



Review article

Malleability of weight-biased attitudes and beliefs: A meta-analysis of weight bias reduction interventions



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ABSTRACT

Weight bias exists across many important life domains, necessitating interventions designed to reduce weight-biased attitudes and beliefs. Though the effectiveness of weight bias interventions has been questioned, to our knowledge no meta-analysis of these interventions has been conducted. This meta-analysis evaluated the impact of weight bias interventions on weight-biased attitudes and beliefs and explored potential moderators. Interventions were eligible if they used an adult sample and a validated measure of weight-biased attitudes, which resulted in the inclusion of 30 studies represented in 29 articles. A random effects approach using inverse weights resulted in a mean effect size estimate of $g = -0.33$ (lower scores indicate less weight bias) for both attitudes and beliefs. Intervention type, publication type, and population type were not significant moderators but demonstrated noteworthy trends. Results reveal a small, positive effect of weight bias interventions on weight-biased attitudes and beliefs and provide useful information for future interventions.

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Contents

Introduction	252
Weight Bias Measures and Facets of the Construct	252
Weight Bias Interventions	252
Aims and Hypotheses	253
Method	253
Search Strategy and Inclusion Criteria	253
Data Extraction	253
Coding and Interrater Reliability	253
Statistical Analyses	255
Results	255
Weight-Biased Attitudes	255
Weight-Biased Beliefs	256
Publication Bias and Sensitivity	256
Discussion	257
Strengths and Limitations	258
Conclusions	258
References	258

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Introduction

The prevalence of weight-based discrimination is comparable to that of race and age-based discrimination (Andreyeva, Puhl, & Brownell, 2008) and may be one of the last acceptable forms of discrimination (Puhl & Brownell, 2001). Recent reviews indicate that weight bias occurs in many life domains (e.g., education, health care, personal relationships) and is associated with a range of negative social, behavioral, psychological, and physical outcomes such as lower salaries, reduced quality of life, and avoidance of preventive health care (Puhl & Brownell, 2001; Puhl & Heuer, 2009).

Given the ubiquity and significant consequences of weight bias, interventions to reduce stigmatizing attitudes and beliefs about persons with obesity have begun to garner attention. A recent qualitative review of weight bias interventions bemoaned the paucity of available studies and the lack of dramatic results in published studies located for the review (Danielsdottir, O'Brien, & Ciao, 2010). Other reviewers have also questioned the effectiveness of these interventions (Puhl & Brownell, 2001; Puhl & Heuer, 2009). However, to our knowledge, no meta-analysis has been conducted on the subject of weight bias interventions. Such an analysis could inspire and provide direction for a fresh wave of research in an area where progress has been slow and fraught with doubt as to whether interventions can effectively address a deeply ingrained problem.

Weight Bias Measures and Facets of the Construct

Many measures are available to assess weight bias, and studies regularly include multiple measures of the construct. Validated measures of weight bias include the Fat Phobia Scale (FPS; Robinson, Bacon, & O'Reilly, 1993), the Antifat Attitudes Questionnaire (AFA; Crandall, 1994), the Antifat Attitudes Test (AFAT; Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), the Antifat Attitudes Scale (AFAS; Morrison & O'Connor, 1999), the Obese Persons Traits Survey (OPTS; Puhl, Schwartz, & Brownell, 2005), the Universal Measure of Bias–Fat (Latner, O'Brien, Durso, Brinkman, & MacDonald, 2008; not mentioned again because none of the studies included in the meta-analysis used this measure), and the Attitudes Toward Obese Persons and Beliefs About Obese Persons scales (ATOP and BAOP; Allison, Basile, & Yucker, 1991). While many weight bias measures include separate subscales to assess weight-biased attitudes and weight-biased beliefs, the ATOP ($\alpha = .80$ in an undergraduate sample; Allison et al., 1991) and BAOP ($\alpha = .65$ in an undergraduate sample; Allison et al., 1991) were designed as companion measures to assess weight-biased attitudes and beliefs, respectively. Although they have not been validated specifically for weight bias, semantic differentiation scales, a common measure of other biases (e.g., racial bias), are also widely used in weight bias studies.

Weight bias is a broad phenomenon that encompasses three conceptually independent constructs: prejudice, stereotyping, and discrimination. Weight-based prejudice, the attitudinal component, is defined as “a negative evaluation of a social group or a negative evaluation of an individual that is significantly based on the individual's group membership” (Crandall & Eshleman, 2003, p. 414). Stereotyping, the beliefs component, refers to convictions about the etiology and maintenance of obesity. The related but distinct nature of weight-biased attitudes and beliefs is supported by the fact that the ATOP and the BAOP correlate at $r = .40$ (Allison et al., 1991). The third construct, weight-based discrimination, refers to weight bias manifested as actions or behaviors (e.g., weight-based teasing; Brownell, 2005).

Weight Bias Interventions

Weight bias interventions take a variety of forms. Theories about how to reduce weight bias developed from the

perceived underpinnings of this bias and led to interventions that can be classified as causality/controllability, empathy, or social consensus (Danielsdottir et al., 2010; Puhl & Heuer, 2009). Causality/controllability interventions (hereafter referred to simply as controllability interventions) aim to reduce blame for obesity and improve opinions about persons with obesity by targeting beliefs about the cause of people's weight status and their ability to control their body weight. For example, studies may compare participants' evaluations of persons with obesity after being exposed to genetic (e.g., poor regulation of appetite due to a genetic mutation) versus behavioral (e.g., sedentary lifestyle) explanations. In one study, undergraduate health students in Australia were assigned to an intervention, comparison, or control condition (Diedrichs & Barlow, 2011). Students in the intervention condition received a lecture on weight bias and the many determinants of body weight (e.g., genetic, biological, and sociocultural factors), while students in the comparison condition learned about the prevalence and treatment of obesity. In the comparison lecture, modifiable behaviors within the individual's control (i.e., sedentary behavior and unhealthy food choices) were emphasized as determinants of body weight. The control condition did not receive a lecture. Post-intervention, only participants in the intervention condition reported a decrease in weight-biased attitudes, which was maintained at three-week follow-up.

Empathy interventions use a variety of methods to attempt to increase likeability and acceptance of persons with obesity. For instance, participants in Grosko's (2008) empathy condition were instructed to read a first-person account of Marie, a woman with obesity. In the narrative, the woman outlined her family history of obesity, her experiences with social rejection, and her resulting feelings of sadness. Results indicated that participants who read the woman's narrative reported a significant increase in positive feelings about persons with obesity from pre- to post-test.

Finally, social consensus interventions attempt to reduce weight bias by manipulating participants' perceptions regarding their peers' or the broader population's acceptance of obesity. In one social consensus intervention, participants were asked to attend two laboratory sessions (Puhl et al., 2005). In the first session, participants were provided with 20 stereotypical traits (10 positive and 10 negative) and asked to estimate the percentage of persons with obesity that possess each trait. One week later, participants returned to the laboratory and were randomly assigned to receive favorable or unfavorable feedback. Participants in the favorable feedback condition were told that other students' attitudes toward persons with obesity were more favorable than their own (i.e., others predicted comparatively lower percentages for negative traits and higher percentages for positive traits). In the unfavorable feedback condition, participants were told that other students expressed comparatively less favorable attitudes toward persons with obesity. Before leaving, participants again completed the traits measure. Consistent with hypotheses, participants who received favorable feedback endorsed fewer negative traits and more positive traits between sessions.

Though controllability, empathy, and social consensus are the established paradigms for weight bias reduction based on the perceived underpinnings of weight bias, a variety of strategies (based on other theories or building upon existing weight bias reduction theories) have been implemented in weight bias interventions. These interventions have used approaches such as size acceptance/sensitivity training for teachers based on the Elaboration Likelihood Model (Hague & White, 2005), manipulated portrayals of persons with obesity in fictional news stories presented to adults from the general population (McClure, Puhl, & Heuer, 2011), comprehensive obesity education/stigma reduction programs for health care professionals based on the Health at Every

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