American Psychological Association

American Psychologist

© 2020 American Psychological Association
ISSN: 0003-066X

2020, Vol. 75, No. 2, 274–289
http://dx.doi.org/10.1037/amp0000538

Weight Stigma as a Psychosocial Contributor to Obesity

Rebecca M. Puhl
University of Connecticut

Mary S. Himmelstein
Kent State University

Rebecca L. Pearl
Perelman School of Medicine at the University of Pennsylvania

Weight stigma is a key aspect of the lived experience of individuals with obesity, and adversely affects health. This article provides an overview of recent evidence examining links between experiences of weight stigma and weight-related behaviors and health (e.g., maladaptive eating, physical activity, stress, obesity, weight loss), including health consequences for individuals with heightened vulnerability to weight stigma (e.g., youth and people seeking bariatric surgery) and implications for clinicians working with individuals who have obesity. This literature points to weight stigma as a psychosocial contributor to obesogenic behaviors, yet the role of weight stigma in weight loss among treatment-seeking individuals has received little attention. Research priorities are identified, including the need for future studies to (a) determine the potentially predictive value of specific characteristics of weight-stigmatizing experiences for weight loss (such as the time period, interpersonal sources, and coping responses for stigma experiences), (b) identify mechanisms through which weight stigma may undermine or facilitate weight-related treatment outcomes, and (c) test strategies that can be implemented in weight management programs to reduce the negative impact of weight stigma on health behaviors. Broadly, more attention should be directed to weight stigma in the obesity field as a relevant psychosocial factor in obesity-focused prevention and treatment.

Public Significance Statement
This article reviews evidence of the ways in which weight stigma may contribute to obesity in youth and adults, such as maladaptive eating behaviors, stress, and weight gain. Additionally, it highlights the importance of addressing weight stigma in clinical practice, through education and efforts to promote a supportive culture of patient care for individuals who are vulnerable to weight stigma.

Keywords: stigma, obesity, weight, weight loss

Adults with obesity compose almost 40% of the adult population in the United States (Hales, Fryar, Carroll, Freedman, & Ogden, 2018). From 1980 to 2015, the prevalence of obesity doubled in more than 70 countries (Global Burden of Disease 2015 Obesity Collaborators, 2017) and the increased prevalence of elevated body mass index (BMI) around the world translate into global projections that over 1.1 billion people will have obesity by 2030 (Kelly, Yang, Chen, Reynolds, & He, 2008). The disease burden associated with obesity has been well documented, with high BMI identified as a risk factor for chronic diseases such as cardiovascular disease, Type 2 diabetes, mul-

Editor's note. This article is part of a special issue, "Obesity: Psychological and Behavioral Aspects of a Modern Epidemic," published in the February–March, 2020 issue of *American Psychologist*. David B. Sarwer and Carlos M. Grilo served as editors of the special issue, with Anne E. Kazak as advisory editor.

Authors' note. Rebecca M. Puhl, Department of Human Development and Family Sciences and Rudd Center for Food Policy and Obesity, University of Connecticut; Mary S. Himmelstein, Department of Psychological Sciences, Kent State University; Rebecca L. Pearl, Center for Weight and Eating Disorders, Department of Psychiatry, Perelman School of Medicine at the University of Pennsylvania.

Rebecca L. Pearl has served as a consultant for Novo Nordisk and WW (formerly Weight Watchers). Rebecca L. Pearl and Rebecca M. Puhl currently receive grant support, outside of the current study, from WW.

Correspondence concerning this article should be addressed to Rebecca M. Puhl, Rudd Center for Food Policy and Obesity, University of Connecticut, 1 Constitution Plaza, Suite 600, Hartford, CT 06103. E-mail: rebecca.puhl@uconn.edu

Rebecca M. Puhl

tiple types of cancer, morbidity/mortality, and reduced quality of life (Global Burden of Disease 2015 Obesity Collaborators, 2017; Taylor, Forhan, Vigod, McIntyre, & Morrison, 2013). The epidemiological evidence linking obesity to health impairments has garnered global attention and prompted numerous efforts by scientists, medical professionals, leaders in public health, policymakers, and federal governments to identify strategies to effectively prevent and treat obesity (Swinburn et al., 2019).

Lifestyle modification is the first line of treatment for obesity; changes in dietary and physical activity behaviors can produce weight losses of 5–10%, which result in significant cardiovascular health benefits (Wing et al., 2011). Psychological factors, such as stress, depression, and mental health-related quality of life, also show modest improvements with weight loss, although they are not as robust as the physical health benefits (Elder et al., 2012; Fabricatore et al., 2011; Warkentin, Das, Majumdar, Johnson, & Padwal, 2014). Supplementing lifestyle modification with medication can increase long-term weight losses by approximately 3–6 kg (Apovian et al., 2015). Bariatric surgery is an option for patients with severe obesity (BMI $\geq$ 40 kg/m^2 or BMI $\geq$ 35 kg/m^2 with an obesity-related comorbidity; Consensus Panel, 1992). Depending on the surgical procedure, patients experience approximately 20–35% reductions in body weight 1 year after surgery, and weight losses are well maintained in the first postoperative decade (Adams et al., 2017; Arterburn et al., 2018). These weight losses confer benefits for physical health (e.g., remission of Type 2 diabetes) and psychological well-being (e.g., improvement in depressive symptoms and body image; Sarwer et al., 2018).

Despite important advances in the treatment of obesity, not all people are able to achieve and sustain clinically meaningful weight losses. For example, approximately 30–50% of people enrolled in intensive behavioral modification programs do not achieve weight losses of $\geq$5% (Jensen et al., 2014), and most individuals regain at least one third of their lost weight within a year without additional weight loss maintenance treatment (Wadden, Webb, Moran, & Bailer, 2012). With increased knowledge of the complex etiology of obesity, and the challenges that people face in sustaining weight loss following conventional nonsurgical weight loss interventions (MacLean et al., 2015), there is a recognized need for more research attention to determine psychosocial factors that may help or hinder people in their adherence to behavioral strategies that promote weight management (MacLean et al., 2018; Wing & Phelan, 2005). Psychosocial factors such as social support, depression, and perceived stress may affect weight loss maintenance (Brantley et al., 2014), and there has been increased focus on the substantial influence of social determinants (e.g., aspects of the social, physical, and economic environment) that affect obesity (Institute of Medicine, 2012). The contributing roles of psychosocial and environmental influences and the best ways to address them require ongoing attention (Institute of Medicine, 2012; Swinburn et al., 2019), providing important research opportunities for social science disciplines to contribute to current understanding of obesity.

A highly relevant but often overlooked psychosocial factor for consideration in the etiology and treatment of obesity is weight stigmatization. Considerable evidence shows that people with overweight or obesity face societal devaluation and mistreatment; body weight is a key social identity subject to stigmatization and discrimination (Puhl & Heuer, 2009). Social devaluation of people because of their body weight is referred to as weight stigma, which can lead to negative weight-based stereotypes (e.g., views that people with obesity are lazy and lacking in self-discipline), and/or discrimination which involves behavioral manifestations of stigma that result in unfair treatment of people because of their weight, such as being denied employment because of one's weight or body size (Pearl, 2018).

This article focuses on weight stigma as an important element for understanding weight-related health in people with overweight and obesity. Through an overview of recent evidence, this article summarizes demonstrated links between weight stigma and adverse health behaviors and indices that contribute to poor weight-related health, such as maladaptive eating behaviors, low physical activity, physiological stress, and weight gain. Health implications for individuals with heightened vulnerability to weight stigma are also discussed, including youth and individuals seeking bariatric surgery, as are clinical implications for practitioners working with individuals who have obesity. This literature indicates the importance of examining weight stigma

Mary S. Himmelstein

as a psychosocial contributor to obesity, but highlights the little that is currently known about its role in the context of weight management interventions. The article closes with a research agenda identifying next steps to advance understanding of the role of weight stigma in weight loss treatment and to determine whether addressing weight stigma as part of weight management programs could help improve treatment outcomes.

The Nature and Extent of Weight Stigma

Several decades of research have established the presence and widespread nature of societal weight-based stereotypes, including assumptions that people with overweight or obesity are lazy, gluttonous, lacking in willpower and self-discipline, incompetent, unmotivated to improve their health, noncompliant with medical treatment, and are personally to blame for their higher body weight (Puhl & Heuer, 2009). Documentation of weight-based stereotypes emerged in studies more than five decades ago, with research demonstrating obesity to be a "social deviance" (Maddox, Back, & Liederman, 1968). For example, in some of the earliest work on this topic, study participants expressed more negative judgments and rejection of children with obesity compared to youth with various physical disabilities, and attributions of personal blame for body weight intensified participants' negative responses (Maddox et al., 1968).

Fifty years later, recent evidence examining population-level implicit biases suggests that implicit weight bias has not improved over the past decade despite reductions occurring in other forms of implicit bias (e.g., for race and sexual orientation; Charlesworth & Banaji, 2019), and that weight stigma has spread globally (Brewis, SturtzSreetharan, & Wutich, 2018). Negative societal perceptions remain present today and may persist, in part, because of societal beliefs that body weight is a matter of personal responsibility and willpower, despite considerable scientific evidence that genetic and physiological factors are prominent factors that contribute to the development and maintenance of overweight and obesity (Schwartz et al., 2017). The persistence of weight stigma may also reflect the lack of systematic efforts to adequately challenge weight stigma and discrimination. Studies testing interventions to reduce weight stigma have yielded many mixed or pessimistic findings (Alberga et al., 2016; Daníelsdóttir, O'Brien, & Ciao, 2010) and have received less research attention compared to the amassing literature documenting weight stigma. Without effective interventions to shift societal attitudes, people with higher body weight remain vulnerable to stigma, societal blame, and unfair treatment because of their weight.

Thus, despite the increased prevalence of obesity in recent decades, stigma and discrimination toward individuals with obesity remain prevalent. A decade ago, the first research comparing the prevalence of perceived weight discrimination to other forms of discrimination (e.g., due to gender, race/ethnicity, sexual orientation, disability, etc.) in a nationally representative U.S. sample found weight discrimination to be the 3rd most common form of discrimination reported by women, and the fourth most common form of discrimination reported by men (Puhl, Andreyeva, & Brownell, 2008). Women were twice as likely as men to report weight discrimination, and rates of perceived weight discrimination were more than three times higher in individuals with a BMI in the obesity range compared to those in lower weight categories. No differences were found in the relationship between obesity and weight discrimination by race, education, or marital status (Puhl et al., 2008). Furthermore, longitudinal comparisons documented that perceived weight discrimination had increased by 66% among U.S. adults between 1995 and 2005 (Andreyeva, Puhl, & Brownell, 2008).

Since then, prevalence patterns of weight discrimination suggest that little has changed. A 2016 meta-analysis reported a pooled prevalence of perceived weight discrimination to be 19.2% among individuals with class I obesity (BMI = 30–35 kg/m^2) and 41.8% among individuals with more severe obesity (BMI = 35 kg/m^2), with higher prevalence estimates found in women compared to men (Spahlholz, Baer, Konig, Riedel-Heller, & Luck-Sikorski, 2016). Similarly, national studies published in the last several years have documented that approximately 40% of adults report being the target of teasing and/or differential treatment because of their weight (Himmelstein, Puhl, & Quinn, 2017; Puhl et al., 2015). As with previous research, individuals with obesity had significantly higher odds of reporting

Rebecca L. Pearl

weight discrimination compared to those with lower BMIs, although recent studies have reported mixed findings in odds of weight mistreatment by gender and race (Dutton et al., 2014; Himmelstein et al., 2017).

People face weight-based stigma and discrimination across multiple life domains. Many studies have documented weight-based disparities in employment (including inequitable weight-based hiring practices and unfair wage penalties), poorer educational outcomes, disadvantages in health care (e.g., biased attitudes from health care providers, poorer provider-patient communication, lack of access to appropriately sized medical equipment), as well as weight stigmatization in interpersonal relationships (e.g., inappropriate or derogatory comments from family members and friends; see reviews by Phelan et al., 2015; Rudolph, Wells, Weller, & Baltes, 2009). Stigmatizing portrayals of individuals with obesity are also present in the mass media, including both child-targeted and adult-targeted TV shows and movies, where characters with larger body sizes are often depicted more negatively than thinner characters, and are shown engaging in stereotypical behaviors like overeating (Ata & Thompson, 2010; Throop et al., 2014). Weight-based stereotypes have also gone viral in social media, where verbal attacks targeting women and men because of their higher body weight are common (Chou, Prestin, & Kunath, 2014; Lydecker et al., 2016). Collectively, these stigmatizing experiences are associated with reduced quality of life for those affected, and, like other forms of stigma, have concerning implications for public health (Puhl & Heuer, 2010). These concerns have prompted increasing research to examine the role of weight stigma in health, bringing attention to weight stigma as a public health issue and a potential contributor to obesity.

Linking Weight Stigma to Weight-Related Behaviors and Health

Weight stigma has been consistently linked to adverse health behaviors that impair weight-related health, often independent of one's actual body weight or BMI (Pearl & Puhl, 2018; Sutin, Stephan, & Terracciano, 2015; Sutin & Terracciano, 2013). Recent evidence is summarized below, with specific attention to research examining implications of weight stigma for eating behaviors, physical activity, body dissatisfaction, physiological stress, weight gain, and weight loss. Findings indicate that weight stigma not only undermines weight-related health but may paradoxically contribute to obesity and weight gain.

Maladaptive Eating Behaviors

A 2016 review of the literature on weight stigma and eating behavior found consistent evidence across more than 30 correlational studies of associations between experiences of weight stigma and unhealthy eating behaviors, such as binge eating, unhealthy weight control behaviors, emotional overeating, and eating pathology (Vartanian & Porter, 2016). These findings were present in both community and treatment-seeking weight loss samples, and associations remained significant in most studies after controlling for BMI (e.g., including BMI as a statistical covariate). Experimental studies included in the review ($N = 11$) similarly showed consistent evidence of adverse effects of weight stigma on food choices and eating behaviors. These studies involved manipulating weight stigma by exposing participants to stigmatizing content (e.g., stigmatizing articles or videos), priming negative weight-based stereotypes in participants, or manipulating ostracism in which participants face social rejection because of their weight, and then assessing the impact of these manipulations on eating behaviors (Major, Hunger, Bunyan, & Miller, 2014; Schvey, Puhl, & Brownell, 2011). Across studies, experimental manipulations resulted in increased food intake among participants; in general, BMI was not a consistent moderator of these findings, demonstrating an adverse impact of weight stigma on eating behaviors regardless of BMI. Additionally, preliminary research examining weight stigma in people's daily lives (e.g., via ecological momentary assessment methods) shows that people who report more frequent daily experiences of weight stigma have decreased motivations to diet and poorer dietary habits (Seacat, Dougal, & Roy, 2016; Vartanian, Pinkus, & Smyth, 2018).

Increasingly, attention is turning to potential underlying mechanisms of the relationship between weight stigma and maladaptive eating behaviors. Some research has found that

internalized weight bias (IWB; i.e., attributing weight-based stereotypes to oneself and engaging in self-stigma) mediates the relationship between weight stigma and maladaptive eating behaviors (O'Brien et al., 2016), and evidence has pointed to IWB as a moderator of eating behavior outcomes over time when comparing adults in a weight-neutral versus behavioral weight management program (Mensinger, Calogero, & Tylka, 2016). Other mechanisms examined include "fear of fat" as a mediator between weight stigma and maladaptive eating behaviors and weight gain, via positive associations with rigid dietary restraint (Wellman, Araiza, Newell, & McCoy, 2018), stress and social withdrawal (Simone & Lockhart, 2016), and poorer inhibitory control, which has been found to predict higher calorie food choices among individuals who perceive higher levels of weight stigma in response to being primed with weight discrimination, compared to those who were not primed (Araiza & Wellman, 2017).

It remains less clear whether weight stigma from different sources (e.g., peers vs. family) differentially contribute to maladaptive eating behaviors, or what characteristics make people most susceptible to adverse eating behaviors in response to weight stigma. A national study of U.S. adults ($N = 5{,}129$) found that weight discrimination was associated with overeating, more frequent consumption of convenience foods, and less regular meal timing, with similar associations observed across sex, age, and race (Sutin, Robinson, Daly, & Terracciano, 2016). In contrast, a recent study of 2,378 adults found racial differences in eating-related responses to weight stigma; compared to white women, Hispanic women were more likely to cope with weight stigma by engaging in maladaptive eating behaviors, black women were less likely to respond this way, and black men were more likely than white men to cope with stigma via eating (Himmelstein et al., 2017). More work is needed to understand key factors that increase vulnerability to unhealthy eating behaviors in those who experience weight stigma.

Physical Activity

Compared to evidence of links between experienced weight stigma and eating behaviors, fewer studies have examined physical activity; however, some research findings point to similar adverse associations. In a recent population-based study of 5,480 middle-aged and older adults from the English Longitudinal Study of Aging, perceived weight discrimination was associated with 59% higher odds of being inactive and 30% lower odds of engaging in moderate or vigorous activity, independent of BMI (Jackson & Steptoe, 2017). In treatment-seeking samples, similar findings have emerged. In a study of 298 patients who had undergone bariatric surgery, weight stigma was associated with reduced physical activity via exercise avoidance; those with higher levels of stigma were more likely to avoid exercise and be less physically active (Han, Agostini, Brewis, & Wutich, 2018). As with research on weight stigma and eating behaviors, emerging evidence suggests that internalized stigma may partially explain the relationship between experienced stigma and lower physical activity (Pearl, Puhl, & Dovidio, 2015). Mensinger and Meadows (2017) found that for women with obesity participating in a lifestyle intervention, physical activity increased in those with low (but not high) IWB, and IWB mediated the effects of the intervention on physical activity. However, collective findings across 10 studies show mixed findings with respect to the relationship between engagement in physical activity and IWB, and suggest that associations may be stronger for motivational aspects of physical activity like exercise self-efficacy or avoidance (see review by Pearl & Puhl, 2018).

Weight stigma may have different implications for physical activity in women versus men. In a study of 439 adults with overweight and obesity, higher levels of weight stigma were related to lower motivation and engagement in physical activity for women, but not for men (Sattler, Deane, Tapsell, & Kelly, 2018). Examination of weight stigma experienced specifically in fitness settings may be useful to clarify the role of weight stigma on physical activity. For example, initial evidence suggests that experiencing weight stigma at the gym is associated with negative attitudes about the gym and poorer emotional and physical health among adults with overweight and obesity (Schvey et al., 2017). While more research attention is needed to clarify these associations, the consistent findings across diverse samples in recent studies suggest that weight stigma could potentially interfere with physical activity.

Body Dissatisfaction

Body dissatisfaction is a well-documented psychological aspect of obesity, especially for women (Sarwer, Thompson, & Cash, 2005), and may also be a risk factor for increased BMI over time (Goldschmidt, Wall, Choo, Becker, & Neumark-Sztainer, 2016; Quick, Wall, Larson, Haines, & Neumark-Sztainer, 2013). People with obesity typically report higher levels of body dissatisfaction than thinner individuals (Weinberger, Kersting, Riedel-Heller, & Luck-Sikorski, 2016), and given that body image is strongly influenced by social experiences (Grogan, 2008), being the target of weight stigma may contribute to heightened body dissatisfaction.

Evidence in community and clinical samples of adults suggests that weight stigma is associated with poorer body image and higher body dissatisfaction. Across several studies of weight loss treatment-seeking samples, frequency of experienced weight stigma was positively associated with poor body image (Friedman, Ashmore, & Applegate, 2008;

Latner, Wilson, Jackson, & Stunkard, 2009), and research with female college students found that lifetime experiences of weight stigma significantly mediated the relationship between BMI and body dissatisfaction (Stevens, Herbozo, Morrell, Schaefer, & Thompson, 2017). In addition, associations between IWB and body dissatisfaction have been demonstrated in adults with overweight or obesity engaged in behavioral weight loss programs (Carels et al., 2010), and among patients with binge eating disorder even after accounting for depression and self-esteem (Durso et al., 2012). Community samples of adults with overweight or obesity have similarly documented associations between IWB and body image concerns, after controlling for BMI (Durso & Latner, 2008).

Experiencing weight-based teasing earlier in life may play a contributing role in body dissatisfaction. A meta-analysis of 41 studies (N = 10,618) found a moderate (medium-large) effect size of 0.39 for the relationship between weight-based teasing and body dissatisfaction (Menzel et al., 2010); associations were stronger in youth and adolescents compared to adults, and for women compared to men. These links have also been demonstrated among patients seeking bariatric surgery, where those with a history of weight-based teasing endorsed significantly higher body dissatisfaction, after accounting for childhood onset of obesity (Rosenberger, Henderson, Bell, & Grilo, 2007). Longitudinal associations have been documented between weight-based teasing in adolescence and poor body image 15 years later in adulthood for both males and females, suggesting that early experiences of weight-based teasing may have long-lasting implications for body image (Puhl, Himmelstein, Gorin, & Suh, 2017).

Physiological Stress

With the knowledge that elevated physiological stress contributes to increased adiposity and elevated risk factors for comorbidities of obesity (Geiker et al., 2018; Rodriguez et al., 2015), physiological consequences of weight stigma have received increasing attention (Wu & Berry, 2017). In national studies of US adults, research has found that among individuals with overweight and obesity (but not severe obesity; N = 7,394), experiencing weight discrimination is positively associated with higher levels of circulating C-reactive protein (a biomarker of systemic inflammation; Sutin, Stephan, Luchetti, & Terracciano, 2014), and may exacerbate the adverse effects of waist-to-hip ratio on glycemic control in nondiabetic adults (N = 938; Tsenkova, Carr, Schoeller, & Ryff, 2011).

Two national studies of middle and older aged adults in the English Longitudinal Study of Aging lend further insights on the role of weight stigma in the relationship between obesity and stress. In one study, nonsmoking adults with obesity (N = 563) who had experienced weight discrimination had significantly elevated levels of cortisol (an indicator of chronic stress exposure) over a 2-month period compared to those who had not experienced weight discrimination (Jackson, Kirschbaum, & Steptoe, 2016). This was especially true among individuals with severe obesity. In a second sample of adults from this study (N = 1,872), obesity, BMI, and perceived weight discrimination were positively related to cortisol levels, and perceived weight discrimination mediated the association between obesity and cortisol, explaining approximately one fifth of the total effect of obesity, and almost one fourth of the effect of BMI, on chronic stress (Jackson & Steptoe, 2017).

Experimental research suggests a causal role of weight stigma in physiological stress, as several studies have demonstrated increased cortisol reactivity in adults exposed to weight stigma compared to controls. For example, following an interpersonal exposure to weight stigma, women who perceived themselves as having a higher body weight (regardless of actual BMI) exhibited sustained elevated cortisol compared to women who were not exposed to weight stigma (Himmelstein, Incollingo Belsky, & Tomiyama, 2015). In another study, adults with overweight and obesity who were placed in a weight-stigmatizing employment situation exhibited maladaptive cortisol responses compared to those in a nonstigmatizing condition (McCleary-Gaddy, Miller, Grover, Hodge, & Major, 2018). A third study demonstrated that exposure to weight-stigmatizing stimuli (watching a stigmatizing video) elicited greater cortisol reactivity among women (across weight categories) compared to those who were exposed to neutral (nonstigmatizing) stimuli (Schvey, Puhl, & Brownell, 2014). Taken together, this experimental evidence suggests a unique role of weight stigma in biochemical stress responses, and aligns with cross sectional evidence demonstrating associations between more frequent experiences of weight stigma and markers of hypothalamic–pituitary–adrenal activation and oxidative stress, even after accounting for adiposity (Tomiyama et al., 2014).

Finally, Vadiveloo and Mattei (2017) examined 10-year prospective associations between weight discrimination and allostatic load, which refers to the cumulative adverse consequences of multiple physiological systems in response to chronic stressors. In this national sample of adults (N = 986) from the Midlife Development in the U.S. Biomarker Substudy, findings showed that adults who experienced weight discrimination had twice the 10-year risk of high allostatic load compared to those who did not experience weight discrimination, after adjusting for BMI, socioeconomic and health characteristics, and other forms of discrimination. Collectively, this literature indicates that weight stigma, independent of the effects of body weight, is associated with stress at a biological level and may contribute to pathophysiology, including adverse physiological

changes that may increase risk of obesity and its comorbidities.

Weight Gain and Obesity

Given the adverse health consequences associated with weight stigma described above, increasing evidence suggests that weight stigma can contribute to weight gain. Several national prospective studies have documented longitudinal associations between perceived weight discrimination and increased risk for obesity and weight gain over time (Jackson, Beeken, & Wardle, 2014; Sutin & Terracciano, 2013). These studies, using data from the Health and Retirement Study ($N = 6,157$) and the English Longitudinal Study of Ageing ($N = 2,944$), found that independent of baseline BMI and demographic factors, adults who experienced weight discrimination had significantly greater odds of transitioning from overweight to obesity (and in some cases, remaining in the obesity category) compared to adults who did not experience weight discrimination. Furthermore, Sutin and Terracciano (2013) observed that findings were specific to weight discrimination and not to other forms of discrimination (e.g., due to race or sex). Longitudinal evidence with adolescents shows similar patterns, in which adolescents who experience weight stigma face a 64–66% increased risk of developing overweight or obesity compared to peers who are not stigmatized about their weight (Hunger & Tomiyama, 2014; Quick et al., 2013). Recent evidence indicates that these associations may persist from adolescence well into adulthood; a longitudinal cohort study examining 1,830 adolescents from Project Eating and Activity in Teens and Young Adults (EAT-IV) found that weight-based teasing in adolescence was associated with higher BMI and obesity 15 years later when participants were in their 30s, even after adjusting for their age, race/ethnicity, socioeconomic status (SES), and baseline weight status (Puhl et al., 2017).

Scholars in the field of psychology have offered important theoretical insights to help frame this literature. Tomiyama's (2014) cyclic obesity/weight-based stigma model purports that weight stigma contributes to weight gain in a cycle: Stigma is characterized as a stressor that elicits psychological (shame, stress appraisals), behavioral (increased eating), and physiological (e.g., elevated cortisol) responses, which may contribute to weight gain and interfere with weight loss, triggering the cycle again. Hunger, Major, Blodorn, and Miller (2015) posited a social identity threat model, suggesting that weight stigma threatens the social identity of individuals with overweight and obesity, increasing stress and motivation to escape stigma while reducing self-regulation. Collectively, these psychological and physiological mechanisms may negatively impact health and promote weight gain (Hunger et al., 2015). These models provide important, yet underutilized, frameworks for informing research in the obesity field to better understand the pathways through which weight stigma may contribute to weight gain and other obesity-related comorbidities, such as metabolic syndrome, cardiovascular disease, and poor health-related quality of life, all of which have been linked to weight stigma (Latner, Barile, Durso, & O'Brien, 2014; Pearl et al., 2017; Udo & Grilo, 2017).

Implications of Weight Stigma for Weight Loss

For many individuals with obesity, weight loss incurs health benefits such as improvements in cardiovascular disease risk factors and health-related quality of life (Jensen et al., 2014). The challenges that many people face in sustaining significant weight loss are well documented (Dulloo & Montani, 2015), highlighting the importance of research to identify key factors that facilitate or impair sustainable weight loss. Weight stigma has received limited attention in the weight loss literature despite evidence that this is a relevant psychosocial factor contributing to poor weight-related health. Initial findings suggest that weight stigma may play a role in people's decisions to pursue more ambitious weight loss goals and contribute to decisions to seek bariatric surgery (Giardino, Keitel, Patelis, & Takooshian, 2019; Jung, Spahlholz, Hilbert, Ridele-Heller, & Luck-Sikorski, 2017; Sharma, Wharton, Forhan, & Kuk, 2011). However, less is known about the role of weight stigma in weight loss outcomes.

While one study has demonstrated positive associations between experiences of weight stigma and greater weight loss among adults in obesity treatment (Latner et al., 2009), several weight loss treatment studies suggest that weight stigma is associated with poorer weight loss outcomes for adults with obesity (Lillis, Thomas, Levin, & Wing, 2017; Pearl, Wadden, et al., 2018; Wott & Carels, 2010). For example, Lillis and colleagues (2017) found that adults in an online weight loss program ($N = 188$) who exhibited higher fear of enacted weight stigma had poorer weight loss over 3 months, controlling for baseline demographics, eating pathology, psychological symptoms, and BMI. Another study found that primary care patients who felt judged about their weight by health care providers were less likely to achieve a $\geq$10% weight loss compared to patients who perceived respectful treatment from providers (Gudzune, Bennett, Cooper, & Bleich, 2014). Emerging evidence suggests that weight stigma could have negative implications for weight loss maintenance in community and weight-loss samples (Olson, Lillis, Thomas, & Wing, 2018; Puhl, Quinn, Weisz, & Suh, 2017) and for weight loss outcomes following bariatric surgery (Lent et al., 2014). For example, recent prospective evidence from the National Weight Control Registry examined the role of IWB in a sample of 1,250 weight-loss maintainers, and found that a 1-point reduction in IWB was associated with a 3% weight loss, whereas

higher baseline IWB predicted weight gain among men (but not women; Olson et al., 2018).

While this initial evidence generally suggests that weight stigma is associated with poorer weight loss, the handful of published studies in this area have used different measures (and time periods) of weight stigma, relatively small and different types of samples (community vs. behavioral weight loss or bariatric surgery samples, including different countries), making comparisons difficult and leaving important questions unanswered. Stigma is rarely addressed in conventional weight loss programs, and there have been no large-scale studies with comprehensive measures of weight stigma to examine its links with weight loss in treatment-seeking samples. Thus, it is not known how key aspects of weight stigma experiences may or may not relate to weight loss behaviors or participation and engagement in weight loss treatment. For example, there is little understanding of whether the frequency of weight stigma experiences, the time period(s) in life when stigma occurs, or the diverse interpersonal sources of stigma in people's lives have different implications for weight loss behaviors. Examining these issues will be informative to advance understanding of the ways in which weight stigma may contribute to barriers to weight loss, and to help identify specific targets for intervention that could potentially improve treatment outcomes for individuals trying to lose weight.

Health Implications for Individuals With Heightened Vulnerability to Weight Stigma

Children and Adolescents

Among youth with overweight or obesity, weight stigma is common and is experienced in the form of victimization, such as teasing (e.g., verbal name calling), bullying (e.g., cyber-bullying, physical aggression), and/or relational victimization (e.g., being ignored, excluded, or the target of rumors). A meta-analysis (van Geel, Vedder, & Tanilon, 2014) of 30 studies (N = 113,571) indicated that youth with overweight or obesity were more likely to be victims of bullying compared to thinner peers; findings were not moderated by gender, and youth with a BMI in the "overweight" range were equally likely to be victimized as those with a BMI in the "obesity" range. Furthermore, recent evidence from a large sample of ethnically diverse adolescents (N = 162,034) found that weight-based victimization was the most common type of peer harassment reported by both girls and boys (compared to harassment based on race/ethnicity, sexual orientation, and disability status; Bucchianeri, Gower, McMorris, & Eisenberg, 2016); this finding is consistent with previous studies of youth teasing and bullying (Bucchianeri, Eisenberg, & Neumark-Sztainer, 2013; Puhl, Luedicke, & Heuer, 2011). Most research to date has examined weight-based harassment from peers, but youth are also vulnerable to weight-based victimization from family members and teachers (Madowitz, Knatz, Maginot, Crow, & Boutelle, 2012; Puhl et al., 2017; Puhl, Peterson, & Luedicke, 2013).

Experiences of weight-based teasing and bullying can be harmful to health for youth who are targeted; many of the same links between weight stigma and poor weight-related health in adults have been documented in children and adolescents. Studies examining these associations in youth typically adjust for variables like BMI, gender, age, and timing of overweight onset, suggesting that adverse health consequences are linked with experiences of teasing and bullying more than to obesity itself. This literature illustrates that youth who are teased or bullied because of their weight have a higher risk of engaging in disordered eating and unhealthy weight control behaviors than peers who are not teased about weight (Madowitz et al., 2012; Olvera, Dempsey, Gonzalez, & Abrahamson, 2013), including both girls and boys, and independent of weight status (Goldfield et al., 2010; Puhl & Luedicke, 2012).

Evidence from Project EAT, a longitudinal cohort study examining factors related to dietary intake and weight-related outcomes in adolescents (N = 2,516), has documented consequences of early experiences of weight-based teasing on disordered eating and weight-control behaviors from adolescence through early adulthood (Eisenberg, Berge, Fulkerson, & Neumark-Sztainer, 2012; Haines, Neumark-Sztainer, Eisenberg, & Hannan, 2006), suggesting that weight-based teasing is associated with maladaptive eating behaviors that persist for many years. Most recently, Project EAT-IV findings showed that weight-based teasing in adolescence (N = 1,830) predicted higher odds of binge eating and unhealthy weight control behaviors 15 years later for women, as well as eating as a coping strategy in both women and men, controlling for age, race/ethnicity, SES, and baseline weight status (Puhl, Wall, Chen, Austin, Eisenberg, et al., 2017). Data from the National Heart, Lung, and Blood Institute Growth and Health Study (a study following adolescent girls for 9 years beginning in 1987), found that adolescent girls (N = 2,036) who were labeled as "too fat" by others had increased unhealthy weight control behaviors 5 years later compared to girls who were not labeled this way by others, independent of objective BMI, race, SES, and baseline eating behaviors (Hunger & Tomiyama, 2018). Even in children ages 6–11 years (N = 1,486), experiences of weight stigma are associated with maladaptive eating behaviors over time (Jendrzyca & Warschburger, 2016).

As noted, meta-analytic findings indicate moderate effect sizes for the relationship between weight teasing and body dissatisfaction, with stronger associations for youth compared to adults (Menzel et al., 2010). More recent evidence suggests that a greater school-level prevalence of weight-related teasing is associated with higher body dissatisfaction in girls (but not boys) independent of individual-level teas-

ing and sociodemographic covariates (Lampard, MacLehose, Eisenberg, Neumark-Sztainer, & Davison, 2014), and that increased exposure to weight-related teasing incidents portrayed in youth-target TV shows is associated with girls' (bot not boys') body dissatisfaction, regardless of weight status (Eisenberg, Ward, Linde, Gollust, & Neumark-Sztainer, 2017). A recent study of ethnically diverse youth (N = 5,128) showed that weight-based mistreatment from peers reported in seventh grade was a stronger predictor of body dissatisfaction in eighth grade than BMI (Juvonen, Lessard, Schacter, & Suchilt, 2017).

Longitudinal studies have identified an increased risk of overweight and obesity for youth who are teased about their weight. Schvey and colleagues (2019) followed youth at risk for overweight or obesity (N = 110) over 8 years, finding that those who reported often being teased about weight at baseline had a 33% increased gain in BMI and a 91% greater gain in fat mass over time compared to peers who were not teased about weight. Previous studies have documented similar findings, particularly in girls; evidence from the Growing Up Today Study (N = 7,172) and Project EAT (N = 2,134) documented longitudinal associations between weight-based teasing and increased incidence of overweight or obesity in girls, but not boys (Haines, Kleinman, Rifas-Shiman, Field, & Austin, 2010; Quick et al., 2013). Findings from the National Heart, Lung, and Blood Institute Growth and Health Study (N = 2,379) showed that girls who were called "too fat" by family members or peers had higher odds of obesity 9 years later, independent of initial weight status and adjusting for race and SES (Hunger & Tomiyama, 2014). While findings from Project EAT documented 15-year longitudinal associations between weight-teasing in adolescents and increased risk of obesity in adulthood for both males and females (Puhl et al., 2017), it may be that links between teasing/bullying and BMI are most pronounced for weight-specific rather than general (nonspecific) forms of victimization, as some evidence has found no associations between general teasing (not specific to weight) in adolescence with BMI over time for boys (Kerr & Gini, 2017; Wolke, Copeland, Angold, & Costello, 2013).

Much less is known about the implications of weight stigma for weight loss in youth and adolescence. Findings from the National Health and Nutrition Examination Survey examining youth attempting to lose weight (N = 6,117), showed that those who were motivated to lose weight because of teasing were more likely to engage in unsafe weight loss behaviors compared to youth who reported motivations such as wanting to be healthier or better at sports, who were more likely to use healthier weight loss behaviors (Brown, Skelton, Perrin, & Skinner, 2016). These initial findings—in addition to emerging studies documenting poorer quality of life (Guardabassi, Mirisola, & Tomasetto, 2018), increased psychosomatic symptoms (Warkentin, Borghese, & Janssen, 2017), decreased physical activity, physical fitness, and exercise self-efficacy (Greenleaf, Petrie, & Martin, 2014; Levers-Landis, Dykstra, Uli, & O'Riordan, 2019; Losekam, Goetzky, Kraeling, Rief, & Hilbert, 2010), increased blood pressure and poorer self-rated health (Rosenthal et al., 2015) among youth who are teased about weight—indicate the need for more research to determine the nature and influence of weight-based victimization on health indices and weight loss outcomes in youth, particularly over time. This future research should also assess links between weight stigma and physiological reactivity, obesity-related comorbidities, and metabolic health indices in youth, which have been demonstrated in adults.

Individuals Seeking Bariatric Surgery

Individuals who seek bariatric surgery face stigma both because of their high body weight and for electing to undergo surgery as a method of weight loss (Vartanian & Fardouly, 2013, 2014). Some of the first studies examining weight stigma in patients seeking bariatric surgery documented a range of adverse health indices associated with frequency of stigmatizing experiences, including poorer quality of life across multiple domains (Sarwer, Fabricatore, Eisenberg, Sywulak, & Wadden, 2008), and poorer psychological functioning including increased depression and anxiety, poor self-esteem and body image, and increased odds of a binge eating disorder diagnosis (Friedman et al., 2008). In these studies, multiple forms of weight stigma were reported by participants, such as negative comments made by others, stigma from doctors, and encountering physical barriers because of their body size.

Weight stigma (particularly public distress of having obesity) is a key contributor to quality of life in men and women seeking bariatric surgery (Wee, Davis, Huskey, Jones, & Hamel, 2013). Some racial differences have been documented in women seeking bariatric surgery with respect to the relative importance of different types of weight stigma on their quality of life, with social stigma having a significant impact on quality of life for Caucasian women, and obesity-related employment issues being more problematic for Hispanic women (Wee, Davis, Chiodi, Huskey, & Hamel, 2014). Depressed mood is also related to increased frequency of stigmatizing experiences and associated coping strategies among bariatric surgery candidates (Fettich & Chen, 2012), and that weight stigma is associated with suicidal ideation and/or behavior among women (but not men) seeking bariatric surgery, independent of their reported loneliness (Chen, Fettich, & McCloskey, 2012). Furthermore, for postsurgery patients, both experienced and internalized weight stigma have been found to predict worse dietary adherence, even after weight is lost (Raves, Brewis, Trainer, Han, & Wutich, 2016).

Even after an individual successfully loses weight with surgery, stigma may persist because of negative societal perceptions of people who undergo bariatric surgery. Experimental evidence demonstrates that people who seek bariatric surgery are judged more negatively than those who lose weight through diet and exercise alone (Mattingly, Stambush, & Hill, 2009). In two experimental studies, Vartanian and Fardouly (2013, 2014) asked participants to provide their impressions of images of individuals prior to being informed that these targets had lost weight either through (a) diet and exercise, (b) surgery, or (c) surgery and diet/exercise, after which participants were asked to provide their impressions again. In both studies, participants rated the individual who had lost weight via surgery more harshly (lazier, sloppy, less competent, less sociable, less healthy) than the individual who lost weight through diet and exercise; negative judgments of laziness and competence were mediated by participants' perceptions that bariatric surgery patients are less responsible for their weight loss. Other experimental research has found that "residual" weight stigma persists against people who previously had obesity regardless of weight loss method (bariatric surgery, diet and exercise, or unspecified method of weight loss) and even after achieving significant weight loss (Latner, Ebneter, & O'Brien, 2012).

It appears that bariatric surgery candidates do perceive this stigma from others; in a recent study, 87% of bariatric surgery candidates reported surgery-stigma including comments from others that they lack willpower and "cheated" because of the decision to seek bariatric surgery, and that they should have tried harder to lose weight through diet and exercise; over half of respondents reported that they hid their surgery from at least one person as a stigma management technique (Hansen & Dye, 2018). Implications of how this stigma may affect weight loss outcomes following surgery has received little attention. Preliminary evidence from two studies demonstrates mixed findings. One study found that higher baseline levels of internalized weight stigma predicted less percent weight loss 1 year after surgery, controlling for baseline BMI, demographic characteristics, depression, and surgery type (Lent et al., 2014), whereas another study found that weight stigma was unrelated to self-reported weight change after surgery (Raves et al., 2016). More work is clearly needed to understand whether weight stigma plays a role in weight loss outcomes among individuals who undergo bariatric surgery.

Implications for Clinical Practice

The literature on weight stigma and health has important implications for clinicians working with individuals who are vulnerable to weight stigma. Identifying experienced and/or internalized weight stigma in youth and adults could help facilitate therapeutic interventions, by assessing whether weight stigma may be interfering with weight management behaviors, and if individuals could benefit from increased psychosocial support and/or assistance in developing healthier strategies to cope with weight stigma. Clinicians can apply therapeutic strategies such as cognitive–behavioral therapy skills to address patients' self-devaluation stemming from weight stigma or promoting the development of adaptive thoughts and behaviors to replace unhealthy responses to stigma (Ratcliffe & Ellison, 2015). Few studies have tested psychological treatment approaches to reduce distress and/or internalization of weight stigma in individuals with obesity, but pilot evidence suggests that empirically supported treatments like cognitive–behavioral therapy and acceptance and commitment therapy may help reduce internalized stigma, increase self-efficacy to control eating, and improve health behaviors (Levin, Potts, Haeger, & Lillis, 2018; Palmeira, Pinto-Gouveia, & Cunha, 2017; Pearl, Hopkins, Berkowitz, & Wadden, 2018). While addressing stigma alone does not provide a "remedy" for obesity, expanding weight management approaches to include consideration of weight stigma could help strengthen the impact of evidence-based intervention efforts.

As part of efforts to address weight stigma in clinical practice, it is important to ensure that stigma does not interfere with provision of care. Studies have documented weight stigma among health care providers toward patients with obesity in the health care setting (Phelan et al., 2015), including practitioners who are particularly likely to provide treatment for patients with obesity (Tomiyama et al., 2015; Swift, Hanlon, El-Redy, Puhl, & Glazebrook, 2013). As stigmatizing attitudes are as pervasive in medical professionals as the general population (Sabin, Marini, & Nosek, 2012), it is important for clinicians to reflect on their personal attitudes and beliefs about weight and obesity that could interfere with the patient-provider relationship or delivery of care, and to challenge negative stereotypes and stigma present in the clinical care environment. While some experimental studies have tested interventions to reduce weight stigma in medical trainees and professionals (Alberga et al., 2016), these have yielded mixed findings, and there is a need to develop practice-focused interventions that can translate directly to improving patient-provider relationships and patient care. For example, recent studies identifying patient preferences for terminology that providers use when discussing body weight (e.g., preferences for more neutral terms like *unhealthy weight* or *weight* rather than *fat* or *morbidly obese*) suggest the importance of careful consideration of weight-based language used in provider-patient communication (Puhl, Peterson, & Luedicke, 2012; Volger et al., 2012), and align with calls for practitioners to avoid labeling patients with culturally stigmatizing terminology (Flint, Oliver, & Copeland, 2017).

These findings, in conjunction with evidence of the harmful health consequences of weight stigma, have prompted

broader efforts in the medical community to address weight stigma. In 2017, the American Medical Association passed a resolution recommending nonstigmatizing language to be used when discussing obesity, and increased education of health care professionals about weight bias (Obesity Medicine Association, 2017). That same year, the American Academy of Pediatrics published a policy statement addressing weight stigma in youth, with clinical practice recommendations for pediatric providers including the use of nonstigmatizing language in communication about weight with youth, and including assessment of psychosocial comorbidities of obesity, such as bullying, in behavioral health screening (Pont, Puhl, Cook, & Slusser, 2017). While increased research attention is needed to identify evidence-based weight-related communication best practices (McPherson et al., 2017), these initiatives reflect important steps to increase awareness and education of weight stigma among health care professionals. Continued and broad efforts in the medical community may help to further promote a culture of patient care that is supportive of individuals, regardless of their body size.

Research Agenda

The existing evidence summarized in this article indicates the adverse implications that weight stigma may have for obesity and poor weight-related health. The lack of research attention to the role of weight stigma in the context of weight loss highlights an important opportunity to identify whether, and how, this key psychosocial factor affects weight loss and weight maintenance over time. Weight stigma remains a highly relevant but frequently neglected psychosocial factor in obesity and weight loss treatment. Efforts to effectively treat individuals with obesity may be augmented with consideration of this key aspect of their social identity and lived experience that has demonstrated consistent links with poor weight-related health. Scholars have called for efforts to address weight stigma in clinical treatment settings (Jung et al., 2017; Ratcliffe & Ellison, 2015), and while weight stigma may prove to be a modifiable psychosocial risk factor that could be targeted as part of treatment efforts, further study is warranted in several key areas to advance understanding of the role of weight stigma in weight loss.

First, with ongoing recognition of the importance of identifying psychosocial predictors of obesity treatment responses (MacLean et al., 2018), research is needed to identify the extent that experiences of weight stigma directly influence weight loss outcomes over time. This should include comprehensive examination of different aspects of weight stigma (the nature, duration, time period, frequency, interpersonal sources, distress, and coping responses) and their predictive value for weight loss outcomes (over and above BMI, sociodemographic characteristics, and health behaviors) in both conventional behavioral weight loss programs and treatment options like bariatric surgery. Second, if well-designed longitudinal and experimental studies provide evidence of adverse effects of weight stigma for weight loss and weight maintenance outcomes, research should be prioritized to improve understanding of the specific processes and mechanisms through which weight stigma undermines weight management, including psychological, behavioral, and physiological mechanisms.

Third, this evidence can in turn inform the development and testing of strategies to reduce the negative impact of weight stigma on health behaviors that can be implemented in conventional weight management programs or obesity interventions, and to determine whether targeting stigma improves treatment outcomes. Interventions might include approaches that aim to (a) screen and identify patients who may be vulnerable to negative consequences of weight stigma, (b) discuss weight stigma with patients and its relationship to their health behaviors, (c) help patients identify and use adaptive coping strategies in response to stigmatizing situations or stigma-related distress, and (d) educate family members or friends about weight stigma and how to engage in supportive conversations about weight-related health with loved ones. Recent preliminary evidence suggests that addressing weight stigma in clinical treatment with adults with obesity may improve some patient outcomes, including benefits for emotional well-being and health behaviors (Carels et al., 2014; Pearl, Hopkins, et al., 2018). Furthermore, adults with obesity report that they would like support in weight management programs to discuss stigma and ways to cope with these experiences (Pearl, Walton, Allison, Tronieri, & Wadden, 2018; Puhl et al., 2017). It will be useful to determine what kinds of clinical interventions are most effective in reducing the adverse consequences associated with stigma and how weight management interventions could be improved with strategies targeting weight stigma. Taken together, this research agenda can address gaps in knowledge and offer opportunities for the obesity field to determine the role of weight stigma in weight loss, identify the potential to enhance treatment outcomes by targeting stigma, and increase support to individuals in their efforts to improve their weight-related health.

References

Adams, T. D., Davidson, L. E., Litwin, S. E., Kim, J., Kolotkin, R. L., Nanjee, M. N., . . . Hunt, S. C. (2017). Weight and metabolic outcomes 12 years after gastric bypass. *The New England Journal of Medicine, 377,* 1143–1155. http://dx.doi.org/10.1056/NEJMoa1700459

Alberga, A. S., Pickering, B. J., Alix Hayden, K., Ball, G. D. C., Edwards, A., Jelinski, S., . . . Russell-Mayhew, S. (2016). Weight bias reduction in health professionals: A systematic review. *Clinical Obesity, 6,* 175–188. http://dx.doi.org/10.1111/cob.12147

Andreyeva, T., Puhl, R. M., & Brownell, K. D. (2008). Changes in perceived weight discrimination among Americans, 1995–1996 through

2004–2006. *Obesity, 16,* 1129–1134. http://dx.doi.org/10.1038/oby.2008.35

Apovian, C. M., Aronne, L. J., Bessesen, D. H., McDonnell, M. E., Murad, M. H., Pagotto, U., . . . the Endocrine Society. (2015). Pharmacological management of obesity: An endocrine Society clinical practice guideline. *The Journal of Clinical Endocrinology and Metabolism, 100,* 342–362. http://dx.doi.org/10.1210/jc.2014-3415

Araiza, A. M., & Wellman, J. D. (2017). Weight stigma predicts inhibitory control and food selection in response to the salience of weight discrimination. *Appetite, 114,* 382–390. http://dx.doi.org/10.1016/j.appet.2017.04.009

Arterburn, D., Wellman, R., Emiliano, A., Smith, S. R., Odegaard, A. O., Murali, S., . . . the PCORnet Bariatric Study Collaborative. (2018). Comparative effectiveness and safety of bariatric procedures for weight loss. *Annals of Internal Medicine, 169,* 741–750. http://dx.doi.org/10.7326/M17-2786

Ata, R. N., & Thompson, J. K. (2010). Weight bias in the media: A review of recent research. *Obesity Facts, 3,* 41–46. http://dx.doi.org/10.1159/000276547

Brantley, P. J., Stewart, D. W., Myers, V. H., Matthews-Ewald, M. R., Ard, J. D., Coughlin, J. W., . . . Stevens, V. J. (2014). Psychosocial predictors of weight regain in the weight loss maintenance trial. *Journal of Behavioral Medicine, 37,* 1155–1168. http://dx.doi.org/10.1007/s10865-014-9565-6

Brewis, A., SturtzSreetharan, C., & Wutich, A. (2018). Obesity stigma as a globalizing health challenge. *Globalization and Health, 14,* 20. http://dx.doi.org/10.1186/s12992-018-0337-x

Brown, C. L., Skelton, J. A., Perrin, E. M., & Skinner, A. C. (2016). Behaviors and motivations for weight loss in children and adolescents. *Obesity, 24,* 446–452. http://dx.doi.org/10.1002/oby.21370

Bucchianeri, M. M., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Weightism, racism, classism, and sexism: Shared forms of harassment in adolescents. *Journal of Adolescent Health, 53,* 47e53.

Bucchianeri, M. M., Gower, A. L., McMorris, B. J., & Eisenberg, M. E. (2016). Youth experiences with multiple types of prejudice-based harassment. *Journal of Adolescence, 51,* 68–75. http://dx.doi.org/10.1016/j.adolescence.2016.05.012

Carels, R. A., Burmeister, J. M., Koball, A. M., Oehlhof, M. W., Hinman, N., LeRoy, M., . . . Gumble, A. (2014). A randomized trial comparing two approaches to weight loss: Differences in weight loss maintenance. *Journal of Health Psychology, 19,* 296–311. http://dx.doi.org/10.1177/1359105312470156

Carels, R. A., Wott, C. B., Young, K. M., Gumble, A., Koball, A., & Oehlhof, M. W. (2010). Implicit, explicit, and internalized weight bias and psychosocial maladjustment among treatment-seeking adults. *Eating Behaviors, 11,* 180–185. http://dx.doi.org/10.1016/j.eatbeh.2010.03.002

Charlesworth, T. E. S., & Banaji, M. R. (2019). Patterns of implicit and explicit attitudes: Long-term term change and stability from 2007-2016. *Psychological Science, 30,* 174–192.

Chen, E. Y., Fettich, K. C., & McCloskey, M. S. (2012). Correlates of suicidal ideation and/or behavior in bariatric-surgery-seeking individuals with severe obesity. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 33,* 137–143. http://dx.doi.org/10.1027/0227-5910/a000115

Chou, W. Y., Prestin, A., & Kunath, S. (2014). Obesity in social media: A mixed methods analysis. *Translational Behavioral Medicine, 4,* 314–323. http://dx.doi.org/10.1007/s13142-014-0256-1

Consensus Panel. (1992). Gastrointestinal surgery for severe obesity: National Institutes of Health Consensus Development Conference Statement. *The American Journal of Clinical Nutrition, 55,* 615S–619S.

Daníelsdóttir, S., O'Brien, K. S., & Ciao, A. (2010). Anti-fat prejudice reduction: A review of published studies. *Obesity Facts, 3,* 47–58. http://dx.doi.org/10.1159/000277067

Dulloo, A. G., & Montani, J. P. (2015). Pathways from dieting to weight regain, to obesity and to the metabolic syndrome: An overview. *Obesity Reviews, 16,* 1–6. http://dx.doi.org/10.1111/obr.12250

Durso, L. E., & Latner, J. D. (2008). Understanding self-directed stigma: Development of the weight bias internalization scale. *Obesity, 16,* S80–S86. http://dx.doi.org/10.1038/oby.2008.448

Durso, L. E., Latner, J. D., White, M. A., Masheb, R. M., Blomquist, K. K., Morgan, P. T., & Grilo, C. M. (2012). Internalized weight bias in obese patients with binge eating disorder: Associations with eating disturbances and psychological functioning. *International Journal of Eating Disorders, 45,* 423–427. http://dx.doi.org/10.1002/eat.20933

Dutton, G. R., Lewis, T. T., Durant, N., Halanych, J., Kiefe, C. I., Sidney, S., . . . Lewis, C. E. (2014). Perceived weight discrimination in the CARDIA study: Differences by race, sex, and weight status. *Obesity, 22,* 530–536. http://dx.doi.org/10.1002/oby.20438

Eisenberg, M. E., Berge, J. M., Fulkerson, J. A., & Neumark-Sztainer, D. (2012). Associations between hurtful weight-related comments by family and significant other and the development of disordered eating behaviors in young adults. *Journal of Behavioral Medicine, 35,* 500–508. http://dx.doi.org/10.1007/s10865-011-9378-9

Eisenberg, M. E., Ward, E., Linde, J. A., Gollust, S. E., & Neumark-Sztainer, D. (2017). Exposure to teasing on popular television shows and associations with adolescent body satisfaction. *Journal of Psychosomatic Research, 103,* 15–21. http://dx.doi.org/10.1016/j.jpsychores.2017.09.014

Elder, C. R., Gullion, C. M., Funk, K. L., Debar, L. L., Lindberg, N. M., & Stevens, V. J. (2012). Impact of sleep, screen time, depression and stress on weight change in the intensive weight loss phase of the LIFE study. *International Journal of Obesity, 36,* 86–92. http://dx.doi.org/10.1038/ijo.2011.60

Fabricatore, A. N., Wadden, T. A., Higginbotham, A. J., Faulconbridge, L. F., Nguyen, A. M., Heymsfield, S. B., & Faith, M. S. (2011). Intentional weight loss and changes in symptoms of depression: A systematic review and meta-analysis. *International Journal of Obesity, 35,* 1363–1376. http://dx.doi.org/10.1038/ijo.2011.2

Fettich, K. C., & Chen, E. Y. (2012). Coping with obesity stigma affects depressed mood in African-American and white candidates for bariatric surgery. *Obesity, 20,* 1118–1121. http://dx.doi.org/10.1038/oby.2012.12

Flint, S. W., Oliver, E. J., & Copeland, R. J. (2017). Obesity stigma in healthcare: Impacts on policy, practice, and patients. *Frontiers in Psychology, 8,* 2149. http://dx.doi.org/10.3389/fpsyg.2017.02149

Friedman, K. E., Ashmore, J. A., & Applegate, K. L. (2008). Recent experiences of weight-based stigmatization in a weight loss surgery population: Psychological and behavioral correlates. *Obesity, 16,* S69–S74.

Geiker, N. R. W., Astrup, A., Hjorth, M. F., Sjödin, A., Pijls, L., & Markus, C. R. (2018). Does stress influence sleep patterns, food intake, weight gain, abdominal obesity and weight loss interventions and vice versa? *Obesity Reviews, 19,* 81–97. http://dx.doi.org/10.1111/obr.12603

Giardino, J. B., Keitel, M. A., Patelis, T., & Takooshian, H. (2019). The impact of weight stigma on decisions about weight loss surgery. *Stigma and Health, 4,* 19–29. http://dx.doi.org/10.1037/sah0000115

Global Burden of Disease 2015 Obesity Collaborators. (2017). Health effects of overweight and obesity in 195 countries over 25 years. *The New England Journal of Medicine, 377,* 13–27. http://dx.doi.org/10.1056/NEJMoa1614362

Goldfield, G., Moore, C., Henderson, K., Buchholz, A., Obeid, N., & Flament, M. (2010). The relation between weight-based teasing and psychological adjustment in adolescents. *Pediatric and Child Health, 15,* 283–288.

Goldschmidt, A. B., Wall, M., Choo, T. H., Becker, C., & Neumark-Sztainer, D. (2016). Shared risk factors for mood-, eating-, and weight-related health outcomes. *Health Psychology, 35,* 245–252. http://dx.doi.org/10.1037/hea0000283

Greenleaf, C., Petrie, T. A., & Martin, S. B. (2014). Relationship of weight-based teasing and adolescents' psychological well-being and physical health. *The Journal of School Health, 84,* 49–55. http://dx.doi.org/10.1111/josh.12118

Grogan, S. (2008). *Body image: Understanding body dissatisfaction in men, women and children* (2nd ed.). New York, NY: Routledge.

Guardabassi, V., Mirisola, A., & Tomasetto, C. (2018). How is weight stigma related to children's health-related quality of life? A model comparison approach. *Quality of Life Research, 27,* 173–183. http://dx.doi.org/10.1007/s11136-017-1701-7

Gudzune, K. A., Bennett, W. L., Cooper, L. A., & Bleich, S. N. (2014). Perceived judgment about weight can negatively influence weight loss: A cross-sectional study of overweight and obese patients. *Preventive Medicine, 62,* 103–107. http://dx.doi.org/10.1016/j.ypmed.2014.02.001

Haines, J., Kleinman, K. P., Rifas-Shiman, S. L., Field, A. E., & Austin, S. B. (2010). Examination of shared risk and protective factors for overweight and disordered eating among adolescents. *Archives of Pediatrics & Adolescent Medicine, 164,* 336–343. http://dx.doi.org/10.1001/archpediatrics.2010.19

Haines, J., Neumark-Sztainer, D., Eisenberg, M. E., & Hannan, P. J. (2006). Weight teasing and disordered eating behaviors in adolescents: Longitudinal findings from Project EAT (Eating Among Teens). *Pediatrics, 117,* e209–e215. http://dx.doi.org/10.1542/peds.2005-1242

Hales, C. M., Fryar, C. D., Carroll, M. D., Freedman, D. S., & Ogden, C. L. (2018). Trends in obesity and severe obesity prevalence in U.S. youth and adults by sex and age, 2007–2008 to 2015–2016. *Journal of the American Medical Association, 319,* 1723–1725. http://dx.doi.org/10.1001/jama.2018.3060

Han, S., Agostini, G., Brewis, A. A., & Wutich, A. (2018). Avoiding exercise mediates the effects of internalized and experienced weight stigma on physical activity in the years following bariatric surgery. *BMC Obesity, 5,* 18. http://dx.doi.org/10.1186/s40608-018-0195-3

Hansen, B., & Dye, M. H. (2018). Damned if you do, damned if you don't: The stigma of weight loss surgery. *Deviant Behavior, 39,* 137–147. http://dx.doi.org/10.1080/01639625.2016.1263081

Himmelstein, M. S., Incollingo Belsky, A. C., & Tomiyama, A. J. (2015). The weight of stigma: Cortisol reactivity to manipulated weight stigma. *Obesity, 23,* 368–374. http://dx.doi.org/10.1002/oby.20959

Himmelstein, M. S., Puhl, R. M., & Quinn, D. M. (2017). Intersectionality: An understudied framework for addressing weight-stigma. *American Journal of Preventive Medicine, 53,* 421–431. http://dx.doi.org/10.1016/j.amepre.2017.04.003

Hunger, J. M., Major, B., Blodorn, A., & Miller, C. T. (2015). Weighed down by stigma: How weight-based social identity threat contributes to weight gain and poor health. *Social and Personality Psychology Compass, 9,* 255–268. http://dx.doi.org/10.1111/spc3.12172

Hunger, J. M., & Tomiyama, A. J. (2014). Weight labeling and obesity: A longitudinal study of girls aged 10 to 19 years. *Journal of the American Medical Association Pediatrics, 168,* 579–580. http://dx.doi.org/10.1001/jamapediatrics.2014.122

Hunger, J. M., & Tomiyama, A. J. (2018). Weight labeling and disordered eating among adolescent females: Longitudinal evidence from the NHLBI Growth and Health Study. *The Journal of Adolescent Health, 63,* 360–362. http://dx.doi.org/10.1016/j.jadohealth.2017.12.016

Institute of Medicine (IOM). (2012). *Accelerating progress in obesity prevention: Solving the weight of the nation*. Washington, DC: National Academies Press.

Jackson, S. E., Beeken, R. J., & Wardle, J. (2014). Perceived weight discrimination and changes in weight, waist circumference, and weight status. *Obesity, 22,* 2485–2488. http://dx.doi.org/10.1002/oby.20891

Jackson, S. E., Kirschbaum, C., & Steptoe, A. (2016). Perceived weight discrimination and chronic biochemical stress: A population-based study using cortisol in scalp hair. *Obesity, 24,* 2515–2521. http://dx.doi.org/10.1002/oby.21657

Jackson, S. E., & Steptoe, A. (2017). Association between perceived weight discrimination and physical activity: A population-based study among English middle-aged and older adults. *British Medical Journal Open, 7,* e014592.

Jendrzyca, A., & Warschburger, P. (2016). Weight stigma and eating behaviors in elementary school children: A prospective population-based study. *Appetite, 102,* 51–59.

Jensen, M. D., Ryan, D. H., Apovian, C. M., Ard, J. D., Comuzzie, A. G., Donato, K. A., & Tomasseli, G. F. (2014). 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Circulation, 129,* S102–S138.

Jung, F., Spahlholz, J., Hilbert, A., Ridele-Heller, S. G., & Luck-Sikorski, C. (2017). Impact of weight-related discrimination, body dissatisfaction, and self-stigma on the desire to weigh less. *Obesity Facts, 10,* 139–151.

Juvonen, J., Lessard, L. M., Schacter, H. L., & Suchilt, L. (2017). Emotional implications of weight stigma across middle school: The role of weight-based peer discrimination. *Journal of Clinical Child & Adolescent Psychology, 46,* 150–158.

Kelly, T., Yang, W., Chen, C. S., Reynolds, K., & He, J. (2008). Global burden of obesity in 2005 and projections to 2030. *International Journal of Obesity, 32,* 1431–1437. http://dx.doi.org/10.1038/ijo.2008.102

Kerr, D. C. R., & Gini, G. (2017). Prospective associations between peer teasing in childhood and young men's obesity. *Obesity Research & Clinical Practice, 11,* 640–646. http://dx.doi.org/10.1016/j.orcp.2017.07.005

Lampard, A. M., MacLehose, R. F., Eisenberg, M. E., Neumark-Sztainer, D., & Davison, K. (2014). Weight-related teasing in the school environment: Associations with psychosocial health and weight control practices among adolescent boys and girls. *Journal of Youth and Adolescence, 43,* 1770–1780.

Latner, J. D., Barile, J. P., Durso, L. E., & O'Brien, K. S. (2014). Weight and health-related quality of life: The moderating role of weight discrimination and internalized weight bias. *Eating Behaviors, 15,* 586–590. http://dx.doi.org/10.1016/j.eatbeh.2014.08.014

Latner, J. D., Ebneter, D. S., & O'Brien, K. S. (2012). Residual obesity stigma: An experimental investigation of bias against obese and lean targets differing in weight-loss history. *Obesity, 20,* 2035–2038. http://dx.doi.org/10.1038/oby.2012.55

Latner, J. D., Wilson, G. T., Jackson, M. L., & Stunkard, A. J. (2009). Greater history of weight-related stigmatizing experience is associated with greater weight loss in obesity treatment. *Journal of Health Psychology, 14,* 190–199. http://dx.doi.org/10.1177/1359105308100203

Lent, M. R., Napolitano, M. A., Wood, G. C., Argyropoulos, G., Gerhard, G. S., Hayes, S., . . . Still, C. D. (2014). Internalized weight bias in weight-loss surgery patients: Psychosocial correlates and weight loss outcomes. *Obesity Surgery, 24,* 2195–2199. http://dx.doi.org/10.1007/s11695-014-1455-z

Levers-Landis, C. E., Dykstra, C., Uli, N., & O'Riordan, M. A. (2019). Weight-related teasing of adolescents who are primarily obese: Roles of sociocultural attitudes towards appearance and physical activity self-efficacy. *International Journal of Environmental Research and Public Health, 30,* e1540.

Levin, M., Potts, S., Haeger, J., & Lillis, J. (2018). Delivering acceptance and commitment therapy for weight self-stigma through guided self-help. Results from an open pilot trial. *Cognitive & Behavioral Practice, 25,* 87–104.

Lillis, J., Thomas, J. G., Levin, M. E., & Wing, R. R. (2017). Self-stigma and weight loss: The impact of fear of being stigmatized. *Journal of Health Psychology*. Advance online publication. http://dx.doi.org/10.1177/1359105317739101

Losekam, S., Goetzky, B., Kraeling, S., Rief, W., & Hilbert, A. (2010). Physical activity in normal-weight and overweight youth: Associations with weight teasing and self-efficacy. *Obesity Facts, 3,* 239–244.

Lydecker, J. A., Cotter, E. W., Palmberg, A. A., Simpson, C., Kwitowski, M., White, K., & Mazzeo, S. E. (2016). Does this Tweet make me look fat? A content analysis of weight stigma on Twitter. *Eating and Weight Disorders, 21,* 229–235.

MacLean, P. S., Rothman, A. J., Nicastro, H. L., Czajkowski, S. M., Agurs-Collins, T., Rice, E. L., . . . Loria, C. M. (2018). The Accumulating Data to Optimally Predict Obesity Treatment (ADOPT) core measures project: Rationale and approach. *Obesity, 26,* S6–S15.

MacLean, P. S., Wing, R. R., Davidson, T., Epstein, L., Goodpaster, B., Hall, K. D., . . . Ryan, D. (2015). NIH working group report: Innovative research to improve maintenance of weight loss. *Obesity, 23,* 7–15.

Maddox, G. L., Back, K. W., & Liederman, V. R. (1968). Overweight as social deviance and disability. *Journal of Health and Social Behavior, 9,* 287–298.

Madowitz, J., Knatz, S., Maginot, T., Crow, S. J., & Boutelle, K. N. (2012). Teasing, depression, and unhealthy weight control behaviour in obese children. *Pediatric Obesity, 7,* 446–452.

Major, B., Hunger, J. M., Bunyan, D. P., & Miller, C. T. (2014). The ironic effects of weight stigma. *Journal of Experimental Social Psychology, 51,* 74–80.

Mattingly, B. A., Stambush, M. A., & Hill, A. E. (2009). Shedding the pounds but not the stigma: Negative attributions as a function of a target's method of weight loss. *Journal of Applied Biobehavioral Research, 14,* 128–144.

McCleary-Gaddy, A. T., Miller, C. T., Grover, K. W., Hodge, J. J., & Major, B. (2018). Weight stigma and hypothalamic-pituitary-adrenocortical axis reactivity in individuals who are overweight. *Annals of Behavioral Medicine, 53,* 392–398.

McPherson, A. C., Hamilton, J., Kingsnorth, S., Knibbe, T. J., Peters, M., Swift, J. A., . . . Ball, G. D. (2017). Communicating with children and families about obesity and weight-related topics: A scoping review of best practices. *Obesity Reviews, 18,* 164–182.

Mensinger, J. L., Calogero, R. M., & Tylka, T. L. (2016). Internalized weight stigma moderates eating behavior outcomes in women with high BMI participating in a healthy living program. *Appetite, 102,* 32–43.

Mensinger, J., & Meadows, A. (2017). Internalized weight stigma mediates and moderates physical activity outcomes during a healthy living program for women with high body mass index. *Psychology of Sport and Exercise, 30,* 64–72.

Menzel, J. E., Schaefer, L. M., Burke, N. L., Mayhew, L. L., Brannick, M. T., & Thompson, J. K. (2010). Appearance-related teasing, body dissatisfaction, and disordered eating: A meta-analysis. *Body Image, 7,* 261–270.

Obesity Medicine Association. (2017). *Report from the annual meeting of the American Medical Association*. Retrieved from https://obesitymedicine.org/destigmatizing-obesity-resolution-ama-annual-meeting/

O'Brien, K. S., Latner, J. D., Puhl, R. M., Vartanian, L. R., Giles, G., Griva, K., & Carter, A. (2016). The relationship between weight stigma and eating behavior is explained by weight bias internalization and psychological distress. *Appetite, 102,* 70–76.

Olson, K. L., Lillis, J., Thomas, J. G., & Wing, R. R. (2018). Prospective evaluation of internalized weight bias and weight change among successful weight-loss maintainers. *Obesity, 26,* 1888–1892.

Olvera, N., Dempsey, A., Gonzalez, E., & Abrahamson, C. (2013). Weight-related teasing, emotional eating, and weight control behaviors in Hispanic and African American girls. *Eating Behaviors, 14,* 513–517.

Palmeira, L., Pinto-Gouveia, J., & Cunha, M. (2017). Exploring the efficacy of an acceptance, mindfulness and compassionate-based group intervention for women struggling with their weight (kg-free): A randomized controlled trial. *Appetite, 112,* 107–116.

Pearl, R. L. (2018). Weight bias and stigma: Public Health implications and structural solutions. *Social Issues and Policy Review, 12,* 146–182.

Pearl, R. L., Hopkins, C. H., Berkowitz, R. I., & Wadden, T. A. (2018). Group cognitive-behavioral treatment for internalized weight stigma: A pilot study. *Eating and Weight Disorders, 23,* 357–362.

Pearl, R. L., & Puhl, R. M. (2018). Weight bias internalization and health: A systematic review. *Obesity Reviews, 19,* 1141–1163.

Pearl, R. L., Puhl, R. M., & Dovidio, J. F. (2015). Differential effects of weight bias experiences and internalization on exercise among women with overweight and obesity. *Journal of Health Psychology, 20,* 1626–1632.

Pearl, R. L., Wadden, T. A., Chao, A. M., Walsh, O., Alamuddin, N., Berkowitz, R. I., & Tronieri, J. S. (2018). Weight bias internalization and long-term weight loss in patients with obesity. *Annals of Behavioral Medicine, 53,* 782–787. http://dx.doi.org/10.1093/abm/kay084

Pearl, R. L., Wadden, T. A., Hopkins, C. M., Shaw, J. A., Hayes, M. R., Bakizada, Z. M., . . . Alamuddin, N. (2017). Association between weight bias internalization and metabolic syndrome among treatment-seeking individuals with obesity. *Obesity, 25,* 317–322.

Pearl, R. L., Walton, K., Allison, K. C., Tronieri, J. S., & Wadden, T. A. (2018). Preference for people-first language among patients seeking bariatric surgery. *Journal of the American Medical Association Surgery, 153,* 1160–1162. http://dx.doi.org/10.1001/jamasurg.2018.2702

Phelan, S. M., Burgess, D. J., Yeazel, M. W., Hellerstedt, W. L., Griffin, J. M., & van Ryn, M. (2015). Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. *Obesity Reviews, 16,* 319–326.

Pont, S. J., Puhl, R. M., Cook, S. R., & Slusser, W. (2017). Stigma experienced by children and adolescents with obesity. *Pediatrics. 140,* e20173034

Puhl, R., Andreyeva, T., & Brownell, K. (2008). Perceptions of weight discrimination: Prevalence and comparison to race and gender discrimination in America. *International Journal of Obesity, 32,* 992–1000.

Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: A review and update. *Obesity, 17,* 941–964.

Puhl, R. M., & Heuer, C. A. (2010). Obesity stigma: Important considerations for public health. *American Journal of Public Health, 100,* 1019–1028.

Puhl, R. M., Himmelstein, M. S., Gorin, A. A., & Suh, Y. J. (2017). Missing the target: Including perspectives of women with overweight and obesity to inform stigma-reduction strategies. *Obesity Science & Practice, 3,* 25–35.

Puhl, R. M., Latner, J. L., O'Brien, K., Luedicke, J. L., Danielstottir, S., & Forhan, M. (2015). A multi-national examination of weight bias: Predictors of anti-fat attitudes across four countries. *International Journal of Obesity, 39,* 1166–1173.

Puhl, R. M., & Luedicke, J. (2012). Weight-based victimization among adolescents in the school setting: Emotional reactions and coping behaviors. *Journal of Youth and Adolescence, 41,* 27–40.

Puhl, R. M., Luedicke, J., & Heuer, C. (2011). Weight-based victimization toward overweight and obese adolescents: Observations and reactions of peers. *Journal of School Health, 81,* 696–703.

Puhl, R. M., Peterson, J. L., & Luedicke, J. (2012). Motivating or stigmatizing? Public perceptions of language about weight used by health providers. *International Journal of Obesity, 37,* 612–619.

Puhl, R. M., Peterson, J. L., & Luedicke, J. (2013). Weight-based victimization: A comprehensive assessment of weight-loss treatment-seeking youth. *Pediatrics, 131,* e1–e9.

Puhl, R. M., Quinn, D. M., Weisz, B. M., & Suh, Y. J. (2017). The role of stigma in weight loss maintenance among U.S. adults. *Annals of Behavioral Medicine, 51,* 754–763.

Puhl, R. M., Wall, M. B., Chen, C., Austin, S. B., Eisenberg, M. E., & Neumark-Sztainer, D. (2017). Early experiences of weight teasing and

weight-related outcomes in adulthood: A 15-year longitudinal study. *Preventive Medicine, 100,* 173–179.

Quick, V., Wall, M., Larson, N., Haines, J., & Neumark-Sztainer, D. (2013). Personal, behavioral and socio-environmental predictors of overweight incidence in young adults: 10-yr longitudinal findings. *International Journal of Behavioral Nutrition, & Physical Activity, 10,* 37.

Ratcliffe, D., & Ellison, N. (2015). Obesity and internalized weight stigma: A formulation model for an emerging psychological problem. *Behavioral and Cognitive Psychotherapy, 43,* 239–252.

Raves, D. M., Brewis, A., Trainer, S., Han, S., & Wutich, A. (2016). Bariatric surgery patients' perceptions of weight-related stigma in health care settings impair post-surgery dietary adherence. *Frontiers in Psychology, 7,* 1497.

Rodriguez, A. C. I., Epel, E. S., White, M. L., Standen, E. C., Seckl, J. R., & Tomiyama, A. J. (2015). Hypothalamic-pituitary-adrenal axis dysregulation and cortisol activity in obesity: A systematic review. *Psychoneuroendocrinology, 62,* 301–318.

Rosenberger, P. H., Henderson, K. E., Bell, R. L., & Grilo, C. M. (2007). Associations of weight-based teasing history and current eating disorder features and psychological functioning in bariatric surgery patients. *Obesity Surgery, 17,* 470–477.

Rosenthal, L., Earnshaw, V. A., Carroll-Scott, A., Henderson, K. E., Peters, S. M., McCaslin, C., & Ickovics, J. R. (2015). Weight- and race-based bullying: Health associations among urban adolescents. *Journal of Health Psychology, 20,* 401–412.

Rudolph, C. W., Wells, C. L., Weller, M. D., & Baltes, B. B. (2009). A meta-analysis of empirical studies of weight bias in the work place. *Journal of Vocational Behavior, 74,* 1–10.

Sabin, J. A., Marini, M., & Nosek, B. A. (2012). Implicit and explicit anti-fat bias among a large sample of medical doctors by BMI, race/ethnicity and gender. *PloS ONE, 7,* 348448.

Sarwer, D. B., Fabricatore, A. N., Eisenberg, M. H., Sywulak, L. A., & Wadden, T. A. (2008). Self-reported stigmatization among candidates for bariatric surgery. *Obesity, 16,* S75–S79.

Sarwer, D. B., Thompson, J. K., & Cash, T. F. (2005). Body image and obesity in adulthood. *Psychiatric Clinics of North America, 28,* 69–87.

Sarwer, D. B., Wadden, T. A., Spitzer, J. C., Mitchell, J. E., Lancaster, K., Courcoulas, A., . . . Christian, L. J. (2018). 4-Year changes in sex hormones, sexual functioning, and psychosocial status in women who underwent bariatric surgery. *Obesity Surgery, 28,* 892–899.

Sattler, K. M., Deane, F. P., Tapsell, L., & Kelly, P. J. (2018). Gender differences in the relationship of weight-based stigmatization with motivation to exercise and physical activity in overweight individuals. *Health Psychology Open*. Advance online publication. http://dx.doi.org/10.1177/2055102918759691

Schvey, N. A., Marwitz, S. E., Mi, S. J., Galescu, O. A., Broadney, M. M., Young-Hyman, D., . . . Yanovski, J. A. (2019). Weight-based teasing is associated with gain in BMI and fat mass among children and adolescents at-risk for obesity: A longitudinal study. *Pediatric Obesity*. Advance online publication. http://dx.doi.org/10.1111/ijpo.12538

Schvey, N. A., Puhl, R. M., & Brownell, K. D. (2011). The impact of weight stigma on caloric consumption. *Obesity, 19,* 1957–1962.

Schvey, N. A., Puhl, R. M., & Brownell, K. D. (2014). The stress of stigma: Exploring the effect of weight stigma on cortisol reactivity. *Psychosomatic Medicine, 76,* 156–162.

Schvey, N. A., Sbrocco, T., Bakalar, J. L., Ress, R., Barmine, M., Gorlick, J., . . . Tanofsky-Kraff, M. (2017). The experience of weight stigma among gym members with overweight and obesity. *Stigma and Health, 2,* 292–306.

Schwartz, M., Seeley, R., Zeltser, L., Drewnowski, A., Ravussin, E., Redman, L., & Leibel, R. (2017). Obesity pathogenesis: An Endocrine Society Scientific statement. *Endocrine Reviews, 38,* 1–30.

Seacat, J. D., Dougal, S. C., & Roy, D. (2016). A daily diary assessment of female weight stigmatization. *Journal of Health Psychology, 21,* 228–240.

Sharma, S., Wharton, S., Forhan, M., & Kuk, J. (2011). Influence of weight discrimination on weight loss goals and self-selected weight loss interventions. *Clinical Obesity, 1,* 153–160.

Simone, M., & Lockhart, G. (2016). Two distinct mediated pathways to disordered eating in response to weight stigmatization and their application to prevention programs. *Journal of American College Health, 64,* 520–526.

Spahlholz, J., Baer, N., Konig, H. H., Riedel-Heller, S. G., & Luck-Sikorski, C. (2016). Obesity and discrimination: A systematic review and meta-analysis of observational studies. *Obesity Reviews, 17,* 43–55.

Stevens, S. D., Herbozo, S., Morrell, H. E. R., Schaefer, L. M., & Thompson, J. K. (2017). Adult and childhood weight influence body image and depression through weight stigmatization. *Journal of Health Psychology, 22,* 1084–1093.

Sutin, A., Robinson, E., Daly, M., & Terracciano, A. (2016). Weight discrimination and unhealthy eating-related behaviors. *Appetite, 102,* 83–89.

Sutin, A. R., Stephan, Y., Luchetti, M., & Terracciano, A. (2014). Perceived weight discrimination and C-reactive protein. *Obesity, 22,* 1959–1961.

Sutin, A. R., Stephan, Y., & Terracciano, A. (2015). Weight discrimination and risk of mortality. *Psychological Science, 26,* 1803–1811.

Sutin, A. R., & Terracciano, A. (2013). Perceived weight discrimination and obesity. *PLoS ONE, 8,* e70048.

Swift, J. A., Hanlon, S., El-Redy, L., Puhl, R. M., & Glazebrook, C. (2013). Weight bias among U.K. trainee dietitians, doctors, nurses and nutritionists. *Journal of Human Nutrition and Dietetics, 26,* 395–402.

Swinburn, B. A., Kraak, V. I., Allender, S., Atkins, V. J., Baker, P. I., Bogard, J. R., . . . Dietz, W. H. (2019). The global syndemic of obesity, undernutrition, and climate change: The Lancet Commission report. *The Lancet, 393,* 791–846.

Taylor, V. H., Forhan, M., Vigod, S. N., McIntyre, R. S., & Morrison, K. M. (2013). The impact of obesity on quality of life. *Best Practice and Research: Clinical Endocrinology & Metabolism, 27,* 139–146.

Throop, E. M., Skinner, A. C., Perrin, A. J., Steiner, M. J., Odulana, A., & Perrin, E. M. (2014). Pass the popcorn: "Obesogenic" behaviors and stigma in children's movies. *Obesity, 22,* 1694–1700.

Tomiyama, A. J. (2014). Weight stigma is stressful: A review of evidence for the cyclic obesity/weight-based stigma model. *Appetite, 82,* 8–15.

Tomiyama, A. J., Epel, E. S., McClatchey, T. M., Poelke, G., Kemeny, M. E., McCoy, S. K., & Daubenmier, J. (2014). Associations of weight stigma with cortisol and oxidative stress independent of adiposity. *Health Psychology, 33,* 862–867.

Tomiyama, A. J., Finch, L. E., Incollingo Belsky, A. C., Buss, J., Finley, C. E., Schwartz, M. B., & Daubenmier, J. (2015). Weight bias in 2001 versus 2013: Contradictory attitudes among obesity researchers and health professionals. *Obesity, 23,* 46–53.

Tsenkova, V. K., Carr, D., Schoeller, D. A., & Ryff, C. D. (2011). Perceived weight discrimination amplifies the link between central adiposity and nondiabetic glycemic control (HbA1c). *Annals of Behavioral Medicine, 41,* 243–251.

Udo, T., & Grilo, C. M. (2017). Cardiovascular disease and perceived weight, racial, and gender discrimination in U.S. adults. *Journal of Psychosomatic Research, 100,* 83–88.

Vadiveloo, M., & Mattei, J. (2017). Perceived weight discrimination and 10-year risk of allostatic load among U.S. adults. *Annals of Behavioral Medicine, 51,* 94–104.

van Geel, M., Vedder, P., & Tanilon, J. (2014). Are overweight and obese youths more often bullied by their peers? A meta-analysis on the relation between weight status and bullying. *International Journal of Obesity, 38,* 1263–1267.

Vartanian, L. R., & Fardouly, J. (2013). The stigma of obesity surgery: Negative evaluations based on weight loss history. *Obesity Surgery, 23,* 1545–1550.

Vartanian, L. R., & Fardouly, J. (2014). Reducing the stigma of bariatric surgery: Benefits of providing information about necessary lifestyle changes. *Obesity, 22,* 1233–1237.

Vartanian, L. R., Pinkus, R. T., & Smyth, J. M. (2018). Experiences of weight stigma in everyday life: Implications for health motivation. *Stigma and Health, 3,* 85–92.

Vartanian, L. R., & Porter, A. M. (2016). Weight stigma and eating behavior: A review of the literature. *Appetite, 105,* 3–14.

Volger, S., Vetter, M. L., Dougherty, M., Panigrahi, E., Egner, R., Webb, V., . . . Wadden, T. A. (2012). Patients' preferred terms for describing their excess weight: Discussing obesity in clinical practice. *Obesity, 20,* 147–150.

Wadden, T. A., Webb, V. L., Moran, C. H., & Bailer, B. A. (2012). Lifestyle modification for obesity: New developments in diet, physical activity, and behavior therapy. *Circulation, 125,* 1157–1170.

Warkentin, L. M., Das, D., Majumdar, S. E., Johnson, J., & Padwal, R. S. (2014). The effect of weight loss on health-related quality of life: Systematic review and meta-analysis of randomized trials. *Obesity Reviews, 15,* 169–182.

Warkentin, T., Borghese, M. M., & Janssen, I. (2017). Associations between weight related teasing and psychosomatic symptoms by weight status among school-aged youth. *Obesity Science & Practice, 3,* 44–50.

Wee, C. C., Davis, R. B., Chiodi, S., Huskey, K. W., & Hamel, M. B. (2014). Sex, race, and the adverse effects of social stigma vs. other quality of life factors among primary care patients with moderate to severe obesity. *General Internal Medicine, 30,* 229–235.

Wee, C. C., Davis, R. B., Huskey, K. W., Jones, D. B., & Hamel, M. B. (2013). Quality of life among obese patients seeking weight loss surgery: The importance of obesity-related social stigma and functional status. *Journal of General Internal Medicine, 28,* 231–238.

Weinberger, N. A., Kersting, A., Riedel-Heller, S. G., Luck-Sikorski, C. (2016). Body dissatisfaction in individuals with obesity compared to normal-weight individuals: A systematic review and meta-analysis. *Obesity Facts, 9,* 424–441.

Wellman, J. D., Araiza, A. M., Newell, E. E., & McCoy, S. K. (2018). Weight stigma facilitates unhealthy eating and weight gain via fear of fat. *Stigma and Health, 3,* 186–194.

Wing, R. R., Lang, W., Wadden, T. A., Safford, M., Knowler, W. C., Bertoni, A. G., . . . the Look AHEAD Research Group. (2011). Benefits of modest weight loss in improving cardiovascular risk factors in overweight and obese individuals with Type 2 diabetes. *Diabetes Care, 34,* 1481–1486.

Wing, R. R., & Phelan, S. (2005). Long-term weight loss maintenance. *American Journal of Clinical Nutrition, 82,* 222S–225S.

Wolke, D., Copeland, W. E., Angold, A., & Costello, E. J. (2013). Impact of bullying in childhood on adult health, wealth, crime, and social outcomes. *Psychological Science, 24,* 1958–1970.

Wott, C. B., & Carels, R. A. (2010). Overt weight stigma, psychological distress and weight loss treatment outcomes. *Journal of Health Psychology, 15,* 608–614.

Wu, Y., & Berry, D. C. (2017). Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: A systematic review. *Journal of Advanced Nursing, 74,* 1030–1042.

Received February 5, 2019
Revision received August 8, 2019
Accepted August 18, 2019 ■