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The internalization of weight bias is associated with severe eating pathology among lean individuals

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ABSTRACT

Objective: The internalization of weight bias is associated with clinically significant eating pathology among overweight adults. However, these relationships have not yet been assessed in lean individuals, who may perceive themselves to be overweight and subsequently internalize weight bias. The aim of the present study, therefore, was to determine whether lean individuals internalize weight bias and if the internalization of weight bias among lean respondents is associated with eating pathology.
Method: Participants were 197 lean (mean BMI: 22.28 ± 1.89, range 15.80–24.98) adults who completed the Weight Bias Internalization Scale (WBIS) and measures of disordered eating behaviors and attitudes via an anonymous online survey.
Results: Based on convergence of responses from the EDE-Q and QEWP-R, and using DSM-5 behavioral criteria, 10% and 15% of participants were classified into a binge eating and binge/purge group, respectively. WBIS scores were significantly higher among those with binge and/or purge behaviors compared to those without eating pathology. Bivariate correlations revealed positive associations between WBIS score and BMI, depression, and all EDE-Q subscales (restraint, eating concern, shape concern, weight concern). Logistic regressions indicated that internalized weight bias was significantly associated with binge/purge behaviors (OR = 4.67, 95% CI: 2.38–9.17, $p < .001$) and binge eating (OR = 2.29, 95% CI: 1.26–4.19, $p < .01$).
Discussion: These novel findings suggest that lean individuals may internalize weight bias. Importantly, the internalization of weight bias among lean individuals is associated with clinically significant eating pathology.

1. Introduction

Existing research demonstrates that overweight individuals are faced with chronic and repeated weight stigma across multiple domains (Puhl & Heuer, 2009), including health care (Sabin, Marini, & Nosek, 2012), the legal system (Schvey, Puhl, Levandoski, & Brownell, 2013), employment (Caliendo & Lee, 2013), and interpersonal and romantic relationships (Puhl & Brownell, 2006). Additionally, overweight and obese individuals report anti-fat attitudes that are similar to those of their lean peers (Puhl, Moss-Racusin, & Schwartz, 2007; Wang, Brownell, & Wadden, 2004). Therefore, overweight individuals face weight-based discrimination by both "out-group" as well as "in-group" members.

Potentially as a result of the pervasiveness and social acceptability of weight stigma, overweight individuals frequently internalize negative weight-based stereotypes and anti-fat attitudes (Puhl et al., 2007; Wang et al., 2004). The internalization of weight bias is a distinct construct from anti-fat attitudes; whereas anti-fat attitudes reflect weight-based attributions made about others, weight bias internalization involves attributions made about oneself. Prior research indicates that weight bias internalization may be prevalent among overweight and obese individuals (Crandall, 1994; Durso & Latner, 2008; Puhl et al., 2007; Wang et al., 2004), and associated with numerous harmful outcomes. For instance, research has demonstrated that the internalization of weight bias among overweight individuals is associated with low self-esteem, depression, body dissatisfaction, and somatoform symptoms (Durso & Latner, 2008; Durso et al., 2012; Hilbert et al., 2014; Puhl et al., 2007; Wang et al., 2004). The internalization of weight bias is also associated with clinically significant binge eating and purging among overweight individuals (Schvey, Roberto, & White, 2013), as well as the overvaluation of shape and weight (Durso et al., 2012). Of particular importance is the fact that internalization of weight bias may, in fact, stymie weight loss efforts; among overweight individuals in a weight loss program, the internalization of weight bias was

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associated with poorer self-monitoring, decreased energy expenditure, greater caloric intake, greater rates of attrition, and ultimately less weight loss (Carels et al., 2009). Recent research also indicates that the internalization of weight bias may contribute to poor physical health, above and beyond the contribution of BMI (Latner, Durso, & Mond, 2013; Pearl, White, & Grilo, 2013). Importantly, the internalization of weight bias appears to be persistent; it has been observed among individuals who have successfully lost weight, indicating that formerly obese, average weight individuals may internalize negative weight-based stereotypes (Levy & Pilver, 2012).

While there is mounting evidence that the internalization of weight bias is both common and harmful among overweight individuals, to our knowledge, no research to date has examined the relationship between internalization of weight bias and eating pathology among lean individuals. The internalization of weight bias among lean individuals is important to assess since prior research indicates that a significant proportion of individuals with a healthy BMI perceive themselves as overweight (Paeratakul, White, Williamson, Ryan, & Bray, 2002). One recent study adapted the Weight Bias Internalization Scale (WBIS) (Durso & Latner, 2008), used to assess internalized bias in overweight respondents, to measure internalized weight attitudes across weight categories (Pearl & Puhl, 2014). Results indicated that the internalization of weight bias was a distinct construct from anti-fat attitudes among respondents of all weight strata, including lean individuals. The authors also observed that internalization of weight bias was associated with body dissatisfaction, binge eating, poor self-esteem, anxiety, and depression, above and beyond the effects of body mass index (BMI) and anti-fat attitudes. Thus, there is emerging research indicating that even individuals of a healthy body weight may internalize some degree of weight bias and subsequently endorse poor body image and eating pathology. The present study expands on the extant research and examines 1) the presence of weight bias internalization among a community sample of lean respondents, and 2) the relationship between weight bias internalization and clinically significant binge eating and purging among lean respondents.

2. Materials and methods

2.1. Participants

Participants were 197 lean (mean BMI: 22.28 ± 1.89, range 15.80–24.98) adult community volunteers who were selected from a sample of 1720 volunteers. Only those participants who were classified as "normal weight" or "underweight" (BMI < 25 kg/m^2) according to the National Institutes of Health's weight classification guidelines and who had completed the WBIS in full were selected for the present study. The study was advertised on Craigslist classified advertisements in different cities throughout the United States (for instance, New York, Boston, Baton Rouge, Tulsa, Austin, Oklahoma City, Seattle, and San Francisco). The advertisement requested volunteers to respond to a questionnaire on "dieting," "eating habits," "health behaviors," or "weight control."

2.2. Procedures

Participants completed all self-report questionnaires anonymously through an online data gathering website (SurveyMonkey; http://www.surveymonkey.com). SurveyMonkey is a research-based web server with secure 128-bit data encryption. Participants were required to confirm willingness to participate and to provide informed consent prior to accessing the questionnaires. Participants were offered a 1 in 20 chance to win a $50 gift certificate in exchange for participation. No personal identifying information was collected. This study received approval of the institutional review board.

2.3. Assessments and measures

Weight Bias Internalization Scale (WBIS) (Durso & Latner, 2008). Since data collection occurred prior to the development of the modified WBIS (Pearl & Puhl, 2014), the original 19-item self-report scale was used in the present study. This scale measures the degree to which a respondent believes that negative stereotypes about overweight and obese persons are applicable to him or herself. Questions include: *I hate myself for being overweight*; *Because of my weight, I don't understand how anyone attractive would want to date me*. Responses are measured on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree." The items are averaged to produce an overall score. Total scores range from 1 to 7; higher scores indicate a greater degree of weight bias internalization. Excellent reliability and validity of the scale was demonstrated in an Internet community sample of overweight and obese participants (Durso & Latner, 2008), as well as in the present sample ($\alpha = .843$).

Eating Disorder Examination Questionnaire (EDE-Q) (Fairburn & Beglin, 1994), the self-report version of the EDE (Fairburn & Cooper, 1993), assesses eating disorders and their features, including objective binge episodes (eating unusually large amounts of food while experiencing a subjective sense of loss of control) and purging behaviors (self-induced vomiting, laxative misuse, and diuretic misuse). The EDE-Q also generates four subscales: restraint, eating concern, shape concern, and weight concern, as well as a global composite score. The EDE-Q has received psychometric support, including adequate test–retest reliability and good convergence with the EDE in studies with diverse disordered-eating groups (Grilo, Masheb, & Wilson, 2001; Mond, Hay, Rodgers, Owen, & Beumont, 2004; Reas, Grilo, & Masheb, 2006). In the present study, the subscales of the EDE-Q showed adequate internal consistency (restraint $\alpha = .84$; eating concern $\alpha = .88$; shape concern $\alpha = .93$; weight concern $\alpha = .86$).

Questionnaire on Eating and Weight Patterns-Revised (QEWP-R) (Spitzer, Yanovski, & Marcus, 1993) assesses both past and present eating- and weight-related variables including symptoms of binge eating disorder. The QEWP-R has received psychometric support for aspects of its validity (Nangle, Johnson, Carr-Nangle, & Engler, 1994). For the purposes of the present study, all BED criteria (American Psychiatric Association, 2013), including behavioral indicators (e.g., eating much more rapidly than usual, eating alone because of embarrassment, feeling upset due to loss of control over eating) were assessed. Participants were queried regarding frequency of binge episodes over the past 6 months, age of onset of binge eating, and dieting attempts. Reliability in the current sample was good ($\alpha = .71$).

Beck Depression Inventory (BDI-II) (Beck, Steer, & Carbin, 1988) is a 21-item scale that assesses current symptoms of depression. It is widely used in diverse populations, and has demonstrated excellent reliability and validity (Reynolds & Gould, 1981). Scores range from 0 to 63; higher scores indicate greater levels of depression. The BDI showed excellent internal consistency in the present sample ($\alpha = .93$).

Participants also provided demographic information, including age, sex, race, self-reported height and weight, perceived weight status (i.e., overweight, obese, normal weight, underweight), and history of overweight.

2.4. Classification of disordered eating groups

Since questionnaire methods may yield greater rates of disordered eating behaviors (Greeno, Marcus, & Wing, 1995), patients were classified into eating behavior groups based on the convergence of the core behavioral features of eating disorders reported on both the EDE-Q and QEWP-R. Thus, participants must have met the core behavioral criteria on both questionnaires to be assigned a disordered eating classification. Using a frequency threshold of at least once per week in accordance with DSM-5 criteria, and a duration threshold of 28 days for binge/purge behaviors, individuals were classified into one of three groups: binge eating and purging (B/P), binge eating alone (BE), and