



# The psychological and physiological effects of interacting with an anti-fat peer



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## ABSTRACT

This experiment tested whether interacting with a peer who holds explicitly anti-fat attitudes leads to cognitive performance deficits and poorer psychological and cardiovascular outcomes among higher body weight women by increasing anticipated rejection. One hundred and forty six higher body weight women were randomly assigned to interact in a non-romantic context with a same-sex peer who endorsed explicit anti-fat or unbiased attitudes. All women showed greater heart rate reactivity and anger when interacting with an anti-fat peer. The heavier women were, and the more they thought they were overweight, the more they anticipated rejection when interacting with an anti-fat peer. This anticipated rejection was in turn associated with poorer cognitive performance, lower state self-esteem, and increased negative emotions, rumination, compensatory efforts, and thoughts related to anxiety and evaluation. These effects were not observed among women in our sample categorized as slightly “overweight” or who perceived themselves as only slightly overweight.

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## 1. Introduction

Social identity threat is a psychological state that occurs in situations in which individuals anticipate being devalued, judged negatively, or rejected based on their social identity – an aspect of self that is linked to group membership (Steele, Spencer, & Aronson, 2002). Social identity threat has been shown to lead to a host of negative outcomes, such as underperformance on challenging tests (Nguyen & Ryan, 2008; Steele & Aronson, 1995), reduced cognitive flexibility (Carr & Steele, 2010), decreased willpower (Inzlicht & Kang, 2010), increased social deviance (Belmi, Barragan, Neale, & Cohen, 2015), and increased stress and stress-related responses (Sawyer, Major, Casad, Townsend, & Mendes, 2012; Schmader, Johns, & Forbes, 2008). These effects have been found among a wide variety of social groups, including women and men, ethnic minority and majority groups, people with lower socioeconomic status, and older adults (Inzlicht & Schmader, 2012; Schmader, Hall, & Croft, 2015).

The current study extends prior research and theory on social identity threat to the relatively unexplored domain of *body weight*.

Body weight is a visible identity characteristic used to categorize self and others, and is often a significant (although not necessarily desired) social identity (Hunger, Major, Blodorn, & Miller, 2015; Miller & Major, 2017). A large body of research indicates that higher body weight individuals are the targets of pervasive negative stereotypes and discrimination (Puhl & Heuer, 2009). Furthermore, experiencing weight-based discrimination has negative implications for mental health (Hatzenbuehler, Keyes et al., 2009), as do chronic concerns about being the target of weight stigma (Hunger et al., 2015). In addition, situational cues that merely activate concerns about being a target of negative stereotypes and social devaluation associated with higher body weight, such as being visible to a potential partner, are sufficient to increase stress and decrease cognitive performance among heavier individuals (Blodorn, Major, Hunger, & Miller, 2016; Major, Eliezer, & Rieck, 2012; Miller, Rothblum, Felicio, & Brand, 1995).

The current research builds on the above research by testing a previously unexamined type of situational cue as an antecedent to weight-based social identity threat – the attitudes endorsed by a same-sex peer, outside of a dating context. Much past research has focused on the potential for experiencing weight-based identity threat in the dating domain, a particularly evaluative domain for higher body weight women (Puhl & Heuer, 2009). The current study extended weight-based social identity threat to examine whether

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and to what extent weight-based social identity threat occurs in non-romantic social interactions and is elicited by the attitudes of same-sex peers, thereby highlighting the potential pervasiveness with which weight-based threat may occur.

We hypothesized that the threat associated with interacting with an anti-fat peer would increase with a person's weight. Past research has shown that the higher people's BMI, the more likely they are to report experiencing weight discrimination (see meta-analysis by Spahlholz, Baer, König, Riedel-Heller, & Luck-Sikorski, 2016), the more concerned they are about being a target of weight stigma (Hunger & Major, 2018), and the more likely they are to anticipate rejection in a dating context if their weight is visible (Blodorn et al., 2016). Furthermore, the effects of weight-based stereotype threat on food choice in a meal-ordering task were more pronounced among individuals with higher body weight (Brochu & Dovidio, 2014), as were the effects of exposure to stigmatizing media on calorie consumption (Schvey, Puhl, & Brownell, 2011). All of these studies lead to the prediction that body weight will moderate the impact of exposure to others' anti-fat attitudes, such that the heavier women are, the more vulnerable they will be to such threats to their identity. Because past research has shown mixed results with regard to whether objective body mass index (BMI) or self-perceived overweight is more predictive of weight-based identity threat (Himmelstein, Incollingo Belsky, & Tomiyama, 2015; Major et al., 2012; Major, Hunger, Bunyan, & Miller, 2014), we tested both objective and self-perceived weight as potential moderators of how people respond to weight bias.

The current study also sought to replicate and extend prior evidence that *anticipated rejection* is the psychological mechanism underlying social identity threat in the weight domain (Blodorn et al., 2016). Prior research on social identity threat typically has inferred threat from differential outcomes across conditions (e.g., Brochu & Dovidio, 2014; Major et al., 2014) or has examined cognitive or affective mediators of threat (e.g., increased vigilance; Schmader et al., 2008). Here, we sought to directly examine anticipated interpersonal rejection as a critical psychological ingredient in the downstream consequences of weight-based social identity threat.

Finally, this study extended our understanding of the downstream effects of weight-based social identity threat by examining two coping responses to weight stigma: rumination and compensation. Despite evidence of the negative effects of weight stigma, relatively few studies have focused on how people cope with weight-based identity threat (see Miller et al., 1995; Puhl & Brownell, 2003 for exceptions). Recent studies identified several different coping responses to weight stigma including active coping, reappraisal coping, and disengagement coping (Hayward, Vartanian, & Pinkus, 2017) and coping via engaging in healthy lifestyle behaviors, maladaptive eating, exercise avoidance, and negative affect (Himmelstein, Puhl, & Quinn, 2018). These studies found that coping with weight stigma via healthy lifestyle behaviors or reappraisal was positively associated with well-being whereas responding to weight stigma with negative affect, maladaptive eating, and or disengagement forms of coping were negatively associated with well-being. The current study examined the extent to which women engaged in rumination and compensation in response to weight-based identity threat. Rumination is a passive coping response in which individuals repetitively dwell on a distressing experience (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Rumination in response to stigmatizing experiences is associated with increases in psychological distress (Hatzenbuehler, Nolen-Hoeksema et al., 2009). Compensation, in contrast is an active coping response in which an individual exerts extra effort to make a good impression or disconfirm negative stereotypes (Miller et al., 1995; Neel, Neufeld, & Neuberg, 2013). Although a potentially effective way to make favorable impressions, com-

ensation can be exhausting and impede subsequent attempts at self-regulation (Vohs, Baumeister, & Ciarocco, 2005). This may explain why Hayward, Vartanian, and Pinkus (2017) found that active coping with weight stigma was unrelated to psychological outcomes. We expected both rumination and compensation to increase in response to weight-based identity threat.

In the current study, women who would be categorized as "overweight" or "obese" based on their BMI interacted with a same-sex peer who they believed held either very negative or unbiased attitudes toward "fat people." We predicted that for higher body weight women, interacting with a same-sex peer who endorsed anti-fat attitudes would be identity threatening, leading to greater anticipation that the partner would dislike and reject them. We further predicted that anticipated rejection would be more pronounced the higher women's weight. Following up previous research (Blodorn et al., 2016), we expected anticipated rejection to be associated with decreased self-esteem, poorer cognitive performance, increased cardiovascular stress responses, and more negative emotions. We also expected that anticipated rejection would be associated with attempts to cope via rumination and compensation.

## 2. Method

### 2.1. Participants

One hundred and forty six women (18–29 years old,  $M = 19.95$ ,  $SD = 2.18$ ), recruited from University of California, Santa Barbara, Santa Barbara Community College, and the surrounding community, participated in exchange for either partial course credit or monetary compensation. They were selected on the basis of their responses to an eligibility survey in which they rated their self-perceived weight on a 7-point scale (1 = *very underweight*, 4 = *average weight*, 7 = *very overweight*) and also reported their height and weight. The latter information was used to calculate self-reported BMI (weight in pounds\*703/height in inches<sup>2</sup>). We restricted recruitment to women who *both* perceived themselves as overweight *and* who self-reported a BMI that was greater than 25. We also restricted recruitment to White ( $n = 70$ ) or Latina/Hispanic ( $n = 76$ ) women in order to have an ethnic-matched confederate and thus eliminate anticipated ethnic-based stigmatization as an alternative explanation for our findings.

At the end of the study, participants' height and weight were measured to get an objective measure of BMI. Two individuals had an objective BMI below 25, but were retained for analyses because they perceived themselves as overweight.<sup>1</sup> One participant did not consent to being weighed and was excluded from analyses. Participants' BMI ranged from 24.21 to 44.87 ( $M = 30.61$ ,  $SD = 4.34$ ), with 57.5% falling in the overweight category ( $BMI \geq 25$  and  $< 30$ ) and 42.5% falling in the obese category ( $BMI \geq 30$ ) according to World Health Organization guidelines. Self-perceived weight and objective BMI were significantly correlated,  $r = .52$ ,  $p < .001$ .

### 2.2. Procedure

Upon arrival to the lab and after providing consent, participants were connected to physiological recording equipment (see below) and sat quietly for a 5-minute baseline recording period. Partici-

<sup>1</sup> Given that perceiving oneself as overweight is theorized to be necessary to experience weight-based social identity threat (Hunger et al., 2015), we had an a priori interest in women who saw themselves as at least slightly overweight. Four participants perceived themselves as overweight when initially recruited but subsequently indicated that they were "average weight" in a pre-study survey, and were therefore excluded from analyses.

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