



Internalized weight stigma mediates and moderates physical activity outcomes during a healthy living program for women with high body mass index



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ABSTRACT

Objectives: To investigate the influence of internalized weight stigma (IWS) on physical activity (PA) outcomes among women with body mass index (BMI) over 30 kg/m².

Design and method: Data were drawn from an RCT that included 80 primarily inactive women (94% non-Hispanic/Latina white; mean age = 39.6, SD = 4.1, range = 30.0 to 45.0; mean BMI = 38.0 kg/m², SD = 3.9, range = 30.2–44.8 kg/m²). Participants completed a 6 month weight-neutral, health-at-every-size or weight-loss-focused group-based healthy living program. PA enjoyment and engagement in moderate-intensity PA (MI-PA) (at least 30 minutes most days of the week) were assessed at baseline and immediately post-intervention. We used intention-to-treat linear mixed-effects modeling to test IWS as a moderator of changes in MI-PA engagement. We also tested a model whereby the positive effects of participating in the program on engagement in MI-PA would be serially mediated by a reduction in IWS and a concomitant increase in MI-PA enjoyment.

Results: The weight-neutral and weight-loss-focused data were combined for all analyses. The moderation hypothesis was supported with a significant interaction between IWS and time. Participants had significant gains overall in MI-PA engagement from baseline to post-intervention; however, those with high IWS had an attenuated response. The serial mediation model was also supported. The positive effect of the program on engagement in MI-PA occurred through decreased IWS and increased MI-PA enjoyment.

Conclusions: Self-directed stigma and holding negative attitudes about one's weight interferes with positive changes in PA outcomes. Healthy living programs may be less effective for those most vulnerable unless we aim to reduce IWS.

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Lack of engagement in physical activity (PA) remains one of the top five contributors to premature mortality (Kohl et al., 2012), and a growing number of public health promotion efforts have focused on establishing effective strategies for increasing PA across the lifespan (see Horodyska et al., 2015 for a review). However, US national data suggest that only one in five American adults meet the recommended PA guidelines, and one quarter do not engage in

any leisure-time PA (Centers for Disease Control and Prevention, 2014). Further, some studies show higher-weight individuals are less likely to meet PA guidelines than their counterparts with a BMI less than 25 (Spees, Scott, & Taylor, 2012). In a recent study of youth, regardless of true body mass index (BMI), perceiving oneself as “overweight” was associated with less vigorous-intensity PA, and lower likelihood of playing sports compared to peers who perceive their weight as “about right” (Patte, Laxer, Qian, & Leatherdale, 2016). Given the widespread benefits of PA for both physical and mental well-being, understanding the factors contributing to PA engagement in higher-weight individuals could lead to improvements in health promotion interventions targeted at this population.

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In recent years, increasing attention has been paid to the impact of weight stigma on health and behavioral outcomes (e.g., Hilbert et al., 2015; Latner, Barile, Durso, & O'Brien, 2014). Experiences of weight stigma can involve perceptions of negative judgment, poorer treatment, rejection, or outright discrimination based on weight, shape, or body size (Tylka et al., 2014). This form of prejudice is now one of the most frequently reported forms of stigma in both adults (Puhl, Andreyeva, & Brownell, 2008) and children (Bucchianeri, Gower, McMorris, & Eisenberg, 2016), and it affects almost all domains of daily life (Puhl & King, 2013). Most types of weight stigma are disproportionately targeted at women (Judge & Cable, 2011), and frequency and severity increase exponentially at higher BMIs (see Spahlholz, Baer, König, Riedel-Heller, & Luck-Sikorski, 2015 for a review). When higher-weight individuals personalize the negative societal evaluation of larger bodies and, in turn, apply it to themselves, the consequent self-devaluation is known as internalized weight stigma or weight self-stigma (Durso & Latner, 2008; Tylka et al., 2014). People with high levels of internalized weight stigma not only fear negative evaluation from others, they endorse weight-related stereotypes—such as “higher-weight individuals have less willpower and are less deserving of a fulfilling social life.” Weight self-stigma results in feeling less competent, less valued, more self-conscious, depressed, and anxious (Hilbert, Braehler, Haeuser, & Zenger, 2014; Schvey et al., 2016).

Both the experience of weight stigma and self-directed weight stigma are constructs associated with poorer health and well-being (Hilbert et al., 2014; Latner et al., 2014). In fact, the relationship between higher BMI and poorer physical health-related quality of life is only present for those with high self-directed weight stigma (Latner et al., 2014). Further, evidence suggests that perceived discrimination and stigma concerns explain the relationship between BMI and self-reported health (Hunger & Major, 2015). Additionally, research has reliably shown that self-directed weight stigma is associated with increased disordered eating behavior (Durso & Latner, 2008; Durso, Latner, & Hayashi, 2012; Mensinger, Calogero, & Tylka, 2016a). In studies that measured self-directed and the experience of weight stigma together, self-directed weight stigma consistently mediated the relationship between being stigmatized by others and health outcomes (Durso et al., 2012; Pearl, Puhl, & Dovidio, 2015). Combining these findings with similar evidence from experimental research (Pearl & Puhl, 2016) suggests that self-directed stigma may be a more potent driver of distress and health outcomes than is experiencing weight stigma.

Weight stigma is also associated with lower engagement in PA (Carels et al., 2009; Wott & Carels, 2010). Specifically, in a study of higher-weight adults seeking behavioral weight-loss treatment, endorsement of greater weight bias was associated with lower energy expenditure, while attributing more positive traits to higher-weight people was associated with longer bouts of exercise (Carels et al., 2009). In addition, data from a cross-sectional study of college-aged females found a positive relationship between weight stigma experiences and motivation for exercise avoidance (Vartanian & Shaprow, 2008). Later evidence noted that this effect was moderated by the participants' own anti-fat attitudes and internalization of the thin ideal (Vartanian & Novak, 2011). Finally, in related research supporting a stereotype threat model, Seacat and Mickelson (2009) showed that behavioral intentions for exercise were significantly lower in a sample of women with a high BMI who were experimentally primed to feel stigmatized for their weight compared to a control condition.

A number of possible explanations exist for the inverse relationship between weight stigma and PA attitudes and behaviors. Systemic or institutional stigma results in physical barriers to PA

that affect higher-weight individuals, from facilities or equipment unsuitable for larger bodies (Schvey et al., 2016), to difficulties in finding suitable apparel in bigger sizes (Christel, O'Donnell, & Bradley, 2016; Packer, 1989). Perhaps more importantly though, is the interpersonal aspect of weight stigma. Heavier individuals report fear of being judged, ridiculed, or even abused when they are exercising (Packer, 1989; Schvey et al., 2016), and such fears are not unfounded. Studies examining the prevalence of different types of stigma experienced by higher-weight individuals report that being stared at, mocked, or verbally harassed by strangers is not uncommon in this population, and approximately one in ten individuals with a high BMI report having been physically attacked because of their weight (Puhl & Brownell, 2006). Within formal fitness environments, larger bodies may be explicitly or implicitly devalued or shamed (Prichard & Tiggemann, 2008; Schvey et al., 2016), and high levels of anti-fat attitudes and endorsement of negative weight-related stereotypes have been reported in exercise science students (Chambliss, Finley, & Blair, 2004), fitness professionals (Robertson & Vohora, 2008), as well as frequent exercisers themselves (Flint & Reale, 2016).

To our knowledge, only one published study has specifically examined the association between internalized weight stigma and PA behavior (Pearl et al., 2015). It was an online cross-sectional study of 177 US women whose self-report height and weight placed them in the 'overweight' or 'obese' BMI category. There was a negative association between self-efficacy, motivation to exercise, and internalized weight stigma, even after controlling for BMI. Although weight stigma experiences were associated with increased PA behavior, there was also an indirect effect whereby experiencing weight stigma predicted greater self-directed stigma, which was associated with reduced PA behavior. Thus, while experiencing weight stigma might encourage women to engage in behaviors that will counteract stereotypes, these experiences also contribute to the self-stigma that predicts multiple maladaptive attitudes and behaviors (as reviewed above), including lower engagement in PA.

Little is known about the mechanisms via which the effects of internalized weight stigma on PA behavior are transmitted and how this might fit into larger theoretical models of PA. Despite the domination of cognitive frameworks (e.g., Ajzen, 1991; Bandura, 2001), some researchers have posited the importance of the affective judgments surrounding PA behavior (e.g., French et al., 2005; for a review see; Rhodes, Fiala, & Conner, 2009). Affective judgments involve studying the extent to which pleasure anticipated or derived from PA influences motivation and engagement. This approach draws from theories of hedonism where humans are believed to behave in ways that will maximize the experience of pleasure and avoid pain (Kahneman, Diener, & Schwarz, 1999). Given that cognitive models have only been able to account for about a quarter of the variation in PA behavior, some researchers have suggested synthesizing these approaches with hedonic theories of motivation (Ekkekakis & Dafermos, 2012). Several studies have supported approaches that combine cognitive and affective models. For example, Kiviniemi, Voss-Humke, and Seifert (2007) established that affective associations with PA behavior mediated all components of the theory of planned behavior (i.e., attitudes, social norms, and perceived benefits, barriers, and behavioral control) in predicting engagement in PA. Similarly, Lewis, Williams, Frayeh, and Marcus (2016) found PA enjoyment at baseline predicted future engagement in PA after participating in a 6 month trial for increasing PA in 448 low-active adults. Their mediation analysis supported a model in which the effect of self-efficacy on future PA was mediated by enjoyment, suggesting greater competency yields more enjoyment.

Also in support of a hedonic framework, two health promotion

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