Eating Behaviors 22 (2016) 141–144

Contents lists available at ScienceDirect

Eating Behaviors

Internalized weight bias mediates the relationship between depressive symptoms and disordered eating behavior among women who think they are overweight

Rachel M. Sienko *, Karen K. Saules, Meagan M. Carr

Eastern Michigan University, Department of Psychology, United States

ARTICLE INFO

Article history:
Received 28 July 2015
Received in revised form 12 April 2016
Accepted 1 June 2016
Available online 3 June 2016

Keywords:
Internalized weight bias
Depressive symptoms
Shape concern
Weight concern
Restraint
Eating concern

ABSTRACT

Objective: This study tested the potential mediating role of Internalized Weight Bias (IWB) in the relationship between depressive symptoms (DEP-SX) and disordered eating behavior. In particular, we hypothesized that IWB may be an intervening variable in the well documented association between depression and disordered eating. Method: College women (N = 172) who were taking undergraduate psychology courses and who endorsed thinking they were overweight completed the Patient Health Questionnaire depression screener (PHQ-9), the Weight Bias Internalization Scale (WBIS), and the Eating Disorder Examination Questionnaire (EDE-Q). Bootstrapping mediation analyses were conducted to explore the relationships between these variables.
Results: IWB was significantly correlated with eating disorder symptoms and DEP-SX, but not Body Mass Index. Mediation analyses supported a model in which IWB mediated the relationship between DEP-SX and disordered eating behavior.
Discussion: Results indicate that individuals with elevated DEP-SX may be likely to internalize weight bias, which may in turn lead to maladaptive approaches to eating and weight control, regardless of one's actual weight status.

1. Introduction

Weight stigma is the "social devaluation and denigration of people perceived to carry excess weight" (Tomiyama, 2014, pg. 8). It is prevalent in a variety of settings and life domains (Puhl & Heuer, 2009), with unflattering portrayals and messages about overweight and obese individuals commonly present in the media, such as television shows, internet videos, and online news images (Greenberg, Eastin, Hofshire, Lachlan, & Brownell, 2003; Heuer, McClure, & Puhl, 2011; Yoo & Kim, 2012). For example, in online news videos about obesity, overweight and obese individuals are commonly shown as being sedentary, wearing ill-fitting clothing, and eating unhealthy foods (Puhl, Peterson, DePierre, & Luedicke, 2013). Additionally, there are frequent images of "headless" individuals and unflattering images focusing on specific body parts or excess weight. Weight bias is associated with many negative consequences and coping strategies (Puhl & Brownell, 2006; Puhl & Heuer, 2009). For example, in a sample of weight loss surgery patients, recent experiences of weight stigma were not only common, but such experiences were associated with psychological distress and binge eating behavior (Friedman, Ashmore, & Applegate, 2008). Other research also supports a link between weight stigma and binge eating (e.g., Almeida, Savoy, & Boxer, 2011), with some evidence indicating that psychological distress may mediate the relationship between experiences of weight stigma and binge eating (Ashmore, Friedman, Reichmann, & Musante, 2008).

These pervasive messages about negative aspects of overweight status can also be directed towards the self, which is referred to as internalized weight bias (IWB; Durso & Latner, 2008). IWB is associated with poor physical and mental health among those who experience it, including higher levels of unhealthy and/or pathological eating behaviors (Durso & Latner, 2008). For example, women who were overweight or obese and reported believing weight-related stereotypes were more likely to report refusal to diet in response to stigma than those who did not believe such stereotypes or thought that they were "sometimes true" (Puhl, Moss-Racusin, & Schwartz, 2007). Additionally, those who believed such stereotypes reported more frequent binge eating than those who did not believe them. Among a sample of individuals with obesity who were diagnosed with Binge Eating Disorder (BED), IWB accounted for significant variance in eating disorder symptomology, above and beyond fat phobia, depression, and self-esteem (Durso et al., 2012). Finally, recent experimental evidence demonstrates that overweight women exposed to stigmatizing news media or images

* Corresponding author at: Eastern Michigan University Psychology Clinic, 611 W. Cross St., Ypsilanti, MI 48197, United States.
E-mail address: rsienko@emich.edu (R.M. Sienko).

http://dx.doi.org/10.1016/j.eatbeh.2016.06.002
1471-0153/

consumed significantly more kilocalories, as compared with the unexposed groups (Major, Hunger, Bunyan, & Miller, 2014; Schvey, Puhl, & Brownell, 2011).

IWB is also associated with depression and other negative health outcomes. Depression has been shown to mediate the relationship between IWB and self-reported health in overweight patients with BED (Pearl, White, & Grilo, 2014). IWB has also significantly predicted mental and physical health impairment in overweight and obese individuals, even when controlling for Body Mass Index (BMI), age, and medical comorbidities (Latner, Durso, & Mond, 2013). Additionally, in a sample of overweight and obese individuals who identified as being overweight, core self-evaluation mediated the relationships between IWB and various health outcomes, including depression, anxiety, health status, and health care utilization (Hilbert, Braehler, Haeuser, & Zenger, 2014). In a sample of women, IWB (but not discrimination from others) was found to moderate the relationship between BMI and physical health-related quality of life (Latner, Barile, Durso, & O'Brien, 2014). In a sample of bariatric surgery patients, individuals with higher levels of IWB before surgery had more pre-operative depressive symptoms and less weight loss one year following surgery (Lent et al., 2014). IWB has also been found to partially mediate the relationship between experiences of weight stigma and exercise-related behavior (Pearl, Puhl, & Dovidio, 2014).

While associations between IWB and both disordered eating and depression have been established, information regarding the interrelationships of all three variables is more limited. The purpose of this study was to explore the relationship between IWB, depressive symptoms (DEP-SX), and disordered eating behavior. Though some previous work has used IWB as a predictor in mediation models of the relationships between depression and health outcomes (e.g., Pearl, White, & Grilo, 2014), we propose that, theoretically DEP-SX may lay the groundwork for internalization of weight bias, as has been suggested by the cognitive models of depression that address negative self-schemas in a broader sense (e.g., Beck, 2002). For example, individuals with depression may have thoughts of low self-regard, self-criticism, and self-blame (Beck, 2002). In particular, it was hypothesized that depressive symptoms may increase an individual's risk for acquiring and/or accommodating many of the negative stereotypes to which they are exposed. In other words, we hypothesized that having a more inferior sense of self would make it more likely that negative messages about oneself would be more easily internalized. In addition, building on the work of previous authors, it was hypothesized that these internalized weight biases would also be associated with increased disordered eating symptoms. Finally, this work adds to the existing literature by including individuals who thought they were overweight, as the belief that one is overweight (regardless of actual weight status) has been linked with negative consequences (e.g., Muennig, Jia, Lee, & Lubetkin, 2008; Saules et al., 2009).

2. Materials and methods

A total of 574 participants (68.8% female) volunteered to participate in a larger survey that was approved by the Eastern Michigan University Institutional Review Board. All participants indicated informed consent by clicking "next" after the informed consent page of the online survey. Participants were recruited from undergraduate psychology classes at a mid-sized university. They completed a web-based survey involving disordered eating behavior, depressive symptoms, internalized weight bias, and other variables. For the purposes of this study, analyses were limited to variables of interest among college women who endorsed believing that they were overweight and who provided valid data (scores on IWB, depression screener, and disordered eating measures). As the Weight Bias Internalization Scale (WBIS; Durso & Latner, 2008) was developed for use in overweight or obese samples, participants in the present study who selected "yes" to the prompt "I think I am overweight" were directed to the WBIS. In addition, data were considered valid based on correctly completing a validity check where survey respondents were simply asked to select the number "2" among the numbers 1–4. The resulting study sample (N = 172) was predominately Caucasian (70.3%) and single (79.7%), with a mean age of 21.11 (ranging from ages 18 to 56; 92.4% age 18–25) and a mean BMI of 29.71. Most participants were correct in their belief that they were overweight, based on their self-reported actual height and weight (0.6% underweight, 19.3% normal weight, 39.8% overweight, 40.3% obese), but all who endorsed the belief that they were overweight are included in this report, reasoning that it would be the belief of being overweight rather than actual weight status that would lead one to perceive and internalize weight bias. This is based on research showing that believing one is overweight (regardless of weight status) is linked with negative consequences (e.g., Muennig et al., 2008; Saules et al., 2009).

Measures included the Weight Bias Internalization Scale (WBIS) the Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001), and the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994). The WBIS is an 11-item measure of IWB with demonstrated internal consistency and validity (Durso & Latner, 2008). The internal consistency for the WBIS in our sample was $\alpha = 0.85$. The PHQ-9 is a 9-item section of the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PRIME-MD; Spitzer et al., 1994), that screens for depression and symptom severity (Kroenke et al., 2001). The PHQ-9 has demonstrated strong validity and reliability (Kroenke et al., 2001). In this study, it was used as a measure of DEP-SX severity. The EDE-Q is a self-report version of the Eating Disorder Examination (Cooper & Fairburn, 1987; Fairburn & Cooper, 1993) that assesses disordered eating and related concerns. This includes frequency of disordered eating behaviors, as well as providing a total score and four subscale scores: shape concern, weight concern, eating concern, and restraint. The EDE-Q has demonstrated validity and reliability (Fairburn & Beglin, 1994; Mond, Hay, Rodgers, Owen, & Beumont, 2004a; Mond, Hay, Rodgers, Owen, & Beumont, 2004b).

2.1. Analytic plan

Missing data for the EDE-Q was handled using the guidelines provided by Fairburn, Cooper, and O'Connor (2008). A correlation matrix that included WBIS, PHQ-9, EDE-Q total and subscales, and BMI was computed. Next, bootstrapping mediation analyses were conducted using the Preacher and Hayes (2008) method. This method was used to explore the hypothesis that IWB would mediate the relationship between DEP-SX and disordered eating behaviors. The SPSS macro provided by Preacher and Hayes (2008) used 1000 bootstrap samples at a 95% confidence interval to test direct and indirect relationships.

3. Results

All participants were college women who were taking psychology classes and endorsed thinking that they were overweight. The mean scores and standard deviations for the measures included in the analyses were: WBIS (44.60 ± 16.66), PHQ-9 (8.41 ± 6.14), and EDE-Q total (2.43 ± 1.31) EDE-Q Shape Concern (3.35 ± 1.67), EDE-Q Weight Concern (3.19 ± 1.54), EDE-Q Eating Concern (1.35 ± 1.29), and EDE-Q Restraint (1.80 ± 1.59). The mean PHQ-9 score fell within the mild range of depressive symptoms. As expected, IWB was significantly correlated with DEP-SX and EDE-Q scores. See Table 1 for the correlation matrix. Compared to norms from a community-based sample of young women (Fairburn & Beglin, 1994), our participants had higher mean scores on all EDE-Q subscales, as well as the total score. (Note: The Fairburn and Beglin (1994) normative means ± *SD* are 1.55 ± 1.21 for Total; 2.15 ± 1.60 for Shape Concern; 1.59 ± 1.37 for Weight Concern, 0.62 ± 0.86 for Eating Concern, and 1.25 ± 1.32 for Restraint).