entered into either the Google or Yahoo! search engines.

Measures

Participants were given the following questionnaires and measures (except where noted):

Demographics questionnaire. All participants completed a demographics questionnaire before completing the additional study measures (Appendix A). This questionnaire was created by the authors and asked for the participant’s self-reported age, gender, height, weight, and ethnicity. The participant’s height and weight was used to calculate Body Mass Index for use in statistical analyses. The questionnaire included a Kinsey-type scale for assessment of sexual orientation based on a 7-point scale ranging from “exclusively heterosexual” to “bisexual” to “exclusively homosexual.” Participants
who rated themselves anywhere from “bisexual” to “exclusively homosexual” were included in the GLB group. Participants were asked to classify their weight status, by indicating whether they believe themselves to be “extremely underweight,” “underweight,” “slightly underweight,” “normal weight,” “slightly overweight,” “overweight,” or “extremely overweight.”

Experiences of discrimination. Items from the National Survey of Midlife Development in the United States (MIDUS; Brim et al., 1996) were given to all participants to gather information about the frequency and impact of discriminatory experiences in their lives (Appendix B). The MIDUS survey was a large-scale survey of 4,242 persons aged 25-74 to investigate patterns, predictors and consequences of midlife development in physical health, psychological well-being and social responsibility (Brim et al., 1996). Five items were selected from the survey for their relevance to the current study. The original authors of the survey did not report reliability or validity data for the items used in the present study; however, as of 1996 the survey results had been used in more than 50 publications (Brim et al., 1996) and they have been used in many subsequent publications, including two which deal directly with the prevalence of weight bias and sexual orientation bias (Mays & Cochran, 2001; Carr & Friedman, 2005). The MIDUS survey items assessed the occurrence of a variety of discriminatory experiences in a concise and simple format and as such were useful for the present study.

The first item asked, “How many times in your life have you been discriminated against in each of the following ways because of such things as your race, ethnicity, gender, age, religion, physical appearance, sexual orientation, or other characteristics?” and gives eleven situations where discrimination may occur. These situations include
education and job settings, housing, medical care or harassment by the police. The respondent was asked to report the number of times in his or her life that these experiences have taken place because of discrimination.

The second item asked how often on a day-to-day basis a participant experienced more subtle forms of discrimination, such as being treated with less respect by others or receiving poorer service at stores or restaurants. There are nine statements and participants were asked to rate the frequency of their occurrence, either “often,” “sometimes,” “rarely,” or “never.”

The third item asked, “What was the main reason for the discrimination you experienced? (If more than one main reason, circle all that apply)” and lists nine possible reasons plus a tenth space to allow participants to write in a reason not listed. This question was modified by the authors to elicit more specific responses from participants. First, we separated discrimination based on height and discrimination based on weight into two separate choices, as weight discrimination is a central question in this design. Second, we asked participants who chose “Some other aspect of your appearance” (i.e. other than height or weight) to specify which aspect in particular. Third, a follow-up question was added to each listing that asked “If yes, please rate the degree to which it was a main reason” on a 5-point scale.

The fourth and fifth items asked respondents about the impact that the discrimination has had on their lives. Participants were asked “Overall, how much has discrimination interfered with you having a full and productive life?” and “Overall, how much harder has your life been because of discrimination?” and they were asked to respond either “a lot,” “some,” “a little,” or “not at all.”
Additional risk factors for binge eating. To assess the impact of additional risk factors for binge eating and to allow for statistical comparisons with occurrence of discrimination, participants were given questions and measures to assess occurrence of perceived stress, parental obesity, weight during childhood, and childhood teasing. Perceived Stress was measured using the Perceived Stress Scale (PSS; Appendix C; Cohen, Kamark, & Mermelstein, 1983) which asks respondents to rate the frequency of thoughts and feelings related to stress on a scale from “never” to “very often.” Items include such statements as “In the last month, how often have you felt confident that you could handle your personal problems?” Internal consistency of the PSS was reported by Cohen, Kamark and Mermelstein (1983) as 0.83 and 0.84 for two samples of college students. Parental obesity was assessed using silhouettes from the Questionnaire on Eating and Weight Patterns-Revised (Appendix D; Spitzer, Yanovski & Marcus, 1993) which asked participants to circle the figure that most resembles their mother and father at their heaviest weight. Childhood obesity was measured in the demographics questionnaire by asking participants to classify their childhood weight status from “extremely underweight” to “extremely overweight.”

Participants also completed the Perception of Teasing Scale (POTS; Appendix E; Thompson et al., 1995) which asked questions regarding weight and competency teasing from ages 5-16. Items asked respondents to rate how often they experienced certain teasing behaviors from other people, either “never,” “sometimes,” or “very often,” and then to rate how upset they were by the teasing on a scale of 1 to 5 (“not upset” to “very upset”). Examples of items include “People made fun of you because you were heavy”
for weight-related teasing and “People made fun of you because you were afraid to do something” for competency-related teasing.

The POTS has demonstrated good reliability with Cronbach alpha reliability coefficients of 0.88 and 0.84 for weight-related teasing and competency-related teasing, respectively. Test-retest reliability is reported as 0.90 for weight-related teasing frequency, 0.85 for weight-related teasing effect, 0.82 for competency-related teasing frequency and 0.66 for competency-teasing effect. Inferences about the validity of the POTS have shown good results, with the scales correlating significantly with the Physical Appearance Scale and Trait Anxiety Scale, the Rosenberg Self-Esteem Questionnaire, as well as the Bulimia, Drive for Thinness and Body Dissatisfaction subscales of the Eating Disorders Inventory (Thompson et al., 1995).

Rates of binge eating. The Eating Disorder Diagnostic Scale (EDDS; Appendix F; Stice, Telch & Rizvi, 2000) was used to assess rates of binge eating in the samples being studied. The EDDS is a brief self-report questionnaire that provides information about symptoms of anorexia nervosa, bulimia nervosa and binge eating disorder for diagnostic purposes. Items include measures of both cognitive and behavioral components of the disorders. The EDDS has shown a reliability estimate (Cronbach’s alpha) of 0.89 as well as a 1 week test-retest reliability estimate of 0.85 for the composite score (Stice, Telch & Rizvi, 2000; Stice, Fisher & Martinez, 2004). Stice et al (2000; 2004) have tested the criterion and convergent validity of the EDDS, demonstrating high agreement between the test and structured interviews for all three diagnoses (all estimates greater than 0.74) and showing that scores correlate with the Eating Disorder Examination, the Yale-Brown-Cornell Eating Disorder Scale, and the Three Factor
Eating Questionnaire. In addition, the EDDS can detect changes following treatment intervention and can predict treatment outcome and increased risk of ED behavior (Stice, Fisher & Martinez, 2004).

*Eating disorder-related beliefs and behaviors.* To gain additional information about the nature of participant’s levels of eating pathology, the Drive for Thinness, Bulimia and Body Dissatisfaction subscales of the Eating Disorder Inventory (EDI; Appendix G; Garner, Olmstead & Polivy, 1983) were administered to all participants. The Drive for Thinness scale is a seven-item scale that measures restrictive tendencies in eating and weight behaviors and cognitions (ex. “I am terrified of gaining weight.”). The Bulimia subscale is a seven-item scale which measures the tendency towards overeating and purging behaviors (ex. “I have gone on eating binges where I have felt that I could not stop.”). Similarly, the Body Dissatisfaction subscale is a nine-item scale that assesses satisfaction with specific body parts, including the waist, hips and thighs (ex. “I think that my thighs are just the right size.”). For all subscales, participants are asked how frequently the item applies to them, “always,” “usually,” “often,” “sometimes,” “rarely,” or “never.” The subscales of the EDI have demonstrated good reliability (Chronbach alpha estimates above 0.85) and good criterion validity, having been tested with patients with anorexia nervosa and bulimia nervosa, obese persons, formerly obese persons, recovered anorexic women and male subjects (Garner, Olmstead & Polivy, 1983).

*Emotional Eating.* The Emotional Eating Scale (EES; Appendix H; Arnow, Kenardy & Agras, 1995) was designed to assess coping with negative mood states by eating and has shown internal consistency estimates of 0.81 (Arnow, Kenardy & Agras, 1995) and 0.93 (Waller & Osman, 1998) for the total score. It has a two week test-retest
reliability estimate of 0.79 and scores correlate with the Binge Eating Scale while remaining distinct from scores on the Beck Depression Inventory. The EES can discriminate between binge eaters and anxiety patients (Arnow, Kenardy & Agras, 1995) and its full scale scores predict scores on the Bulimia, Interpersonal Distrust, and Ineffectiveness subscales of the Eating Disorders Inventory. The test asks respondents to rate whether they feel “no desire to eat,” “a small desire to eat,” “a moderate desire to eat,” “a strong urge to eat,” or “an overwhelming urge to eat” following the experience of such emotions as “inadequate,” “sad,” or “frustrated.”

*Internalization.* Measures of internalization of cultural stereotypes were given to participants to test the moderating effect of that internalization on the relationship between stigmatization and overeating. The Lesbian and Gay Identity Scale (LGIS; Appendix I; Mohr & Fassinger, 2000) was given to those participants in the lesbian and gay group. The LGIS is a 40-item scale of gay identity and internalized homophobia with six subscales. Two of the subscales—measuring Need for Acceptance (ex. “I often worry whether others judge me for being (lesbian/gay),”) and Internalized Homonegativity (ex. “I would rather be straight if I could,”)—were selected for inclusion in the present study, as they relate most closely to the concept of internalized bias. The test authors reported acceptable internal consistency estimates and that scores correlate with a self-esteem measure but fail to publish the actual test values. However, the scale was tested on samples of both men and women, unlike other available measures of internalized homophobia whose test samples included only men or only women, and articulates lower-order factors which may be a part of internalized homophobia as a larger construct. As such it is still appropriate to use the LGIS with this sample.
The Weight Bias Internalization Scale (WBIS; Appendix J; Durso & Latner, 2007) was used to assess internalization of anti-fat bias in the obese participants. Respondents were asked to rate their agreement with each item on a 7-point scale from “strongly disagree” to “strongly agree.” Examples of the scale’s 10 items include, “Because I’m overweight, I don’t feel like my true self,” and “As an overweight person I am just as attractive as anyone else.” The WBIS was found to have an internal consistency estimate of 0.87 in previous research and has shown strong correlations with self-esteem, drive for thinness, and body image, as well as mood disturbance and binge eating. WBIS scores were found to significantly predict scores on measures of self-esteem, body image concern, and binge eating.

These procedures were approved by the Institutional Review Board at the University of Hawai’i at Manoa.

**Statistical Analyses**

Two main demographic variables were relevant to the categorization of participants into analysis groups – weight status and sexual orientation. It was hypothesized that belonging to multiple stigmatized groups may have an impact on an individual above that of belonging to one. Given the large sample size, the subject pool was divided into four groups: heterosexual and non-overweight; gay, lesbian or bisexual (GLB) and non-overweight; heterosexual and overweight; and gay, lesbian or bisexual and overweight. These classifications were based on respondents’ demographic data.

Demographic variables were compared to look for differences among the groups. One-way analysis of variance (ANOVA) analyses with post-hoc Scheffe’s tests were used to compare mean scores of each study measure by group assignment. Of particular
interest was to explore whether, on average, the stigmatized groups (obese and gay) show higher rates of emotional and binge eating than the non-obese, heterosexual group.

To test the first hypothesis, that within each group those individuals who report more discrimination would show higher levels of binge eating, Pearson product-moment correlations were calculated using scores on the MIDUS survey, scores from the Emotional Eating Scale, the binge eating items from the EDDS, and the Bulimia subscale of the EDI. To clarify the specificity of the relationship between discrimination and eating behaviors, partial correlations were run using perceived stress as a controlling variable.

As the severity of the events in MIDUS item 1 may be strong enough to elicit lasting effects, even if occurring only once, the variable was analyzed as both a categorical and dimensional measure, with each participant being categorized as either having experienced or never having experienced a major discrimination event. An independent samples t-test was run to explore whether scores on the eating measures were significantly different between those who have or have not experienced such events.

To test the second hypothesis, that discrimination would account for the variance in emotional eating above and beyond additional established risk factors, scores from the MIDUS survey were entered into a multiple linear regression analysis along with the total score from the Perception of Teasing Scale (POTS), Perceived Stress Scale scores (PSS), and self-reported parental and childhood weight status. These previously identified risk factors were entered as the first block with one measure of discrimination from the MIDUS as the second block. This model was tested using each of the three measures of
discrimination as a predictor variable. The dependent variables for each model were EES scores and frequency of binge eating scores (3 months and 6 months).

Finally, to test the third hypothesis, that an individual’s level of internalization of negative stereotypes may mediate the relationship between discrimination and binge eating, structural equation modeling (SEM) was undertaken to test the statistical relationships between the variables. Given a well-developed theory, SEM tests several goodness-of-fit indices to assess the strength of a model. The model being tested in this study hypothesized that acts of discrimination (as measured by the MIDUS survey) has an effect on eating disturbance (as measured by the EES, subscales of the EDI and frequency of binge eating questions from the EDDS), which is mediated by an individual’s level of internalization of cultural biases (as measured by the LGIS and the WBIS).

To control for the occurrence of Type I error, all analyses were considered significant at the $p<0.01$ level (unless otherwise noted).

Results

Sample Characteristics.

In total, 486 persons accessed the online survey. Of those, 415 participants gave enough demographic data to be included in one of the study’s comparison groups. Demographic information is presented in Table 1. The study sample includes 339 women and 76 men, with the total sample having a mean age of 35.4 (range = 18-76). An independent samples $t$-test showed that males and females in the sample had significantly different mean scores on three measures: MIDUS2 (frequency of day-to-day discrimination), and the Drive for Thinness and Body Dissatisfaction subscales of the

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Eating Disorders Inventory. As the MIDUS2 variable is of central importance to the study hypotheses, Pearson product-moment correlations were run for the male and female participants to compare the relationship of day-to-day discrimination with other study measures. Using Fisher’s r to z transformation (Meng, Rosenthal, & Rubin, 1992), the effect sizes of these correlations for men and women were compared and no statistically significant differences between them emerged. As such, the data for the combined set are presented below.

Participants included residents of 37 U.S. states and the District of Columbia, as well as South Korea, India, Mexico, Denmark, Israel, and Canada (total non-U.S. residents = 9). The sample included 16 different self-identified ethnic groups but was predominantly Caucasian (n = 330). Participants also identified themselves as Asian (n = 21), Latina/o or Hispanic (n = 19), being of mixed ethnic heritage (n = 18), African-American (n=14), Native American (n = 3), and Hawaiian (n = 1).

Sexual orientation. Results using a Kinsey-type scale of sexual orientation indicate the total sample included 173 participants who identified as exclusively heterosexual and 58 who are either predominantly or mainly heterosexual. Of those who identified as non-heterosexual, 25 classified themselves as bisexual, 72 as predominantly or mainly homosexual, and 86 as exclusively homosexual. When asked to classify themselves into more discrete categories (gay, lesbian, bisexual, or heterosexual), 28 respondents (9.2%) identified as gay, 79 (25.8%) as lesbian, 31 (10.1%) as bisexual, and 168 (54.9%) as heterosexual (out of 306 responses).

Weight status. The sample had a mean Body Mass Index (BMI; m/kg$^2$) of 29.78 ($SD = 11.52$; range = 11.62-95.27). Based on World Health Organization (WHO)
classifications of weight status, a BMI under 18.5 is considered underweight, a BMI of 18.5 to 24.99 is considered average weight, a BMI of 25-30 is considered overweight, and a BMI over 30 is considered obese. The present sample contains 10 participants who are underweight, 177 who are of average weight, 92 who are overweight, and 136 who would be considered obese. Of the participants who self-identified their weight status ($n = 304$), 24 listed themselves as underweight, 97 as normal weight, and 183 as overweight.

In comparing each respondent's self-identified weight status to their actual weight status, 12 cases were identified where the individual misclassified themselves as normal weight when they would be considered overweight by WHO standards. The small size of this subgroup precluded the use of any analyses to test whether these 12 were significantly different from the rest of the study participants on any of the measures. As the misclassification did not impact the battery of questionnaires completed by these participants, all 12 were retained for the study.

In addition to those overweight participants who misclassified themselves as not overweight, 34 cases were identified where participants misclassified themselves as overweight when they would be considered average weight (BMI range = 20-24.99). To determine whether these 34 persons should be analyzed as part of the overweight groups or whether they represent a subgroup within the study population, an independent samples $t$-test was conducted to compare these participants to the overweight participants.

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1 As stated in the methods section, participants were asked to self-identify weight status to determine presentation of the Weight Bias Internalization Scale. Not considering oneself overweight and bypassing this measure is functionally equivalent to choosing not to respond to the set of questions. For the purposes of this study this is akin to missing data and the inclusion of these participants will not impact the results. The 12 participants who did not classify themselves as overweight may well represent an important subgroup of the study pool worthy of further study, however this is beyond the scope of the present study.
who correctly labeled themselves overweight. As discrimination is partly based in a person's perception of behavior as stigmatizing, these cases have a theoretical basis for being included in the overweight comparison groups. Results from the t-test indicated that the groups differed significantly on BMI ($t(149) = 6.35, p < 0.001$) and mean MIDUS2 scores ($t(147) = 2.63, p = 0.009$). All other tests were not significant. Those participants who correctly identified themselves as overweight had a mean MIDUS2 score of 1.14 while those who incorrectly identified themselves as overweight had a mean score of 0.86. Given these results, the 34 cases were not included within the overweight groups.

An independent samples t-test comparing these cases to the participants who correctly identified themselves as not overweight demonstrated significant differences on perceived stress ($t(139) = -3.67, p < 0.001$), drive for thinness ($t(139) = -3.93, p < 0.001$) and body dissatisfaction ($t(139) = -5.36, p < 0.001$). For all measures listed, those who incorrectly identified themselves as overweight had higher mean scores than those who correctly identified themselves as not overweight. Given these differences, it was determined that these 34 cases could not be included in either the overweight or non-overweight groups; they were retained for overall sample analyses but excluded from subsequent between group analyses.

Based on demographic data (and excluding the participants mentioned above), 90 participants were categorized as belonging to the heterosexual, non-overweight group (HNO), 63 in the GLB, non-overweight (GLBNO), 117 in the heterosexual, overweight group (HO), and 111 in the GLB, overweight (GLBO) group. Data presented below are for the sample as a whole and, where noted, for these analysis groups.
Scores on measures of eating disturbance (EES, EDI, EDDS). Table 2 presents mean scores on the EES, EDI and EDDS for the sample as a whole as well as each comparison group. When asked if subjects had eaten a large amount of food in the past 6 months, 47.7% (n = 198) of the sample said that they had. When asked if subjects experienced a loss of control during those periods of overeating, 35.7% (n = 148) of the sample said that they had. Each participant was screened for positive responses to both of these questions and 34% (n = 141) of the sample endorsed the two hallmark criteria for a binge episode.

A Pearson chi-square analysis to test having ever had a binge episode by group assignment was significant ($\chi^2(3, N = 263) = 9.49, p = 0.02$). Of those reporting a binge episode, 16.4% belonged to the HNO group, 13.9% belonged in the GLBNO group, 32.8% in the HO group and 36.9% in the GLBO group. A z-test was conducted to compare the proportion of each study group reporting a binge episode in the last six months. The proportion of the GLBO group who endorsed having an episode was significantly higher than the proportion of the HNO group ($p = 0.001$). All other proportion comparisons were not significant at the $p = 0.01$ level.

A series of one-way ANOVAs revealed significant differences among the groups on the eating-related behavior measures and these results are also presented in Table 2. Post-hoc analyses revealed that mean EES scores of the HO group were significantly higher than mean scores of the HNO group but were not significantly higher than the intervening GLBNO or GLBO groups. Mean Bulimia scores of each group were significantly different, with post-hoc analyses demonstrating that the HO group had significantly higher mean scores than either the HNO group or the GLBNO group. The
GLBO group also had significantly higher mean Bulimia scores than the HNO group.

One-way ANOVAs comparing the mean frequency of binge eating for each group were significant for the previous 3 months and previous 6 months. Post-hoc analyses demonstrated that the HO group had significantly higher 3 month frequency scores than the HNO group while both the HO and the GLBO groups had higher mean 6 month frequency scores than the HNO group.

Severity of Discrimination.

Frequency of major discrimination (MIDUS item 1). Initial analysis of the variable showed the existence of three distinct outliers, where the sum of major events totaled over 100. Following removal of these three outliers, the sample had a mean of 0.43 \((SD = 0.71)\) events and reported between 0 and 58 acts of overt discrimination, such as being fired from a job. The most frequently cited events were not being hired for a job (35.4% of the sample endorsed at least once incident), being denied or provided inferior service by a service provider (33%) and not being given a job promotion (26.6%). Table 3 shows frequency data for each type of major discrimination event for the sample as a whole and for each comparison group; data shown includes the mean and standard deviation of the frequency of each event overall and indicates the frequency of endorsing at least one incident of discrimination for the sample as well as each group.

Overall, 208 participants (50.5%) reported having faced at least one major event in their lifetime. A Pearson chi-square analysis to test differences across groups in having faced at least one major event was significant \((\chi^2(3, N = 280) = 12.9, p = 0.005)\). Fifty-five point seven percent of the HNO group reported at least one major discrimination event, along with 54.2% of the GLBNO group, 67.8% of the HO group
and 80% of the GLBO group. A z-test was conducted to compare the proportion of each group who endorsed experiencing at least one major event across the study groups. The proportion of the GLBO group who endorsed an event was significantly higher than the proportion of the HNO group ($p = 0.001$) and the GLBNO group ($p = 0.001$) endorsing a major event. All other proportion comparisons were not significant at the $p = 0.01$ level. A one-way ANOVA revealed significant differences among the study groups, with post-hoc comparisons demonstrating that the HO and the GLBO groups had significantly higher mean frequency scores than the HNO group ($p = 0.008$ for each comparison). No other group comparisons of the frequency of major discrimination was found to be significant.

**Frequency of day-to-day discrimination (MIDUS item 2).** Two hundred ninety-nine respondents (89.8%) reported at least “rarely” experiencing the day-to-day events referred to in MIDUS item 2. Numerical values from 0 (never) to 3 (often) were assigned to each response choice for the MIDUS item 2 questions relating to day-to-day occurrences of discrimination. All questions were combined and a mean score for this type of discrimination was computed, called MIDUS2. The overall sample mean for this variable was 0.93 ($SD = 0.63$). Mean and standard deviation of each type of day-to-day event for the overall sample and comparison groups, as well as the number of participants who reported ever having faced each event, are presented in Table 3. A one-way analysis of variance (ANOVA) was conducted to compare each study group on the frequency of day-to-day discrimination and results were found to be significant (Table 2). Post-hoc Scheffe's tests revealed that the HO and GLBO groups had significantly higher mean scores than the HNO group. The HO and GLBO groups did not differ significantly on
MIDUS2 scores. A Pearson chi-square analysis to test having ever faced day-to-day discrimination by group assignment was not significant.

**Impact of discrimination (MIDUS items 3 and 4).** Two items assessed the impact of discrimination on participants' lives. Scores from each of these items, which reflect the level of interference and difficulty placed on participants' lives as a result of discrimination. The two items had a Pearson correlation coefficient of 0.85 and were combined to form a mean impact score (MIDUSImpact). Overall, the sample had a mean impact score of 0.87 (SD = 0.86). A one-way ANOVA to compare impact scores across analysis groups demonstrated significant differences. The two overweight groups, HO and GLBO had significantly higher mean scores than the HNO group. These two groups did not significantly differ.

**Hypothesis 1**

To test the first hypothesis, an independent samples t-test was run to compare those participants who had experienced and those who had never experienced a major discrimination event; those participants who had experienced such an event reported higher mean EES scores ($t(281) = 3.14, p = 0.002$) and higher mean Bulimia scores ($t(266) = 4.74, p < 0.0001$). Mean frequencies of binge eating over the last 3 months and 6 months were not significantly different between those who had and had not experienced a major discriminatory event ($t(261) = 2.06, ns$; $t(294) = 1.73, ns$). Within each study group, an independent samples t-test to compare those participants who had experienced and those who had never experienced a major discrimination event on eating behavior scores was non-significant.
Table 4 shows the Pearson product-moment correlations between each discrimination score and each of the study measures relating to emotional eating and binge eating. As shown, both MIDUS2 and MIDUSImpact correlated significantly with all measures, with values falling within a low to moderate range ($r = 0.19$ to $r = 0.37$). MIDUS1sum scores correlated significantly with mean EES scores ($r = 0.24$), frequency of binge eating over last 3 months ($r = 0.22$), and the Bulimia ($r = 0.28$) subscale of the EDI.

Given the significant differences found among the study groups on eating behavior measures, partial correlations were computed with BMI as a controlling variable to account for possible effects of the relationship between overweight and eating disturbance. Results are presented in Table 4. As shown, when controlling for the effect of BMI, 9 of the 12 correlations remained significant. MIDUS1sum scores were no longer significantly related to frequency of binge eating scores. MIDUSImpact scores were no longer significantly related to frequency of binge eating over the last 6 months. All coefficients with MIDUS2 scores remained significant. In addition, partial correlations were run controlling for perceived stress (PSS) with results presented in Table 4. Controlling for the effect of PSS scores, 10 of the 12 coefficients remained significant. MIDUS1sum scores and MIDUSImpact were no longer significantly related to frequency of binge eating (6 months) scores. All coefficients with MIDUS2 scores remained significant.

**Hypothesis 2**

To test the study's second hypothesis, multiple linear regression models were conducted using the measures of discrimination as predictor variables. Three models
were tested for each of three independent variables and results from these models are summarized in Tables 5-7. Using the block method, all regression models tested were significant at the \( \alpha = 0.01 \) level. The models predicted 28-30% of the variance in EES scores, 13% of the variance in 3 month binge eating frequency scores, and 9-11% of the 6 month binge eating frequency scores. MIDUS2 scores were significant independent predictors of all three eating behavior measures, contributing to the variance above the proportion of variance accounted for by the known risk factors. MIDUS2 was the only significant independent predictor of the binge eating frequency scores. MIDUSImpact scores significantly and independently predicted the 3 month binge eating frequency scores. MIDUS1 sum scores did not independently contribute to any of the models tested.

Hypothesis 3

As MIDUS2 scores emerged as the strongest predictor of emotional eating and binge eating frequency, the variable was included as the measure of discrimination experiences used to test Hypothesis 3. Of the two measures of binge eating frequency, frequency over the last 3 months was the most strongly related to the measures of discrimination and was therefore chosen to be included in the model being tested. This measure of binge eating was combined with the other study measures relating to eating behavior (EES, Bulimia, DFT, and BD scales) to create the latent variable “eating disturbance” to be tested using structural equation modeling.

Table 8 presents a Pearson correlation coefficient matrix for the overall sample of the variables in the proposed model. Both WBIS scores and LGIS scores correlated significantly with MIDUS2 scores (when \( \alpha = 0.05 \)), however only the WBIS scores significantly correlated with the eating behavior measures. The pattern of significant
correlations suggests that WBIS scores may be a mediator of the relationship between discrimination and emotional or binge eating. Therefore, the SEM model was used to test the impact of WBIS scores using only the overweight participants. The correlation matrix for the model variables using only the overweight participants is presented in Table 9 ($n = 142$). Model 1.0 (Figure 1) was fit to the data presented in Table 9 using EQS version 6.1 (Bentler, 1995; http://www.mvsoft.com). Maximum likelihood estimation was employed to estimate the model parameters. The adequacy of the fit was determined using the goodness-of-fit index (GFI), comparative fit index (CFI), and normed fit index (NFI). Hu and Bentler (1995, 1999) recommend that these indices fall at or above .95 to indicate an excellent fit.

Fit statistics revealed that Model 1.0 was a near-excellent fit to the data (Figure 2; GFI = .94, CFI = .94, NFI = .90) and all path coefficients were significant ($p < 0.05$). Model 1.0 explained 55% of the variance of the latent variable “eating disturbance.” A Lagrange Multiplier Test (LM Test; Aitchison & Silvey, 1958) was used to look for additional paths to improve the fit of the model. LM test suggested one additional path – discrimination to bulimia – and the model was reanalyzed including this parameter.

The revised model (Model 1.1; Figure 3) was found to be a better fit to the data. Model 1.2 explained 57% of the variance in eating disturbance, with a GFI of .95, a CFI of .96, and an NFI of .92. Once again all paths were significant ($p < 0.05$) and no additional parameters were suggested by LM test. The total effect of discrimination on eating disturbance was calculated by multiplying the standardized path coefficients from discrimination to internalization and from internalization to eating disturbance (i.e. the

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2 This analysis excluded those participants who self-identified as overweight but who did not have a BMI over 25 kg/m².
indirect effects); the product was then added to the direct effect of discrimination on eating disturbance. The total effect of discrimination on eating disturbance was calculated to be 0.51. Using the method outlined by Sobel (1982, 1986), path coefficients and their standard errors were used to calculate the significance of the total effect. The total effect of discrimination on eating disturbance was found to be significant ($t = 5.40$). The excellent fit of the model to the data indicates that internalization of weight bias partially mediates the relationship between discrimination and eating disturbance.

**Discussion**

Overall, the results obtained from this study suggest that discrimination, from subtle day-to-day experiences to significant life events, has a relationship with eating behavior. In the sample, participants who had faced at least one major occurrence of discrimination in their lives, such as being fired from a job or receiving inferior medical care, reported more bulimic behaviors and appear more likely to overeat in response to changes in their emotional state. Correlation analyses demonstrated that those participants who reported more frequent experiences of discrimination were also more likely to report frequent bulimic behaviors, binge eating episodes, and show an increased likelihood to overeat in response to changes in affect. That these results remained significant when controlling for body mass index suggests that irrespective of actual weight status, discrimination has a relationship with dysfunctional eating behavior. This result is important in light of the body of research demonstrating the association between overweight and eating disturbance (e.g. Spitzer et al., 1993; Fairburn, Welch, Doll, & Davies, 1997; Fairburn et al., 1998). The incidence of emotional and binge eating in this
sample cannot be fully explained by the weight status of participants but is related to the
discrimination they report.

Regression analyses conducted in this study showed that the previously identified
risk factors - perceived stress, childhood overweight, history of teasing, and parental
overweight - along with discrimination accounted for between 9 and 30% of the variance
in scores on the eating behavior measures. The frequency of day-to-day discrimination
emerged as the best predictor of eating behavior, as it significantly added to the risk
factor models, independent of the other factors. Indeed, aside from perceived stress, day­
to-day discrimination was the only significant predictor of emotional and binge eating.
These results argue for the consideration of discrimination as a risk factor for binge
eating, particularly in the case of day-to-day discrimination.

The relationship of discrimination with binge eating and emotional eating was
most strongly demonstrated using the frequency of day-to-day discrimination but not the
frequency of major events. This result suggests that one must consider the type of
discriminatory event when examining the relationship with eating disturbance and
perhaps other forms of psychopathology. More importantly, it suggests that events of
objectively lower severity (e.g. being treated with less courtesy) may have a greater
impact on an individual's well-being as compared to events of seemingly higher severity
(e.g. not being given a job promotion). That 89.8% of the overall sample reported facing
these types of events, compared to the 50% who had experienced more overt events,
suggests that a greater number of individuals may be experiencing these events at a more
frequent rate. Perhaps the chronicity of such lower-severity events is a causal factor for
the eating behaviors described in this study. It may also be the case that these day-to-day
experiences are interpreted by members of stigmatized groups as equivalent to more major experiences. For example, Burn, Kadlec and Rexer (2005) reported that gay, lesbian and bisexual persons who read hypothetical scenarios that were not overt examples of anti-gay harassment still found the scenarios to be offensive and indicative of prejudice.

Persons facing such types of subtle discrimination may also have fewer strategies available to them to adequately cope, such as possible legal recourse for cases of police harassment or job discrimination (Puhl & Brownell, 2003b; Puhl & Brownell, 2006). It may also be less socially acceptable to seek out support for situations which might be viewed by others as an individual “taking it the wrong way” or “overreacting.” Though well-intentioned, counseling a member of a stigmatized group with assurances that “it was all a misunderstanding” or by helping his or her try to develop a “thicker skin” may actually reduce the likelihood of an individual seeking out help and exacerbate the negative consequences of truly discriminatory acts. The use of perceived stress as a control in this study argues that the relationship between discrimination and dysfunctional eating behavior is real, despite the possible presence of individuals in the sample who are prone to “overreact” or who are more sensitive to cues of stigmatization.

The significant relationships between discrimination and emotional and binge eating provide evidence in support of the theory that binge eating is a maladaptive response to stress (Heatherton, Polivy & Herman, 1991; Davis, Freeman, & Garner, 1988; Crowther, Sanftner, Bonifazi & Shepherd, 2001; Wolff, Crosby, Roberts & Wittrockes, 2000; Freeman & Gil, 2004). The study supports and extends results found in Striegel-Moore et al. (2007) on the impact of daily stress on eating behavior. Results
reported here replicate the finding that perceived daily stress is predictive of binge eating but the current data demonstrate the effect of present day stress, not stress experienced prior to age 14. Taken together, it may be hypothesized that perceived stress is both a causal and a maintaining factor of binge eating behavior. As in Striegel-Moore et al. (2007), none of the hypothesized risk factors other than perceived stress was a significant predictor of binge eating. The present research also extends the results found by Striegel-Moore and colleagues by specifying a type of stressor, day-to-day discrimination, which may have an impact on eating behavior over and above the effects of daily life stressors. Future research may be specifically directed at identifying whether this impact is greater for different stigmatized groups, a set of analyses which could not be completed in the present study due to the large number of risk factors to test and small n sizes for each comparison group. Future research may also wish to compare the effects of discrimination against both the Perceived Stress Scale, whose items mainly address internally-based attributions of stress, (e.g. "In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?"), and a scale with addresses more externally-based attributions of stress, such as "The world is out to get me." Given previous research which has found that the experience of stress may be greater for individuals with bulimia nervosa (Crowther, Sanftner, Bonifazi & Shepherd, 2001; Wolff, Crosby, Roberts & Wittrocks, 2000) it will be important to address the possibility of inflated reporting of discrimination among individuals who binge eat.

The present study did, however, begin to quantify the effect of discrimination on binge eating for the overweight participants. The model of binge eating proposed in this
study was tested to assess the effect of the internalization of cultural stereotypes (e.g. weight bias) on the relationship between discrimination and binge eating. Pearson correlations showed that internalization was most strongly related to discrimination and eating behavior for the overweight participants. As such, the full model was tested using only the study’s overweight participants and was able to explain 57% of the variance in eating disturbance for these individuals. The adequate fit of the model demonstrated that internalization is a partial mediator of the relationship between discrimination and eating disturbance and contributes to the total effect of discrimination on eating disturbance. Future studies may wish to develop models to test other possible mediators of the relationship, such as self-esteem or mood disturbance.

Discrimination was found to be directly related to one of the markers of eating disturbance in particular, bulimia, offering additional areas for future research. Surprisingly, discrimination had a direct negative effect on bulimic symptomology, despite having a positive total effect on eating disturbance and bulimia overall. From a methodological perspective, structural equation modeling is meant to test the fit of a model to the data provided by a given sample. Thus the negative effect of discrimination on bulimic symptomology may reflect unique characteristics of the sample.

This unexpected result may also indicate the simplicity of the model being tested and the importance of identifying additional mediating variables. Or, it may be indicative of important distinctions among eating disturbance patterns of behavior. For example, Waller, Ohanian, Meyer and Osman (2000) looked for differences in the content of the core beliefs among women with bulimia, women with anorexia nervosa - bulimic subtype, women with binge eating disorder, and a group of comparison women with no
bulimic symptomology. The authors found that among the bulimic women, frequency of binge eating was significantly predicted by emotional inhibition whereas the frequency of vomiting was significantly predicted by beliefs about defectiveness or shame.

The present results may make a distinction between binge eating behaviors (as measured in the model by the Emotional Eating Scale, the Eating Disorder Diagnostic Scale and items on the Bulimia subscale) and compensatory behaviors like vomiting (only assessed using the Bulimia subscale). Discriminatory events may interact with affect regulation to cause an increase in binge eating behaviors, as indicated by the significant path between discrimination and eating disturbance. Discriminatory events might also interact with a mediating variable relating to beliefs about defectiveness or shame to directly effect compensatory behaviors. When re-examining item responses, the item on the Bulimia subscale which asks about vomiting in response to overeating was the least positively endorsed of the scale items. In addition, only 13 participants out of the entire sample reported ever having vomited to lose weight. Correct interpretation of the negative coefficient of the path between discrimination and bulimic symptomology may require the identification of additional mediators in the model and more precise measurement of relevant variables.

It is interesting to note that the correlation coefficient for the path between internalization and eating disturbance was stronger than the coefficient for the path between discrimination and internalization (0.23 versus 0.57). The strong relationship between internalization and eating disturbance in this model suggests that internalization may have a significant impact on eating disturbance, irrespective of having faced discrimination. This may be true, for example, for the individuals in the present study
who misclassified themselves as overweight when they are in fact average weight. The
only significant difference between the “misclassifiers” and the actually overweight
participants was on the frequency of day-to-day discriminatory events; otherwise
measurement scores were not significantly different. Thus it may be the case that two
mechanistic pathways are at work which cause the same patterns of eating disturbance.
In the case of the actually overweight participants, facing frequent discrimination may
result in binge eating for those who have high levels of internalized weight bias (i.e.
Model 1.1). In contrast, persons who believe themselves to be overweight may have a
more internally-based mechanism for causing patterns of eating disturbance, one which is
also influenced by the internalization of weight bias. While the classification of average
weight and normal weight individuals based on BMI cutoffs is a somewhat arbitrary
system, this group of participants may represent a unique population worthy of further
study. If multiple mechanisms do exist, they might require different treatment modalities
for maximum effectiveness of a protocol, such as increasing adaptive coping strategies
for victims of discrimination or more cognitively-based strategies for non-overweight
individuals who nonetheless have internalized negative messages relating to obesity.
Future research is needed to ascertain whether these mechanisms exist and develop
further the role of internalized weight bias in the expression of dysfunctional eating
behaviors.

In contrast to some recent studies (Reilly & Rudd, 2006) internalized homophobia
did not significantly correlate with measures of eating disturbance. However, this does
not indicate the weakness of the relationship between sexual orientation-based
discrimination and eating disturbance. There may be other partial mediators to explain
the manifestation of eating disturbance in the GLB population. The low levels of internalized homophobia reported by the sample make it difficult to conclude whether the proposed model is a poor fit for persons with high levels of internalized homophobia. The results may be more reflective of the protective properties of stigma noted by Crocker and Major (1989). One of the main properties they discuss is that members of a stigmatized out-group may benefit from attributing negative feedback (such as discrimination) to external sources and not to some global, stable aspect of themselves. In doing so, self-concept and self-esteem are protected. The authors point out that internalization of stereotypes may moderate the relationship between stigmatizing conditions and self-esteem, but it may also be the case that it is more difficult to internalize negative stereotypes if the self is protected by membership in a stigmatized group. If this is true for the present sample of gay, lesbian, and bisexual persons, it is decidedly not true for the sample of overweight persons. That internalization was significantly related to eating disturbance for the overweight participants indicates that there may be no such protection if one is a member of an overweight group.

Analysis of the frequency of discrimination and the mean scores of study variables consistently showed that the two overweight groups faced more major discrimination events and had significantly higher scores on study measures than the two non-overweight groups. This was in part contrary to the study hypotheses, which predicted that the gay, lesbian, and bisexual participants (of all weight classes) would also be significantly different from the heterosexual, non-overweight group. Crocker and Major point out several additional moderating variables that may help explain some of
the between-group differences found in the current study: concealability of the stigma and responsibility for the stigmatizing condition.

These demographic categories, sexual orientation and weight status, are excellent examples of the potential impact of the two moderating variables noted above. While sexual orientation, on average, may be considered a stigmatizing condition that is concealable, weight status is highly salient to the external world. The two overweight groups may be reporting higher rates of discrimination because they are more readily discernable targets of discriminatory actions. It is also well-documented that among overweight and non-overweight persons alike, weight is seen as a characteristic which is under near-full control of an individual (Crandall, 1994). In a review on the causes and origins of weight-based stigma, Puhl and Brownell (2003a) review research which shows that strong belief in the controllability of weight is correlated with increased levels of weight bias. Sexual orientation, in contrast, is increasingly being seen by the public and by the field of psychology as an in-born trait of an individual, and rates of sexual orientation-based prejudice have declined in recent years (Herek, 2000).

Views relating to the responsibility of the stigmatizing condition and the degree of concealability of the stigma may affect members of each group in opposing ways. For gay, lesbian or bisexual persons, the ability to “conceal” one’s sexual orientation from the public and increasing beliefs that sexual orientation is out of individual control may reduce both the occurrence and impact of stigmatizing situations. For overweight individuals, the pervasiveness of anti-fat attitudes in the general population and the salience of one’s weight status may serve to increase the occurrence of discrimination.

Previous studies utilizing the same measure of discrimination as the present research have
found higher rates of discrimination among overweight individuals (Carr & Friedman, 2005) than among gay, lesbian, or bisexual individuals (Mays & Cochran, 2001). In addition, internalized beliefs in the controllability of weight may increase the vulnerability of an overweight individual to some of the negative outcomes discussed in this study. This is supported by the influential role of internalized weight bias demonstrated in the study model. The opposing effects of each stigmatizing condition are also suggested by the unsupported hypothesis that being a member of both stigmatized groups would put an individual at risk for greater negative consequences. The GLBO group reported significant differences from the GLBNO group, but did not differ significantly from the HO group, suggesting the importance of weight status in the development of negative outcomes following discriminatory experiences.

Limitations of the present study must be noted. Most importantly, the correlational design of the study prohibits any causal inferences from being made about the relationship of the study variables. A second major limitation is the absence of a specific measure of affect, as affect regulation is central to the theoretical models of binge eating discussed in the introduction. However, with these analyses laying a foundation, further research in this area may use experimental and quasi-experimental designs to describe the nature of the mechanisms behind the stated relationships. There may also be several variables not controlled for affecting the results of this study, such as social support, self-esteem, or dieting history. The small number of men present in the sample, while not appearing to significantly differ from the women in the sample and distributed equally across the comparison groups, makes it hard to say conclusively that gender is not an important and influential variable. Participant age may be seen as a
potential confound of the results, since it was significantly different across the study groups. It is reasonable to suspect that the longer one has lived the more discrimination one has faced and perhaps this compounding of events contributes to the relationship between discrimination and eating disturbance.

The method of participant recruitment and classification into comparison groups may also be seen as limitations. While the study sample is made up of community members of different ethnic backgrounds, geographic locations, and varied ages, the use of topic-specific list-servs may have introduced specific confounds. Though none of the recruited list-servs were political in nature or associated with advocacy work, the majority of obesity-related list-servs appeared to be a means of support for individuals who considered their weight a problem. So while many GLBT-related list-servs may be dedicated to issues other than sexuality (ex. local community events or parents groups,) obesity-related groups appeared to deal specifically with weight as a personal issue. Members of these groups may be more distressed about their weight and hold more dysfunction beliefs about it, such as having high levels of internalized weight bias, than their GLBT-counterparts. This method, however, may have similar limitations to recruiting individuals seeking weight-loss treatment to study the overweight/obese population. The present sample may have lower levels of distress about their weight than treatment-seeking samples, as it likely contains individuals who have never sought or do not plan to seek weight-loss treatment. Future research in this area needs to take treatment-seeking behavior and its correlates into consideration.

Despite the presence of items to assess the main reason for the type of discrimination faced by study participants, so few individuals responded to the set of
questions it precluded the use of these items to classify participants into the study’s four comparison groups. For each of the 11 items, between 11 (main reason = height) and 137 (main reason = gender) people gave a response, due perhaps to a number of factors. Participants may have viewed the questions as less relevant, been confused or fatigued by the Likert scale provided, or only thought to answer the one item which best fit their experiences. It is curious that while a majority of participants reported having faced discrimination during their lifetime, at most 33% stated the main reason for that discrimination. Of central relevance to the current study, 84 (20.2%) responded to say that weight was to some degree a main reason for the discrimination faced and 64 (15.4%) stated that sexual orientation was to some degree a main reason. Without the attributions of the study participants, the subject pool was divided using available demographic data. While using demographic data to sort participants is a common method, it remains a methodological limitation of the present study.

The results found in the present study highlight the need for a two-pronged approach to the treatment of binge eating. Individual treatment must consider the possible effect of belonging to a stigmatized group and the impact of discrimination on eating behavior. As noted, this is not simply a matter of “toughening up” clients to help them functionally cope with stigmatizing situations. In the case of overweight individuals, a promising avenue may be to assist clients in perceiving and attributing discriminatory actions as byproducts of stereotypes and bias and not as legitimate events which the client somehow “deserves” (Crocker & Major, 1989; Crocker, Cornwell & Major, 1993). Another important therapeutic target identified in this study is internalized weight bias. As found by Durso and Latner (2007); internalized weight bias has a
relationship with body image concern, drive for thinness, self-esteem, mood disturbance, and binge eating. The model put forward in this study also illustrates the role of internalized weight bias in the mediation of the relationship between discriminatory events and eating disturbance. Strategies to reduce internalization of weight bias among the overweight may prove extremely successful in a number of psychological domains.

Efforts must also be made on a societal level to reduce the incidence of discrimination and further research continues to be warranted. As Hall (2001) notes, “individual adjustment to discrimination will do little to change a problem that may reside within the perpetrator more than within the victim (p. 507).” The current study points to the importance of understanding the nature of day-to-day discriminatory experiences and developing strategies that target and reduce these events. For example, Burn (2000) found that about half of persons who used heterosexist language were not strongly anti-homosexual and that these individuals became motivated to change their behavior once they were asked to consider how GLB individuals might feel when hearing anti-gay language. This is not to say that the effects of discrimination are either the fault of society or the fault of the individual, to the exclusion of the other. Indeed one of the more insidious results of stigmatization may be that the experience of having been the victim of discrimination once may increase the likelihood of perceiving discrimination again where it may not exist. This hypervigilance may serve to maintain or compound the effects of discriminatory actions. It may also make an individual more vulnerable to the use of dysfunctional coping strategies, such as emotional or binge eating.

Reducing the amount of discrimination faced by overweight, GLB, or other stigmatized persons serves in a direct sense to reduce the negative psychosocial outcomes
found in this and other research studies. Reducing stigma on a social level may also have indirect positive results. In the case of weight bias, for example, reducing negative psychosocial outcomes may not only improve an individual’s quality of life but might also remove impediments to seeking weight-loss treatment that may be necessary for improving one’s health status (Puhl, Moss-Racusin, & Schwartz, 2007). In turn, reducing rates of weight-based discrimination may increase successful outcomes of weight-loss treatment by eliminating additional life stressors and deemphasizing the discrepancy between overweight persons and society’s “thin ideal.” This two-pronged approach to treatment, targeting both the individual and the larger social context, may have the greatest and longest-lasting impact on reducing the negative effects of discrimination.
References


<table>
<thead>
<tr>
<th>Statistic</th>
<th>Group</th>
<th>Frequency (N = 415)</th>
<th>% female</th>
<th>% of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>male</td>
<td>76</td>
<td>18.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>339</td>
<td>81.70</td>
<td></td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>underweight</td>
<td>10 (88.9)</td>
<td>2.41</td>
<td></td>
</tr>
<tr>
<td></td>
<td>normal weight</td>
<td>177 (81.9)</td>
<td>42.65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>overweight</td>
<td>92 (71.4)</td>
<td>22.17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>obese</td>
<td>136 (88.1)</td>
<td>32.77</td>
<td></td>
</tr>
<tr>
<td>Sexual Orientation</td>
<td>exclusively heterosexual</td>
<td>173 (84.7)</td>
<td>41.69</td>
<td></td>
</tr>
<tr>
<td></td>
<td>predominantly heterosexual</td>
<td>48 (89.5)</td>
<td>11.57</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mainly heterosexual, slightly homosexual</td>
<td>10 (100)</td>
<td>2.41</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bisexual</td>
<td>25 (96)</td>
<td>6.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mainly homosexual, slightly heterosexual</td>
<td>22 (86.4)</td>
<td>5.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>predominantly homosexual</td>
<td>50 (78)</td>
<td>12.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>exclusively homosexual</td>
<td>86 (66.3)</td>
<td>20.72</td>
<td></td>
</tr>
<tr>
<td>Comparison Group</td>
<td>heterosexual, not overweight (HNO)</td>
<td>90 (85.4)</td>
<td>21.69</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gay, lesbian, bisexual, not overweight (GLBNO)</td>
<td>63 (76.2)</td>
<td>15.18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>heterosexual, overweight (HO)</td>
<td>117 (86.1)</td>
<td>28.19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gay, lesbian, bisexual, overweight (GLBO)</td>
<td>111 (76.6)</td>
<td>26.75</td>
<td></td>
</tr>
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</table>
Table 2. Mean Scores of All Study Measures - Full Sample and Group Comparison

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean (SD)</th>
<th>Full Sample</th>
<th>HNO</th>
<th>GLBNO</th>
<th>HO</th>
<th>GLBO</th>
<th>F (df1, df2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>35.4 (11.87)</td>
<td>28.96 (8.96)*</td>
<td>34.13 (11.51)*</td>
<td>38.13 (11.90)*</td>
<td>39.64 (11.67)*</td>
<td>17.64 (3, 377)</td>
<td></td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>29.8 (11.50)</td>
<td>21.54 (1.95)*</td>
<td>21.99 (1.91)*</td>
<td>36.00 (13.24)*</td>
<td>34.29 (10.59)*</td>
<td>75.91 (3, 377)</td>
<td></td>
</tr>
<tr>
<td>MIDUS1sum</td>
<td>4.94 (3.37)</td>
<td>2.11 (2.77)*</td>
<td>2.85 (4.57)*</td>
<td>8.74 (10.96)*</td>
<td>6.92 (9.78)*</td>
<td>6.51 (3, 279)</td>
<td></td>
</tr>
<tr>
<td>MIDUS2</td>
<td>0.91 (0.61)</td>
<td>0.64 (0.52)*</td>
<td>0.79 (0.44)*</td>
<td>1.06 (0.68)*</td>
<td>1.08 (0.63)*</td>
<td>10.13 (3, 296)</td>
<td></td>
</tr>
<tr>
<td>MIDUS Impact</td>
<td>0.86 (0.55)</td>
<td>0.33 (0.48)*</td>
<td>0.80 (0.74)*</td>
<td>1.01 (0.94)*</td>
<td>1.14 (0.87)*</td>
<td>15.01 (3, 296)</td>
<td></td>
</tr>
<tr>
<td>EES</td>
<td>2.23 (0.87)</td>
<td>1.97 (0.92)*</td>
<td>2.01 (0.64)*</td>
<td>2.45 (0.95)*</td>
<td>2.36 (0.84)*</td>
<td>5.35 (3, 271)</td>
<td></td>
</tr>
<tr>
<td>Binge Eating Frequency (3 months)</td>
<td>1.63 (3.12)</td>
<td>0.55 (1.31)*</td>
<td>0.93 (2.33)*</td>
<td>2.58 (4.27)*</td>
<td>2.00 (3.32)*</td>
<td>6.45 (3, 293)</td>
<td></td>
</tr>
<tr>
<td>Binge Eating Frequency (6 months)</td>
<td>1.26 (1.78)</td>
<td>0.63 (1.45)*</td>
<td>0.71 (1.15)*</td>
<td>1.59 (2.00)*</td>
<td>1.80 (1.93)*</td>
<td>5.76 (3, 250)</td>
<td></td>
</tr>
<tr>
<td>LGIS</td>
<td>2.75 (0.77)</td>
<td>n/a</td>
<td>n/a</td>
<td>2.81 (0.64)</td>
<td>n/a</td>
<td>2.71 (0.83)</td>
<td>0.48 (1, 119)</td>
</tr>
<tr>
<td>WBIS</td>
<td>4.00 (1.61)</td>
<td>n/a</td>
<td>n/a</td>
<td>3.98 (1.34)</td>
<td>4.01 (1.26)</td>
<td>0.03 (1, 173)</td>
<td></td>
</tr>
<tr>
<td>PSS</td>
<td>1.94 (0.58)</td>
<td>1.70 (0.4)</td>
<td>1.87 (0.62)</td>
<td>1.94 (0.61)</td>
<td>1.99 (0.61)</td>
<td>1.56 (3, 265)</td>
<td></td>
</tr>
<tr>
<td>POTS Frequency</td>
<td>2.26 (1.11)</td>
<td>1.80 (0.90)*</td>
<td>2.17 (1.16)*</td>
<td>2.52 (1.22)*</td>
<td>2.35 (1.08)*</td>
<td>5.60 (3, 318)</td>
<td></td>
</tr>
<tr>
<td>POTS Effect</td>
<td>2.06 (1.00)</td>
<td>1.75 (0.79)*</td>
<td>1.91 (0.72)*</td>
<td>2.37 (1.29)*</td>
<td>2.14 (0.91)*</td>
<td>6.16 (3, 319)</td>
<td></td>
</tr>
<tr>
<td>DFT†</td>
<td>3.21 (1.35)</td>
<td>2.82 (1.40)*</td>
<td>2.64 (1.33)*</td>
<td>3.41 (1.58)*</td>
<td>3.37 (1.16)*</td>
<td>5.08 (3, 259)</td>
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</tr>
<tr>
<td>Bulimia</td>
<td>2.25 (1.24)</td>
<td>1.81 (0.93)*</td>
<td>1.91 (2.62)*</td>
<td>2.82 (1.44)*</td>
<td>2.41 (1.26)*</td>
<td>6.53 (3, 250)</td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>3.96 (1.24)</td>
<td>3.09 (0.90)*</td>
<td>3.11 (0.94)*</td>
<td>4.58 (1.18)*</td>
<td>4.44 (1.16)*</td>
<td>36.38 (3, 258)</td>
<td></td>
</tr>
</tbody>
</table>

* = p<0.01
† = post-hoc comparisons significant at the p=0.05 level only

Note: Mean scores with overlapping superscripts are not significantly different. Mean scores without overlapping superscripts are significantly different at p < 0.01. All comparisons are made across rows. For the LGIS and WBIS mean scores, t ratios were converted to F ratios for simplicity.
Table 1. Mean, Standard Deviation and Frequency of Ever Having Experienced A Discriminatory Event

<table>
<thead>
<tr>
<th>Major Discrimination Event</th>
<th>Mean</th>
<th>SD</th>
<th>Overall (%)</th>
<th>HNO (%)</th>
<th>GLBNO (%)</th>
<th>HO (%)</th>
<th>GLBO (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td># times not hired for a job</td>
<td>1.07</td>
<td>0.83</td>
<td>35.4</td>
<td>29.4</td>
<td>24</td>
<td>40.2</td>
<td>36.5</td>
</tr>
<tr>
<td># times denied or provided inferior service by service provider</td>
<td>1.22</td>
<td>0.91</td>
<td>33</td>
<td>26</td>
<td>26.5</td>
<td>34.1</td>
<td>40.3</td>
</tr>
<tr>
<td># times not given a job promotion</td>
<td>0.49</td>
<td>0.69</td>
<td>26.8</td>
<td>16.7</td>
<td>20</td>
<td>34.4</td>
<td>32.5</td>
</tr>
<tr>
<td># times denied or provided inferior medical care</td>
<td>0.89</td>
<td>1.20</td>
<td>25.3</td>
<td>9.7</td>
<td>12.5</td>
<td>37.5</td>
<td>35.1</td>
</tr>
<tr>
<td># times discouraged from seeking higher education</td>
<td>0.34</td>
<td>0.70</td>
<td>18.9</td>
<td>15.3</td>
<td>12.2</td>
<td>16.9</td>
<td>26.3</td>
</tr>
<tr>
<td># times harassed by the police</td>
<td>0.29</td>
<td>0.80</td>
<td>17.2</td>
<td>21.9</td>
<td>6.3</td>
<td>14.8</td>
<td>20.5</td>
</tr>
<tr>
<td># times fired</td>
<td>0.19</td>
<td>0.63</td>
<td>15.7</td>
<td>5.6</td>
<td>16.3</td>
<td>18</td>
<td>25.6</td>
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<tr>
<td># times denied a scholarship</td>
<td>0.09</td>
<td>0.43</td>
<td>13.5</td>
<td>11.3</td>
<td>8.2</td>
<td>16.9</td>
<td>12.8</td>
</tr>
<tr>
<td># times prevented from renting or buying a home</td>
<td>0.12</td>
<td>0.42</td>
<td>6.6</td>
<td>2.9</td>
<td>8</td>
<td>7.9</td>
<td>14.1</td>
</tr>
<tr>
<td># times denied a bank loan</td>
<td>0.10</td>
<td>0.47</td>
<td>6.3</td>
<td>4.2</td>
<td>2.1</td>
<td>10.1</td>
<td>7.7</td>
</tr>
<tr>
<td># times prevented from remaining in a neighborhood because uncomfortable</td>
<td>0.10</td>
<td>0.57</td>
<td>4.8</td>
<td>2.9</td>
<td>2.1</td>
<td>5.7</td>
<td>5.1</td>
</tr>
<tr>
<td>Any Event Listed</td>
<td>—</td>
<td>—</td>
<td>50.5</td>
<td>55.7</td>
<td>54.2</td>
<td>67.8</td>
<td>80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day-to-Day Discrimination Event</th>
<th>Mean</th>
<th>SD</th>
<th>Overall (%)</th>
<th>HNO (%)</th>
<th>GLBNO (%)</th>
<th>HO (%)</th>
<th>GLBO (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td># times not hired for a job</td>
<td>1.16</td>
<td>0.85</td>
<td>76.4</td>
<td>68.2</td>
<td>82</td>
<td>80</td>
<td>81.4</td>
</tr>
<tr>
<td># times denied or provided inferior service by service provider</td>
<td>1.28</td>
<td>0.94</td>
<td>75.9</td>
<td>60.6</td>
<td>78</td>
<td>80</td>
<td>85.1</td>
</tr>
<tr>
<td># times not given a job promotion</td>
<td>1.09</td>
<td>0.65</td>
<td>72.6</td>
<td>56.3</td>
<td>80</td>
<td>76.7</td>
<td>79.3</td>
</tr>
<tr>
<td># times denied or provided inferior medical care</td>
<td>1.07</td>
<td>0.69</td>
<td>68.9</td>
<td>53.5</td>
<td>68</td>
<td>73</td>
<td>80.58</td>
</tr>
<tr>
<td># times harassed by the police</td>
<td>1.06</td>
<td>0.62</td>
<td>66.8</td>
<td>62</td>
<td>48</td>
<td>73</td>
<td>73.6</td>
</tr>
<tr>
<td># times denied a scholarship</td>
<td>0.81</td>
<td>0.81</td>
<td>58.7</td>
<td>42.3</td>
<td>68</td>
<td>62.2</td>
<td>63.2</td>
</tr>
<tr>
<td>How often people act as if they think you are not as good as they are</td>
<td>0.81</td>
<td>0.74</td>
<td>48.5</td>
<td>33.8</td>
<td>46</td>
<td>48.3</td>
<td>50.6</td>
</tr>
<tr>
<td>How often people act as if they are afraid of you</td>
<td>0.55</td>
<td>0.84</td>
<td>44.3</td>
<td>31.4</td>
<td>35</td>
<td>54.9</td>
<td>54</td>
</tr>
<tr>
<td>How often people act as if they think you are dishonest</td>
<td>0.47</td>
<td>0.65</td>
<td>38.7</td>
<td>29.6</td>
<td>34</td>
<td>43.8</td>
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<tr>
<td>Any Event Listed</td>
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<td>—</td>
<td>89.9</td>
<td>81.7</td>
<td>92</td>
<td>92.3</td>
<td>93.1</td>
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Note: Events are listed in order of most frequently endorsed to least frequently endorsed for the sample overall; % = percent of those responding.
Table 4. Correlation of Discrimination Measures with Emotional Eating and Eating Disturbance

<table>
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<tr>
<th>Discrimination Measure</th>
<th>EES</th>
<th>Binge Eating (3 months)</th>
<th>Binge Eating (6 months)</th>
<th>Bulimia</th>
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<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Pearson Product-moment Correlations</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MIDUS1sum</td>
<td>0.24*</td>
<td>0.22*</td>
<td>0.10</td>
<td>0.28*</td>
</tr>
<tr>
<td>MIDUS2</td>
<td>0.37*</td>
<td>0.32*</td>
<td>0.24*</td>
<td>0.29*</td>
</tr>
<tr>
<td>MIDUSImpact</td>
<td>0.32*</td>
<td>0.28*</td>
<td>0.19*</td>
<td>0.29*</td>
</tr>
<tr>
<td><strong>Partial Correlations controlling for BMI</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MIDUS1sum</td>
<td>0.18*</td>
<td>0.08</td>
<td>-0.04</td>
<td>0.20*</td>
</tr>
<tr>
<td>MIDUS2</td>
<td>0.31*</td>
<td>0.21*</td>
<td>0.17*</td>
<td>0.22*</td>
</tr>
<tr>
<td>MIDUSImpact</td>
<td>0.26*</td>
<td>0.16*</td>
<td>0.11</td>
<td>0.20*</td>
</tr>
<tr>
<td><strong>Partial Correlations controlling for Perceived Stress Scores</strong></td>
<td></td>
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<tr>
<td>MIDUS1sum</td>
<td>0.24*</td>
<td>0.19*</td>
<td>0.08</td>
<td>0.25*</td>
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<tr>
<td>MIDUS2</td>
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<td>0.25*</td>
<td>0.17*</td>
<td>0.19*</td>
</tr>
<tr>
<td>MIDUSImpact</td>
<td>0.19*</td>
<td>0.21*</td>
<td>0.12**</td>
<td>0.19*</td>
</tr>
</tbody>
</table>

* = Correlation is significant at the 0.01 level (2-tailed).
** = Correlation is significant at the 0.05 level (2-tailed).
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Model R²</th>
<th>F</th>
<th>Block</th>
<th>Independent Variables</th>
<th>Standardized Beta</th>
<th>p value</th>
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<td>Self-described childhood weight</td>
<td>0.07</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Father Figure</td>
<td>0.08</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mother Figure</td>
<td>-0.06</td>
<td>0.27</td>
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<tr>
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<td>POTS Frequency</td>
<td>0.01</td>
<td>0.92</td>
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<tr>
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<td></td>
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<td>POTS Effect</td>
<td>0.16</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PSS¹</td>
<td>0.41</td>
<td>0.00</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MIDUS1sum</td>
<td>0.13</td>
<td>0.03</td>
</tr>
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<td><strong>Binge Eating Frequency</strong> (last 3 months)</td>
<td>0.13</td>
<td>4.84*</td>
<td>1</td>
<td>Self-described childhood weight</td>
<td>0.08</td>
<td>0.42</td>
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<td></td>
<td></td>
<td></td>
<td>Father Figure</td>
<td>-0.05</td>
<td>0.42</td>
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<td>Mother Figure</td>
<td>-0.05</td>
<td>0.40</td>
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<td>POTS Frequency</td>
<td>-0.05</td>
<td>0.65</td>
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<td>POTS Effect</td>
<td>0.17</td>
<td>0.13</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>PSS¹</td>
<td>0.21</td>
<td>0.00</td>
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<td>MIDUS1sum</td>
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<td><strong>Binge Eating Frequency</strong> (last 6 months)</td>
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<td>4.48*</td>
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<td>Self-described childhood weight</td>
<td>0.15</td>
<td>0.03</td>
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<td>Father Figure</td>
<td>-0.07</td>
<td>0.28</td>
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<td></td>
<td>Mother Figure</td>
<td>-0.07</td>
<td>0.30</td>
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<td></td>
<td>POTS Frequency</td>
<td>-0.12</td>
<td>0.30</td>
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<td></td>
<td>POTS Effect</td>
<td>0.16</td>
<td>0.15</td>
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<tr>
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<td></td>
<td>PSS¹</td>
<td>0.26</td>
<td>0.00</td>
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<td>MIDUS1sum</td>
<td>0.08</td>
<td>0.40</td>
</tr>
</tbody>
</table>

* = p<0.001
† = significant predictor

Note: EES = Emotional Eating Scale; Father Figure = Paternal silhouette from the Questionnaire on Eating and Weight Patterns; Mother Figure = Maternal silhouette from the Questionnaire on Eating and Weight Patterns; POTS Frequency = Perception of Teasing Scale total Frequency score; POTS Effect = Perception of Teasing Scale total Effect score; PSS = Perceived Stress Scale; Block 1 = Self-described childhood weight, Father Figure, Mother Figure, POTS Frequency, POTS Effect, and PSS; Block 2 = all Block 1 plus MIDUS1sum
Table 6. Summary of Multiple Regression Analyses

**Discrimination Measure: MIDUS2**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Model R²</th>
<th>F</th>
<th>Block</th>
<th>Independent Variables</th>
<th>Standardized</th>
<th>p value</th>
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<td>15.63*</td>
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<td>Self-described childhood weight</td>
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<td>0.23</td>
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<td></td>
<td>Father Figure</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
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<td>Mother Figure</td>
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<td>POTS Frequency</td>
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<tr>
<td><strong>Binge Eating Frequency</strong></td>
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<td>5.55*</td>
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<td>Self-described childhood weight</td>
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<td>0.25</td>
</tr>
<tr>
<td>(last 3 months)</td>
<td></td>
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<td>POTS Effect</td>
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<td></td>
<td></td>
<td></td>
<td>PSS</td>
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<td>0.03</td>
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<td>MIDUS2</td>
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<td>Self-described childhood weight</td>
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<tr>
<td>(last 6 months)</td>
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<td></td>
<td>Father Figure</td>
<td>-0.05</td>
<td>0.46</td>
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<td>2</td>
<td>MIDUS2</td>
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<td>0.01</td>
</tr>
</tbody>
</table>

*= p<0.001
† = significant predictor

Note: EES = Emotional Eating Scale; Father Figure = Paternal silhouette from the Questionnaire on Eating and Weight Patterns; Mother Figure = Maternal silhouette from the Questionnaire on Eating and Weight Patterns, POTS Frequency = Perception of Teasing Scale total Frequency score; POTS Effect = Perception of Teasing Scale total Effect score; PSS = Perceived Stress Scale; Block 1 = Self-described childhood weight, Father Figure, Mother Figure, POTS Frequency, POTS Effect, and PSS; Block 2 = at Block 1 plus MIDUS2.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Model R²</th>
<th>F</th>
<th>Block</th>
<th>Independent Variables</th>
<th>Standardized Beta</th>
<th>p value</th>
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<td>Self-described childhood weight</td>
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<td>Father Figure</td>
<td>0.10</td>
<td>0.09</td>
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<td>Mother Figure</td>
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<td>0.21</td>
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</table>

* = p<0.001
† = significant predictor

Note: EES = Emotional Eating Scale; Father Figure = Paternal silhouette from the Questionnaire on Eating and Weight Patterns; Mother Figure = Maternal silhouette from the Questionnaire on Eating and Weight Patterns; POTS Frequency = Perception of Teasing Scale total Frequency score; POTS Effect = Perception of Teasing Scale total Effect score; PSS = Perceived Stress Scale; Block 1 = Self-described childhood weight, Father Figure, Mother Figure, POTS Frequency, POTS Effect, and PSS; Block 2 = all Block 1 plus MIDUSImpact
Table 8. Correlation Matrix for Structural Equation Models (Full Sample)

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<th>MIDUS2</th>
<th>WBIS</th>
<th>LGIS</th>
<th>EES</th>
<th>EDDS</th>
<th>Bulimia</th>
<th>DFT</th>
<th>BD</th>
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<tr>
<td>Bulimia</td>
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<td>0.51*</td>
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<tr>
<td>DFT</td>
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<td>1.00</td>
</tr>
</tbody>
</table>

* = Correlation is significant at the 0.01 level (2-tailed).
** = Correlation is significant at the 0.05 level (2-tailed).

Note: MIDUS2 = Day-to-Day Discrimination, WBIS = Weight Bias Internalization Scale, LGIS = Lesbian and Gay Identity Scale, EES = Emotional Eating Scale, EDDS = Frequency of Binge Eating over last 3 months, Bulimia = Bulimia subscale of EDI, DFT = Drive for Thinness subscale of EDI, BD = Body Dissatisfaction subscale of EDI.
Table 9. Correlation Matrix for Structural Equation Models (Overweight Participants)

<table>
<thead>
<tr>
<th></th>
<th>MIDUS2</th>
<th>WBIS</th>
<th>EES</th>
<th>EDDS</th>
<th>Bulimia</th>
<th>DFT</th>
<th>BD</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIDUS2</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WBIS</td>
<td>0.23*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES</td>
<td>0.37*</td>
<td>0.30*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDDS</td>
<td>0.32*</td>
<td>0.33*</td>
<td>0.37*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulimia</td>
<td>0.27*</td>
<td>0.54*</td>
<td>0.62*</td>
<td>0.45*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DFT</td>
<td>0.32*</td>
<td>0.59*</td>
<td>0.44*</td>
<td>0.36*</td>
<td>0.60*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>0.37*</td>
<td>0.50*</td>
<td>0.44*</td>
<td>0.33*</td>
<td>0.51*</td>
<td>0.52*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* = Correlation is significant at the 0.01 level (2-tailed).

Note: Model based on 142 cases; MIDUS2 = Day-to-Day Discrimination, WBIS = Weight Bias Internalization Scale, EES = Emotional Eating Scale, EDDS = Frequency of Binge Eating over last 3 months, Bulimia = Bulimia subscale of EDI, DFT = Drive for Thinness subscale of EDI, BD = Body Dissatisfaction subscale of EDI.
Figure 1 Caption

*Figure 1: SEM Model 1.0 representing the effect of discrimination (MIDUS2) and internalization of weight bias (WBIS) on the latent variable “eating disturbance.” Latent variable components include emotional eating (EES), frequency of binge eating, Bulimia (Bulimia), Drive for Thinness (DFT), and Body Dissatisfaction (BD) subscales of the Eating Disorders Inventory.*
Figure 1

Model 1.0

Eating Disturbance

WBIS

MIDUS2Mean

EES

Frequency of binge eating

DFT

Bulimia

BD
Figure Caption:

*Figure 2. SEM Model 1.0 representing the effect of discrimination (MIDUS2) and internalization of weight bias (WBIS) on the latent variable “eating disturbance.” All paths represent standardized coefficients. * indicates the path is significant at $p<0.05$. Latent variable components include emotional eating (EES), frequency of binge eating, Bulimia (Bulimia), Drive for Thinness (DFT), and Body Dissatisfaction (BD) subscales of the Eating Disorders Inventory.*
Figure 2

Model 1.0

Total Effect of MIDUS2 on Eating Disturbance = 0.45
Figure Caption:

*Figure 3. SEM Model 1.1 representing the effect of discrimination (MIDUS2) and internalization of weight bias (WBIS) on the latent variable “eating disturbance.”* All paths represent standardized coefficients. * indicates the path is significant at p<0.05. Latent variable components include emotional eating (EES), frequency of binge eating, Bulimia (Bulimia), Drive for Thinness (DFT), and Body Dissatisfaction (BD) subscales of the Eating Disorders Inventory.
Figure 3

Model 1.1

MIDUS2Mean → Eating Disturbance

WBIS → Eating Disturbance

EES → Frequency of binge eating

DFT → BD

Bulimia → BD

Total Effect of MIDUS2 on Eating Disturbance = 0.51
Appendix A

Demographics Questionnaire

Please respond to the following questions:

What is your age?

What is your gender?

What is your height (in inches, where 5 feet equals 60 inches)?

What is your weight (in pounds)?

What is your ethnicity?

What is your sexual orientation?
   1 = exclusively heterosexual
   2 = predominantly heterosexual
   3 = mainly heterosexual, slightly homosexual
   4 = bisexual
   5 = mainly homosexual, slightly heterosexual
   6 = predominantly homosexual
   7 = exclusively homosexual

How would you describe your weight?
   1 = extremely underweight
   2 = underweight
   3 = slightly underweight
   4 = normal weight
   5 = slightly overweight
   6 = overweight
   7 = extremely overweight

How would you describe your weight during childhood?
   1 = extremely underweight
   2 = underweight
   3 = slightly underweight
   4 = normal weight
   5 = slightly overweight
   6 = overweight
   7 = extremely overweight
Appendix B

National Survey of Midlife Development in the United States (Brim et al., 1996)

How many times in your life have you been discriminated against in each of the following ways because of such things as your race, ethnicity, gender, age, religion, physical appearance, sexual orientation, or other characteristics? (If the experience happened to you, but for some reason other than discrimination, enter "0".)

a. You were discouraged by a teacher or advisor from seeking higher education?
b. You were denied a scholarship?
c. You were not hired for a job?
d. You were not given a job promotion?
e. You were fired?
f. You were prevented from renting or buying a home in the neighborhood you wanted?
g. You were prevented from remaining in a neighborhood because neighbors made life so uncomfortable?
h. You were hassled by the police?
i. You were denied a bank loan?
j. You were denied or provided inferior medical care?
k. You were denied or provided inferior service by a plumber, car mechanic, or other service provider?

How often on a day-to-day basis do you experience each of the following types of discrimination?

<table>
<thead>
<tr>
<th>OFTEN</th>
<th>SOMETIMES</th>
<th>RARELY</th>
<th>NEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. You are treated with less courtesy than other people.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. You are treated with less respect than other people.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. You receive poorer service than other people at restaurants or stores.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. People act as if they think you are not smart.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. People act as if they are afraid of you.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. People act as if they think you are dishonest.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. People act as if they think you are not as good as they are.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. You are called names or insulted.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. You are threatened or harassed.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What was the main reason for the discrimination you experienced? (circle all that apply)

1. Your age
   - If yes, please rate the degree to which it was a main reason
     - Only slightly
     - Completely

2. Your gender
   - If yes, please rate the degree to which it was a main reason
     - 1 2 3 4 5
3. Your race
   If yes, please rate the degree to which it was a main reason
   1  2  3  4  5
   Only slightly  Completely

4. Your ethnicity or nationality
   If yes, please rate the degree to which it was a main reason
   1  2  3  4  5
   Only slightly  Completely

5. Your religion
   If yes, please rate the degree to which it was a main reason
   1  2  3  4  5
   Only slightly  Completely

6. Your height
   If yes, please rate the degree to which it was a main reason
   1  2  3  4  5
   Only slightly  Completely

7. Your weight
   If yes, please rate the degree to which it was a main reason
   1  2  3  4  5
   Only slightly  Completely

8. Some other aspect of your appearance
   If yes, please rate the degree to which it was a main reason
   1  2  3  4  5
   Only slightly  Completely

9. A physical disability
   If yes, please rate the degree to which it was a main reason
   1  2  3  4  5
   Only slightly  Completely

10. Your sexual orientation
    If yes, please rate the degree to which it was a main reason
        1  2  3  4  5
        Only slightly  Completely

11. Some other reason for discrimination
    Please specify:
    If yes, please rate the degree to which it was a main reason
       1  2  3  4  5
       Only slightly  Completely

Overall, how much has discrimination interfered with you having a full and productive life?
1. A lot
2. Some
3. A little
4. Not at all
Overall, how much harder has your life been because of discrimination?
1. A lot
2. Some
3. A little
4. Not at all
Appendix C

Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983)

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don’t try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

0. never
1. almost never
2. sometimes
3. fairly often
4. very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. In the last month, how often have you dealt successfully with irritating life hassles?
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6. In the last month, how often have you felt confident about your ability to handle your personal problems?
7. In the last month, how often have you felt that things were going your way?
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9. In the last month, how often have you been able to control irritations in your life?
10. In the last month, how often have you felt that you were on top of things?
11. In the last month, how often have you been angered because of things that happened that were outside of your control?
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
13. In the last month, how often have you been able to control the way you spend your time?
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
Appendix D

Questionnaire on Eating and Weight Patterns (Spitzer, Yanovski, & Marcus, 1993)

Please take a look at these silhouettes. Put a circle around the silhouettes which most resemble the body build of your natural father and mother at their heaviest. If you have no knowledge of your biological father and/or mother, don’t circle anything for that parent.

YOUR FATHER

YOUR MOTHER
Appendix E

The Perception of Teasing Scale (Thompson et al., 1995)

The following questions should be answered with respect to the period of time when you were growing up (ages 5-16).

First, rate how often you think you have been the object of such behavior using the scale provided, never to very often.

Second, unless you responded never to a particular question, rate how upset you were by the teasing (not upset to very upset).

<table>
<thead>
<tr>
<th></th>
<th>People made fun of you because you were heavy.</th>
<th>Never</th>
<th>Sometimes</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>People made jokes about you being too heavy.</td>
<td>Not Upset</td>
<td>Somewhat Upset</td>
<td>Very Upset</td>
</tr>
<tr>
<td>2</td>
<td>People laughed at you for trying out for sports because you were heavy.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Very Often</td>
</tr>
<tr>
<td>3</td>
<td>People called you names like “fatso.”</td>
<td>Not Upset</td>
<td>Somewhat Upset</td>
<td>Very Upset</td>
</tr>
<tr>
<td>4</td>
<td>People made fun of you by repeating something that you said because they thought it was dumb.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Very Often</td>
</tr>
<tr>
<td>5</td>
<td>People pointed at you because you were overweight.</td>
<td>Not Upset</td>
<td>Somewhat Upset</td>
<td>Very Upset</td>
</tr>
<tr>
<td>6</td>
<td>People snickered about your heaviness when you walked into a room alone.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Very Often</td>
</tr>
<tr>
<td>7</td>
<td>People made fun of you by repeating something that you said because they thought it was dumb.</td>
<td>Not Upset</td>
<td>Somewhat Upset</td>
<td>Very Upset</td>
</tr>
<tr>
<td>8</td>
<td>People made fun of you because you were afraid to do something.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Very Often</td>
</tr>
<tr>
<td>9</td>
<td>People said you acted dumb.</td>
<td>Not Upset</td>
<td>Somewhat Upset</td>
<td>Very Upset</td>
</tr>
<tr>
<td>10</td>
<td>People laughed at you because you didn't understand something.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Very Often</td>
</tr>
<tr>
<td>11</td>
<td>People teased you because you didn't get a joke.</td>
<td>Not Upset</td>
<td>Somewhat Upset</td>
<td>Very Upset</td>
</tr>
</tbody>
</table>
Appendix F

Eating Disorder Diagnostic Scale (Stice, Telch, & Rizvi, 2004)

Please carefully complete all questions.

Over the past 3 months...

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you felt fat?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Have you had a definite fear that you might gain weight or become fat?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Has your weight influenced how you think about (judge) yourself as a person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Has your shape influenced how you think about (judge) yourself as a person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

5. During the past 6 months have there been times when you felt you have eaten what other people would regard as an unusually large amount of food (e.g., a quart of ice cream) given the circumstances? YES NO

6. During the times when you ate an unusually large amount of food, did you experience a loss of control (feel you couldn’t stop eating or control what or how much you were eating)? YES NO

7. How many days per week on average over the past 6 months have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7

8. How many times per week on average over the past 3 months have you eaten an unusually large amount of food and experienced a loss of control?
   0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

During these episodes of overeating and loss of control did you...

9. Eat much more rapidly than normal? YES NO

10. Eat until you felt uncomfortably full? YES NO

11. Eat large amounts of food when you didn’t feel physically hungry? YES NO

12. Eat alone because you were embarrassed by how much you were eating? YES NO

13. Feel disgusted with yourself, depressed, or very guilty after overeating? YES NO

14. Feel very upset about your uncontrollable overeating or resulting weight gain? YES NO

15. How many times per week on average over the past 3 months have you made yourself vomit to prevent weight gain or counteract the effects of eating?
   0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
16. How many times per week on average over the past 3 months have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating?
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

17. How many times per week on average over the past 3 months have you fasted (skipped at least 2 meals in a row) to prevent weight gain or counteract the effects of eating?
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

18. How many times per week on average over the past 3 months have you engaged in excessive exercise specifically to counteract the effects of overeating episodes?
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14


20. How tall are you? Please specify in inches (5 ft. = 60 in.) ____________ in.

21. Over the past 3 months, how many menstrual periods have you missed?
0 1 2 3 n/a

22. Have you been taking birth control pills during the past 3 months? .............. YES NO
Appendix G

Drive for Thinness, Bulimia and Body Dissatisfaction subscales of the EDI (Garner, Olmstead & Polivy, 1983)

Drive for Thinness

1. I eat sweets and carbohydrates without feeling nervous.
2. I think about dieting.
3. I feel extremely guilty after overeating.
4. I am terrified of gaining weight.
5. I exaggerate or magnify the importance of weight.
6. I am preoccupied with the desire to be thinner.
7. If I gain a pound, I worry that I will keep gaining.

Bulimia

1. I eat when I am upset.
2. I stuff myself with food.
3. I have gone on eating binges where I have felt that I could not stop.
4. I think about bingeing (overeating).
5. I eat moderately in front of others and stuff myself when they’re gone.
6. I have the thought of trying to vomit in order to lose weight.
7. I eat or drink in secrecy.

Body Dissatisfaction

1. I think that my stomach is too big.
2. I think that my thighs are too large.
3. I think that my stomach is just the right size.
4. I feel satisfied with the shape of my body.
5. I like the shape of my buttocks.
6. I think my hips are too big.
7. I think that my thighs are just the right size.
8. I think my buttocks are too large.
9. I think that my hips are just the right size.
Appendix H

*The Emotional Eating Scale (Arnow, Kenardy & Agras, 1995)*

We all respond to different emotions differently. Some types of feelings lead people to experience an urge to eat. Please indicate the extent to which the following feelings lead you to feel an urge to eat by ticking the appropriate box.

<table>
<thead>
<tr>
<th>Feeling</th>
<th>No desire to eat</th>
<th>A small desire to eat</th>
<th>A moderate desire to eat</th>
<th>A strong urge to eat</th>
<th>An overwhelming urge to eat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resentful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discouraged</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaky</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worn out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inadequate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excited</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rebellious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jittery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uneasy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irritated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jealous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worried</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frustrated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lonely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On edge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confused</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guilty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bored</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helpless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upset</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Appendix I

The Lesbian and Gay Identity Scale (Mohr & Fassinger, 2000)

Need for Acceptance subscale

1. I will never be able to accept my sexual orientation until all the people in my life have accepted me.
2. I often worry whether others judge me for being (lesbian/gay).
3. I can’t feel comfortable knowing that others judge me negatively for being (lesbian/gay).
4. Being a (lesbian/gay men) makes me feel insecure about straight people.
5. I think a lot about how my (lesbianism/gayness) affects the way people see me.

Internalized Homonegativity subscale

1. I would rather be straight if I could.
2. I am glad to be a (lesbian/gay man).
3. Homosexual lifestyles are not as fulfilling as heterosexual lifestyles.
4. I’m proud to be a part of the LGB community.
5. I wish I were heterosexual.
Appendix J

The Weight Bias Internalization Scale (Durso & Latner, 2007)

Please rate your level of agreement with the following statements using this scale:

1 = Strongly disagree
2 = Disagree
3 = Slightly disagree
4 = Neutral
5 = Slightly agree
6 = Agree
7 = Strongly agree

1. I am less attractive than most other people because of my weight.
2. I feel anxious about being overweight because of what people might think of me.
3. I wish I could drastically change my weight.
4. If only I had more willpower I wouldn’t be the weight that I am.
5. Whenever I think a lot about being overweight, I feel depressed.
6. My weight is a major way that I judge my value as a person.
7. I don’t feel that I deserve to have a really fulfilling social life, as long as I’m overweight.
8. I am OK being the weight that I am.
9. Because I’m overweight, I don’t feel like my true self.
10. If other people don’t treat me with respect, I should put up with it because of my weight.