Are the associations between weight bias, health behavior, and psychological well-being the same for female athletes and non-athletes?

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Abstract

The associations between weight stigma, mental health, exercise, and exercise-avoidance motivation were explored and compared among female college athletes and non-athletes. Participants (n = 114) completed measures of weight stigma experiences, self-esteem, depression, eating disorder symptoms, diet and exercise habits, and exercise motivation. Stigma experiences were significantly associated with poorer habits and mental health in college women, and even more so among the athletes. These findings suggest that weight stigma may undermine mental health and motivation to engage in health-promoting behavior. They highlight the importance of investigating weight stigma within diverse populations that are not necessarily overweight or obese.

Key words: Weight stigma, college students, diet, exercise, mental health

Previous literature has documented that overweight and obese individuals report experiences with weight stigma in many domains, including education, employment, health care, and social interactions (Puhl & Brownell, 2001; 2006; Brownell, Puhl, Schwartz, & Rudd, 2005). Weight stigma or weight bias can be described as negative weight-related attitudes and beliefs communicated through stereotypes, rejections, prejudice, and discrimination towards individuals based on their body weight (Puhl, Moss-Racusin, Schwartz, & Brownell, 2008). One might assume that the likeliest perpetrators of weight stigma would be strangers, and though strangers do contribute to this problem, a sample of overweight adults reported that the most common sources of weight stigma were significant close others, such as parents or spouses (Puhl, Moss-Racusin, Schwartz, & Brownell, 2008). Other common sources of weight stigma include co-workers and employers (Puhl & Brownell, 2006). These results indicate that weight stigma occurs within relationships and groups with frequent contact, of both personal and professional origins, and among peers and supervisors.

Experiences with weight stigma are not only common among adults in general, but among children and adolescents as well. Children and adolescents describe experiences with weight stigma, and they are more likely to perceive weight stigma from classmates, peers, and teachers--figures that are less relevant in the lives of older adults (Puhl & Brownell, 2006).

Irrespective of gender or age, evidence has accumulated demonstrating that experiences with weight stigma are detrimental to mental health (Friedman, Reichmann, Constanzo, Zelli, Ashmore, & Musante, 2005; Myers & Rosen, 1999). In a study of obese men and women in a weight-loss facility, Ashmore, Friedman, Reichmann, & Musante (2008) found that stigmatizing experiences were related to a wide range of concerns, including overall psychological distress,

interpersonal sensitivity, suspiciousness toward others, binge eating, depression, social isolation, anxiety, and hostility. Additional studies of college students and a broader range of adults have shown that people who experienced weight stigma were more likely to report body dissatisfaction and symptoms of depression (Vartanian & Shaprow, 2008; Puhl & Brownell, 2006) and less likely to report high self-esteem or self-worth (Crocker & Garcia, 2005).

Though weight stigma has been primarily linked to adverse psychological functioning, stigma experiences may also exert a negative influence on health behaviors. Adults who experience weight stigma might avoid exercise and withdraw from diets as coping mechanisms, albeit maladaptive ones. According to a recent study of over 2,000 overweight or obese adults, 79% reported eating more as a coping mechanism for dealing with stigmatizing experiences (Puhl & Brownell, 2006). Focusing on the exercise behaviors of young women, Vartanian and Shaprow (2008) found that compared to women who experienced weight stigma less frequently, participants who reported more frequent weight stigma experiences indicated a greater desire to avoid exercise. In another recent study, Vartanian and Novak (2011) found that adults (both men and women) who internalized negative societal attitudes about weight were especially likely to want to avoid exercise after experiencing weight stigma. This evidence suggests that weight stigma can potentially undermine people's motivation to diet and exercise, thus inhibiting potential weight loss success, putting health at greater risk, and increasing the likelihood of future weight stigma experiences. The current study will build upon the results from previous studies by exploring the behavioral and psychological correlates of weight stigma experiences among a particularly vulnerable population: female college students.

Though there may not be gender differences in regards to the type of weight stigma that overweight individuals experience (Puhl & Brownell, 2006; Puhl, Moss-Racusin, Schwartz, & Brownell, 2008), research has suggested that women may suffer more from weight stigma than men (Stake & Lauer, 1987; Rothblum, 1992). In previous studies, heavier women have been characterized by others as less warm, trustworthy, motivated, smart, good, and valuable, whereas heavy men are perceived less negatively (Boyes & Latner, 2009; Schwartz, Chambliss, Brownell, Blair, & Billington, 2003).

Women who are overweight are not only judged harshly, but tend to judge themselves harshly. Negative attitudes about overweight and obese people are widely held, even among people who are overweight or obese themselves (Schwartz, Vartanian, Nosek, & Brownell, 2006). However, because women are more likely to internalize a cultural ideal body (McKinley & Hyde, 1996; McKinley, 1998), women may also internalize weight stigma to a greater extent. For example, Boyes and Latner (2009) investigated the perceptions of romantic couples and found that women who were overweight judged themselves as poorer matches to an ideal mate, but overweight men did not derogate themselves as partners. In a study of obese women, Puhl, Moss-Racusin, & Schwartz (2007) found that women who internalize weight stigma were more likely to use unhealthy coping mechanisms (i.e., refused to diet) and engage in binge eating.

Although body dissatisfaction has been reported to remain stable across the lifespan (Tiggemann, 2004), previous research suggests that young women are preoccupied with body image and are at an increased risk for body image disturbance (Tiggemann & Lynch, 2001; 2004). For example, Tiggemann and Lynch (2001) investigated women's experience with body image across the life span by surveying 322 women with ages ranging from 20-84 years. The

researchers found that younger women experienced higher levels of appearance anxiety, disordered eating and dietary restraint.

Negative body-focused social interactions also undermine young women's body perceptions and may pressure them to lose weight. Lieberman, Gauvin, Bukowski, and White (2001) examined weight, body, and appearance-related teasing in adolescent women. After controlling for BMI, age, and age of first period, as well as other social characteristics, weight-related teasing was a predictor of dieting and body shape, weight, and appearance-related teasing were predictors of poor body esteem.

Body-related and weight-related comments have also been investigated among college women, suggesting that there is a norm of "fat talk" or negative, self-degrading body comments within this group (Britton, Martz, Bazzini, Curtin, & LeaShomb, 2006). Stormer and Thompson (1996) investigated weight-related teasing in a sample of college women and found that teasing and social comparisons were among the strongest predictors of body image disturbance. Vartanian and Shaprow (2008) found that higher body mass index (BMI) levels were correlated with more frequent experiences of weight stigma, and weight stigma was associated with poorer mental health and health habits. This investigation was particularly striking because it focused on college women with predominantly “normal” BMIs, indicating that weight stigma is not limited to those who are obese or even overweight. Perceptions of weight stigma are present among “normal” female college students, too. Thus, it is important to consider how experiences with weight stigma are linked to mental and physical health among female college students, including the more narrow population of female college athletes.

It may seem somewhat counterintuitive to explore weight stigma experiences among athletes because of prevalent stereotypes about their superior fitness and health. However, though participation in athletics can promote healthy behavior and physical fitness, athletes face a high degree of scrutiny of their bodies, and this may include negative weight-related comments (George, 2005). Muscat and Long (2008) found that female athletes and sport participants who recalled receiving negative comments about their weight reported greater feelings of shame and anxiety and higher levels of disordered eating compared to those who did not recall weight criticism. Thus, if athletes are perceived as overweight within their sport organization, they may experience the detrimental effects of weight stigma, even if they are not overweight based on any objective or rational standard. Therefore, female college athletes may be vulnerable to weight stigma and the negative mental health and health behavioral consequences that have previously been documented within the broader population.

The purpose of the current investigation is to discover whether the links among weight stigma, health behavior, and psychological well-being are similar for female college athletes and non-athletes, or if each group experiences stigma differently. Examining female athletes within the context of the broader population of female college students is important to understand the ways that their experiences are similar to and different from their peers. Female athletes may be buffered from some of the previously discussed negative associations with weight stigma due to healthier exercise and nutrition habits, but they may also be more vulnerable as they may experience weight stigma within their social environment (e.g., comments from friends, classmates, and family members) in addition to potential weight stigma and critical body comments from coaches and teammates, who play significant roles in their lives. Thus, athletes

may experience as much or even more weight stigma than their peers who do not participate in athletics.

Based on the literature described above, more frequent experiences with weight stigma were expected to be associated with poorer mental health, including lower self-esteem, greater symptoms of depression, higher levels of body dissatisfaction, more symptoms of bulimia, and a greater desire to lose weight. Female athletes were expected to be as likely to evidence these negative associations as their non-athlete peers.

However, although the frequency of experiences with weight stigma and the associations between weight stigma and mental health were expected to be similar for athletes and non-athletes, the associations between weight stigma and health behavior could be quite different. Though eating disordered symptoms have been documented among female athletes (Smolak, Murnen, & Ruble, 2000), it is important for female athletes to engage in healthy dieting to avoid poor health prevalent among female athletes, such as the female athlete triad (Yeager, Agostini, Nattiv, & Drinkwater, 1993). Female athletes who report more frequent experiences with weight stigma may report more healthy dieting behaviors, compared to non-athletes, who may be more motivated to engage in unhealthy practices that would be even more untenable for athletes, such as skipping meals.

Similarly, although previous research demonstrated that weight stigma is correlated with greater motivation to avoid exercise, but this may not be the case for athletes (Vartanian & Shaprow, 2008; Vartanian & Novak, 2011). Because exercise is a high priority for most athletes, female athletes who experience weight stigma may report greater motivation to approach rather than avoid exercise compared to non-athletes. Furthermore, athletes were expected to report

more frequent exercise than their peers due to obligations to their sports team, structured exercise programs, or for enjoyment. Female athletes were expected to reveal more positive associations between weight stigma and exercise behavior compared to non-athletes.

All of the proposed hypotheses focus on experiences with weight stigma, rather than body weight itself or chronically low self-esteem. Thus, the associations between weight stigma and poorer mental health, as well as the predicted positive associations with health behavior for athletes, and negative associations with health behavior for non-athletes, are predicted to hold regardless of participants' weight status. The proposed associations will be examined with BMI and trait levels of self-esteem included as covariates.

Method

Participants

There were 114 female participants in the study recruited from a midwestern university and a northeastern university. No significant differences were found between participants from the two locations. Among these participants, 55% (n = 63) self-identified as athletes and 45% (n = 51) were not involved in sports or athletics ("non-athletes"). The participants' ages ranged from 18-22 (M = 19.17, SD = 1.12). The majority of the sample was Caucasian (78%), 6% of the participants were African-American, 5% were Hispanic, 3% were Asian American, and 7% identified as multiracial or did not identify.

Procedure

Participants were recruited through the university participant pool or university sports teams at two universities. The women were given a link to a survey hosted on a secure, encrypted website. After providing consent, participants completed questions assessing

stigmatizing weight-related experiences, mental health (self-esteem, symptoms of depression, eating disordered symptoms), as well as dietary and exercise habits. At the end of the survey, participants were asked for general background information, including weight history and demographics, before being debriefed. Both universities' institutional review boards approved all procedures.

Measures

Weight stigma. The 11-item "Others Making Negative Assumptions" subscale of the Stigmatizing Situations Questionnaire (Myers & Rosen, 1999) was used to assess weight stigma. The original scale was developed for use with overweight and obese individuals, but has been used with predominantly "normal" samples, including college students (e.g., Vartanian & Shaprow). For the current investigation, the subscale focused on others' negative assumptions was used because of its relevance to college students. Participants rated the frequency with which different stigmatizing situations had happened to them on a 10-point Likert-type scale (0 = *Never*, 9 = *Daily*). Sample items include: "Having strangers suggest diets to you," "Other people having low expectations of you because of your weight," and "Friends, acquaintances, co-workers, etc. making fun of your appearance." Higher scores indicated more frequent experiences with weight stigma. Internal consistency for the subscale was very good, $\alpha = .75$.

Trait self-esteem. The Rosenberg Self-Esteem scale (Rosenberg, 1965) measured participants' dispositional self-esteem. The 10-item scale was rated on a 4-point Likert-type scale (1 = *Strongly Disagree*, 4 = *Strongly Agree*). Items in the scale include statements such as, "On the whole I am satisfied with myself," and reversed items such as, "I certainly feel useless at times." The internal consistency for the current sample was excellent, $\alpha = .87$.

State self-esteem. The State Self-Esteem scale (Heatherton & Polivy, 1991) was used to measure participants' recent and situational perceptions of self-esteem. Participants were asked to indicate how true each of 20 statements were for them "at this moment" through ratings on a 5-point Likert-type scale (1 = *Not at all*, 5 = *Extremely*). The subscales of the composite measure assess appearance, social, and performance esteem. Sample items include, "I am dissatisfied with my weight," "I am self-conscious," and "I feel confident about my abilities," respectively. Internal reliability for the, appearance social, and performance subscales were α = .86, α = .82, and α = .80, respectively. Internal reliability for the total scale was excellent, α = .90.

Depressive symptoms. The Center for Epidemiological Studies-Depression Scale (CES-D**;** Radloff, 1977) was used to measure recent symptoms of depression. Participants were asked to rate how they felt or behaved during the past week on a 4-point Likert-type scale (1 = *"Rarely or none of the time (Less than one day)" to* 4 = *"Most or All of the time (5-7 days)"*). Items in the scale include statements such as, "I thought my life had been a failure," and reversed items such as, "I felt hopeful about the future." Internal consistency for the measure was excellent, α = .88.

Eating disorder symptoms. The Eating Disorder Inventory (EDI; Garner, Olmstead, & Polivy, 1983) was used to measure eating disorder symptoms. For the purpose of the current study, three subscales were examined: drive for thinness (7 items; α = .93), bulimia (7 items; α = .89), and body dissatisfaction (9 items; α = .90). Sample items in the drive for thinness, bulimia, and body dissatisfaction subscales included, "I think about dieting," "I think about bingeing (overeating)," and "I think that my stomach is too big," respectively. Items were rated on a 6-

point Likert-type scale from *(1 =Never, 6 = Always),* with higher scores indicating more disordered attitudes and behaviors.

Dieting behavior. The scale assessing behaviors to control dietary intake used by Vartanian and Herman (2006) was adapted for the current study. To assess healthy and unhealthy dieting behaviors, participants were asked to rate on a 4-point Likert-type scale (1 = *Never*, 4 = *Always*) how often they engaged in specific dietary habits. Four items represented healthy dieting behaviors (α = .77,) and two represented unhealthy behaviors (α = .60). Sample items from the healthy and unhealthy dietary habits subscales include, "Eat a healthy/balanced diet" and "Take diet pills, powders, or liquids," respectively.

Exercise behavior. A modified version of the Godin Leisure-Time Exercise Questionnaire described in previous work (Vartanian & Novak, 2011) was used to assess recent exercise patterns. This measure asked participants to report the frequency and duration of mild (low effort, such as easy walking, yoga, etc.), moderate (not exhausting, such as easy bicycling, baseball, etc.), and strenuous (heart beats rapidly, such as basketball, running, etc.) exercise completed during the past week. For each level of exercise, participants reported the frequency of exercise on an eight-point scale (*0 = None; 7 = Seven times or more*) and reported the average duration of exercise in minutes. The number of sessions they reported at each level of exertion was multiplied by the number of minutes participants reported to calculate the total amount of exercise at each level.

Exercise motivation. Participants completed a measure of approach and avoidance exercise based on the work of Vartanian and Shaprow (2008). Participants were asked to think about the statements as responses to negative situations related to weight. Four items represented

exercise avoidance motivation (e.g., "I feel uncomfortable going to a gym where there are a lot of mirrors," and "I avoid going to the gym when I know there will be a lot of thin people there"), and two represented exercise approach motivation ("I do physical activity in order to feel more comfortable with my body," and I feel motivated to exercise as a way to control my weight"). Endorsement of each item was rated on a 7-point Likert-type scale (1 = *Not true at all*, 7 = *Completely true*). Both subscales evidenced good internal consistency (Avoidance: α = .83; Approach: α = .79).

Body mass. Self-reported height and weight values were used to calculate BMI. BMI was calculated using the National Institutes of Health BMI calculator (NIH, 2010).

Weight history. Participants' weight history was assessed using a rating of their weight status at different phases of their lives. The participant described their weight status on a 7-point Likert-type scale (1 = *Underweight*, 7 = *Obese*). Their weight status during childhood, middle school, high school, and now was rated.

Results

Group Comparisons

First, t-tests were used to compare the two groups of women on key variables. No differences in the main predictor variable, frequency of experiencing weight stigma, were found. The groups were not significantly different on any of the control variables, BMI levels, self-reported weight status, or trait self-esteem. Descriptive statistics for both groups for these and the following analyses are provided in Table 1.

INSERT TABLE 1 ABOUT HERE

No differences were reported on any of the mental health indicators, including symptoms of depression, the state self-esteem subscales, and the three eating disordered symptoms subscales. The comparison of dieting behaviors revealed that athletes reported more frequent healthy dieting behaviors compared to non-athletes, $t(111) = 2.18$, $p = .03$, $\eta^2 = .04$, though no difference in unhealthy dieting behaviors was found.

T-tests also revealed predictable differences between the groups on several exercise-related variables. Specifically, significant differences were observed for amounts of strenuous exercise, $t(92) = 4.72$, $p < .001$, $\eta^2 = 0.19$, $CI_{95} = 116.9, 286.9$, and moderate exercise, $t(95) = 3.77$, $p < .001$, $\eta^2 = 0.13$, $CI_{95} = 77.3, 249.6$. Levene's tests indicated unequal variances for the two groups on both strenuous exercise ($F = 11.09$, $p = .001$) and moderate exercise ($F = 13.63$, $p < .001$), so degrees of freedom were adjusted from 111 to 92 and 95, respectively. Athletes reported higher amounts of each of these exercise levels than non-athletes. No difference in reported mild exercise was found. Small but significant differences were reported for exercise avoidance motivation, $t(92) = -2.07$, $p = .04$, $\eta^2 = 0.05$, $CI_{95} = -1.03, -.02$, and exercise approach motivation, $t(111) = 2.69$, $p = .008$, $\eta^2 = .06$. Levene's tests showed unequal variances for the groups on exercise avoidance motivation ($F = 5.38$, $p = .02$). Athletes reported lower levels of exercise avoidance and higher levels of exercise approach compared to non-athletes.

Associations with Weight Stigma

Multiple linear regressions were computed separately for athletes and non-athletes. In each model, weight stigma was added as a predictor, BMI[1] and trait self-esteem were included as covariates, and the mental health factors and health behaviors were added as dependent variables. BMI and trait self-esteem were included as covariates because they are directly related

to weight stigma in the current sample and help to isolate the implications of experiencing weight stigma, above and beyond the associations with heavier weight status and chronically low self-esteem, as has been done in previous research (Vartanian & Shaprow, 2008). For the entire sample, as well as for athletes and non-athletes examined separately, weight stigma was significantly correlated with higher BMI levels, $r = .36$, $p < .001$, and with lower trait self-esteem, $r = -.32$, $p = .001$.

First, regressions were used to examine links between weight stigma and mental health. These results, and those in the sections that follow, are reported in Table 2. The performance self-esteem subscale was not associated with weight stigma for either group of participants. However, the appearance esteem subscale, $R^2 = .58$, $F(3, 55) = 25.72$, $p < .001$, and the social esteem subscale, $R^2 = .58$, $F(3, 55) = 24.82$, $p < .001$, were both negatively associated with stigma for athletes, but not for non-athletes. Stigma was significantly associated with more depressive symptoms among both athletes, $R^2 = .60$, $F(3, 55) = 27.58$, $p < .001$, and non-athletes, $R^2 = .47$, $F(3, 44) = 13.9$, $p < .001$. Among athletes, stigma was associated with reports of more eating disordered symptoms, including greater body dissatisfaction, $R^2 = .38$, $F(3, 55) = 11.3$, $p < .001$, bulimia, $R^2 = .28$, $F(3, 55) = 7.1$, $p < .001$, and drive for thinness, $R^2 = .43$, $F(3, 55) = 13.98$, $p < .001$. Only bulimia, $R^2 = .50$, $F(3, 44) = 14.61$, $p < .001$, and drive for thinness, $R^2 = .30$, $F(3, 44) = 6.28$, $p < .001$, were associated with stigma among non-athletes.

INSERT TABLE 2 ABOUT HERE

Next, regressions were used to test relationships between weight stigma and dieting behavior to determine whether weight stigma was associated with poorer health behavior for each group. There was no significant association found for non-athletes' healthy dieting, $R^2 =$

.04, $F(3, 44) = .63$, $p = .60$, but a significant positive association was shown for unhealthy dieting, $R^2 = .18$, $F(3, 44) = 3.23$, $p = .03$. For athletes, more frequent experiences with weight stigma were associated with both more frequent healthy dieting behaviors, $R^2 = .29$, $F(3, 55) = 7.54$, $p < .001$, and with more frequent unhealthy dieting behaviors, $R^2 = .29$, $F(3, 55) = 7.53$, $p < .001$.

Finally, exercise amounts and motivations were examined to determine whether weight stigma undermined exercise behavior or the motivations to avoid or engage in exercise. No associations between amounts of strenuous, moderate, or mild exercise and weight stigma were found for either group of women. However, more frequent weight stigma was associated with higher levels of exercise avoidance motivation for both athletes, $R^2 = .49$, $F(3, 55) = 17.81$, $p < .001$, and non-athletes, $R^2 = .36$, $F(3, 44) = 8.07$, $p < .001$. As predicted, among athletes, but not non-athletes, more frequent weight stigma was also associated with higher levels of exercise approach motivation, $R^2 = .19$, $F(3, 55) = 4.17$, $p = .01$.

Discussion

The current study contributes additional evidence that college women, who have on average a normal BMI, are not immune to experiences with weight stigma. Though female athletes and non-athletes reveal some predictable differences, they were equally likely to report experiences with weight stigma, and many of the expected problematic associations between weight stigma, mental health, and health behavior were evidenced for both groups of women.

As predicted, among both athletes and non-athletes, weight stigma was associated with depression and symptoms of eating disorders, including bulimia and drive for thinness. Interestingly and unexpectedly, appearance self-esteem, social self-esteem, and body

dissatisfaction were only associated with weight stigma among athletes, suggesting that female athletes who experience weight stigma may be even more negatively and profoundly affected than non-athletes. These findings may be related to the previously noted higher prevalence of eating disordered symptoms among athletes compared to the broader population of young women (Smolak, Murnen, & Ruble, 2000). Furthermore, the athlete may perceive strict standards and ideals for weight and physical appearance from others within the sport organization, such as teammates and coaches (George, 2005). Indeed, the body dissatisfaction subscale asks participants to report their thoughts about specific body parts, and athletes may have more articulated attitudes and more challenging goals compared to non-athletes. However, it should be noted that no differences in eating disorder symptoms, including body dissatisfaction, were observed between the two groups in the current investigation.

The results also showed that weight stigma was more strongly associated with dietary habits for athletes. It had been hypothesized that athletes who experienced weight stigma might respond with healthy dieting because nutrition is likely to be an important part of their athletic performance and success. Interestingly, athletes evidenced correlations between weight stigma and both healthy dieting practices (e.g., eating a healthy, balanced diet) and unhealthy dieting practices (e.g., taking diet pills). This suggests that female athletes engaged in a variety of dieting strategies to lose weight or alter their bodies, some of which may compromise their physical health. The significant association between weight stigma and unhealthy dieting found for non-athletes provided support for the expectation that they would engage in more unhealthy practices when facing weight stigma.

Regarding exercise, as predicted, college women identified as athletes reported engaging in more exercise of strenuous and moderate intensity than non-athletes. This finding makes sense because athletes may be required to work out by coaches or athletic trainers in their sport, or may simply prioritize it and enjoy it more than non-athletes. No associations between weight stigma and exercise were observed for either group. However, both groups revealed associations between weight stigma and a heightened desire to avoid exercise. Non-athletes experiencing weight stigma may indeed be withdrawing from opportunities to engage in physical activity, but exercise frequency among non-athletes was lower overall. It may be that athletes' exercise amounts are less variable due to obligations and routines, and thus less likely to be associated with concerns over weight stigma or decreased desire to exercise. On a more positive note, athletes also demonstrated an association between weight stigma and motivation to approach or engage in exercise. Thus, participation in athletics may afford women health-promoting skills and motivation to cope with negative comments about their bodies adaptively. Athletes may have access to experts within the sport organization, such as athletic trainers or nutritionists, who can recommend healthy diet and exercise behaviors, whereas non-athletes may lack these valuable resources.

Limitations to the current study should be noted. First, the study compared responses from relatively small samples of female athletes and non-athletes. The participants may not be representative of women in college overall, though the findings for non-athletes echo those from a previous investigation elsewhere (Vartanian & Shaprow, 2008). Future research should include a larger sampling of participants from a broader range of universities. Weight stigma should also

be investigated in college men and male athletes to explore whether pressures to attain a particular physique are similarly associated with mental health and health behavior among men.

Due to the cross-sectional design, causal interpretations suggesting that weight stigma produces negative outcomes among college women cannot be made. The documented associations between experiences of weight stigma, mental health, and health behavior among both athletes and non-athletes suggest that longitudinal investigations and explorations of potential mediators and moderators will be fruitful next steps to understand this phenomenon and discover protective factors to minimize the conceivable harm.

The current study showed that involvement in athletics did not protect female athletes from experiences with weight stigma. For both groups of students, weight stigma was linked to poorer mental health, and athletes unexpectedly revealed more pronounced associations with lower self-esteem and more negative body perceptions. Athletes may possess more helpful resources to respond to weight stigma with healthier dieting strategies and greater motivation to engage in exercise, but they were also vulnerable to unhealthy dieting practices and a desire to withdraw from exercise, like other women in college. Coaches, parents, friends, and teammates should be made aware that judgments about weight and appearance might be detrimental to athletes' mental and physical health. As researchers and health professionals, it is essential to increase understanding and awareness about the detrimental effects of stigmatizing comments and actions so that health and well-being can be promoted, regardless of people's body weight, size, or apparent level of fitness.

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Table 1

Descriptive statistics and comparisons for athletes and non-athletes

	Athletes		Non-Athletes		
	M	*SD*	*M*	*SD*	*t (df)*
Weight stigma	1.75	.68	1.75	.72	-.01(109)
BMI	23.39	3.67	24.81	4.99	-1.66 (86.1)
Trait self-esteem	31.92	5.19	31.60	6.28	.30(111)
State self-esteem					
Performance	26.84	4.47	27.3	4.55	-.54(111)
Appearance	20.1	4.91	19.32	5.37	.80(111)
Social	24.76	5.62	25.8	4.93	-1.03(111)
Depression	14.27	8.75	15.26	11.09	-53(111)
Eating disorder symptoms					
Body dissatisfaction	3.38	1.10	3.57	1.23	-.86(111)
Bulimia symptoms	2.06	.98	1.97	.95	.48(111)
Drive for thinness	3.51	1.39	3.10	1.34	1.60(111)
Healthy dieting	2.44	.74	2.16	.58	2.18 (111) *
Unhealthy dieting	1.42	.54	1.46	.55	-.38 (111)
Strenuous exercise	282.94	296.55	81.04	140.76	4.72 (91.6) ***
Moderate exercise	265.97	295.33	102.52	151.08	3.77 (95.1) ***
Mild exercise	154.56	190.64	130.15	135.92	.75 (108)
Exercise avoidance	1.79 *	1.16	2.32 *	1.47	-2.07 (91.7) *
Exercise approach	4.40 *	1.87	3.50 *	1.64	2.69 (111) **

Note: *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 2

Correlates of stigma for athletes and non-athletes, controlling for BMI and trait self-esteem

	Athletes			Non-Athletes		
Variable	*b*	*t*	r_p	*b*	*t*	r_p
State self-esteem						
Performance	.83	1.1	.15	-.15	-.21	-.03
Appearance	-2.82	-4.07 ***	-.48	-.37	-.53	-.08
Social	-2.27	-2.83 **	-.36	-.73	-.81	-.12
Depression	2.76	2.28 *	.29	4.21	2.23 *	.32
Eating disorder symptoms						
Body dissatisfaction	.71	3.73 ***	.45	.17	.80	.12
Bulimia symptoms	.45	2.5 *	.32	.88	5.49 ***	.64
Drive for thinness	.94	4.1 ***	.48	.81	3.04 **	.42
Healthy dieting	.54	3.94 **	.47	.16	1.15	.17
Unhealthy dieting	.38	3.83 ***	.46	.21	1.81 †	.26
Strenuous exercise	7.99	.13	.02	.41	.01	.002
Moderate exercise	12.16	.19	.03	14.64	.41	.06
Mild exercise	10.71	.26	.04	-.64	-.02	-.003
Exercise avoidance	.50	2.78 **	.35	.58	2.06 *	.30
Exercise approach	1.03	2.78 *	.35	.41	1.10	.16

Note: Coef. = Unstandardized regression coefficient. r_p = Partial correlation.

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Footnote

[1] Because BMI levels may misclassify adults with greater muscle mass, and this is a particular concern in a study of athletes who are likely to be more muscular, each analysis was repeated with self-reported weight status included as a covariate instead of BMI. The pattern of results was identical.