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Effects of Weight Stigma on Exercise Motivation and Behavior

A Preliminary Investigation among College-aged Females

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Abstract

This study examined the relation between weight stigma, exercise motivation and exercise behavior. One hundred female undergraduates (BMIs [kg/m^2] 17–38) completed measures of experiences with weight stigma, body dissatisfaction, self-esteem and exercise motivation, and reported on their exercise behavior. Stigma experiences were positively correlated with BMI and body dissatisfaction. Importantly, stigma experiences were related to increased desire to avoid exercise, even when controlling for BMI and body dissatisfaction. Exercise avoidance was in turn related to less frequent strenuous and moderate exercise. These findings suggest that weight stigma (through its impact on avoidance motivation) could potentially decrease physical activity levels.

Keywords

- *college students*
- *exercise*
- *motivation*
- *weight stigma*

OBESITY and related negative health consequences are key public health issues, and have received a great deal of attention in both the scientific literature and in the popular media. Increasingly, researchers are also focusing on the negative social consequences for overweight and obese individuals. It has been well documented that stigma and discrimination against obese individuals is widespread. Obese persons suffer discrimination in virtually every area of their lives, including education, employment, health care and romantic relationships (Puhl & Brownell, 2001). Negative attitudes toward and stereotypes about obese persons are observed at both implicit and explicit levels (Crandall, 1994; Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003), and are even observed among health care professionals specializing in obesity (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003) and obese individuals themselves (Schwartz, Vartanian, Nosek, & Brownell, 2006; Wang, Brownell, & Wadden, 2004). There is evidence that negative attitudes toward overweight and obese individuals are formed as early as age three (Cramer & Steinwert, 1998), and that these attitudes are worse today than they were four decades ago (Latner & Stunkard, 2003).

Although weight bias has been well documented, much less is currently known about the consequences of such bias on the stigmatized individuals themselves. There is some evidence that weight stigma is associated with increased depression and body dissatisfaction, and with lower self-esteem (Friedman et al., 2005; Myers & Rosen, 1999). Importantly, weight stigma has the potential to impact individuals' weight-management efforts, which could have important implications for their overall health and well-being. For example, research with adolescents has shown that the experience of being teased is related to an increased likelihood of engaging in eating-disordered behaviors (e.g. binge eating, skipping meals and using laxatives) (Neumark-Sztainer et al., 2002). In addition, other studies have shown that obese individuals are more likely to overeat and avoid dieting in response to weight stigma than they are to go on a diet (Myers & Rosen, 1999; Puhl & Brownell, 2006). In short, weight stigma appears to result in behaviors that would be inconsistent with healthy weight management.

Just as weight teasing and stigma were found to result in unhealthy eating behaviors, there is some evidence that weight stigma might also decrease the likelihood that individuals will engage in physical

activities. This research has been conducted primarily among children and adolescents. Children report that they are reluctant to become involved in physical activities at school because of teasing that they might experience (Bauer, Yang, & Austin, 2004). Moreover, teasing about weight among children is related to lower involvement with physical activity and a preference for sedentary activities (Hayden-Wade et al., 2005), and overweight children are more likely than their normal-weight peers to report that teasing from friends was a barrier to engaging in physical activity (Zabinski, Saelens, Stein, Hayden-Wade, & Wilfley, 2003). Finally, one recent study (Storch et al., 2007) found that depression and loneliness mediated the link between peer victimization and decreased physical activity, and another study found that coping skills moderated the link between weight criticism and enjoyment of sports (Faith, Leone, Ayers, Heo, & Pietrobelli, 2002).

The studies just cited provide some indication that experiences with weight stigma can result in lower levels of physical activity, at least among children and adolescents. In light of the benefits of physical activity to weight management and overall health, we sought to examine the potential impact of weight stigma on exercise motivation and exercise behavior among adults. Specifically, we tested the hypothesis that experiences with weight stigma would be linked with decreased motivation to engage in physical exercise, as well as to lower levels of actual physical activity.

Methods

Participants

Participants were 100 female undergraduate students at a private North-Eastern university. Their average age was 20.1 years (range = 18 to 25), and their average BMI was 23.3 (range = 17 to 38). Fifty-eight percent of participants were White, 11 percent were Asian, 9 percent were African-American, 8 percent were Hispanic and 14 percent identified as 'mixed' or 'other.'

Materials and procedure

Participants were recruited from two high-traffic locations on campus. Passers-by were invited to take part in a brief questionnaire study examining individuals' exercise motivation and behavior, and were given a scratch lottery ticket as compensation for their participation.

Table 1. Descriptive statistics for subscales of the Stigmatizing Situations Inventory

	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>%</i>
Comments from children	0 to 6.25	0.91	1.21	56
Comments from strangers	0 to 4.40	0.70	0.90	72
Being stared at	0 to 4.20	0.64	0.99	47
Comments from family	0 to 4.57	0.62	0.96	57
Being avoided or excluded	0 to 5.50	0.40	1.03	21
Others making negative assumptions	0 to 6.00	0.40	1.10	20
Physical barriers	0 to 4.00	0.35	0.65	48
Inappropriate comments from doctors	0 to 4.75	0.32	0.78	29
Being physically attacked	0 to 6.00	0.27	1.08	8
Loved ones embarrassed by your size	0 to 4.00	0.21	0.62	20
Job discrimination	0 to 2.33	0.12	0.39	12

Note: Scale scores ranged from 0 (never) to 9 (daily). % = percentage of participants who reported ever experiencing each category of stigma

Questionnaire materials The Stigmatizing Situations Inventory (Myers & Rosen, 1999) was used to assess individuals' experiences with weight stigma throughout their lives. This measure contains 50 items that are organized into 11 subscales (e.g. Comments from doctors, Comments from family members, Bias in employment settings; see Table 1). Each item is rated on a 10-point scale ranging from 0 (never) to 9 (daily). For each subscale and for the full scale, higher scores indicate more frequent experiences with weight stigma. Cronbach's alpha for the full scale was .94.

Participants also completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965), which was used as a measure of global self-esteem. This measure has 10 items rated on a four-point scale ranging from 1 (Strongly agree) to 4 (Strongly disagree). Higher scores indicate higher self-esteem (Cronbach's alpha = .89).

The Body Dissatisfaction subscale of the Eating Disorders Inventory (Garner, Olmsted, & Polivy, 1983) was used as a measure of body dissatisfaction. The scale has nine items, each of which was rated on a six-point scale ranging from 1 (Never) to 6 (Always). Higher scores indicate greater body dissatisfaction (Cronbach's alpha = .86).

The Exercise-Avoidance Motivation Scale was created for the purpose of the present study. The scale contains eight items that reflect individuals' reactions to experiencing 'negative situations related to their weight', in particular with respect to exercise and weight-control behaviors (see Appendix). Some of these items were taken from Myers and Rosen's (1999) Coping Responses Inventory, others were

adapted from the Restricted Activities Scale (Robinson & Bacon, 1989), and others were created specifically for this study. Each item was rated on a seven-point scale, ranging from 1 (Not at all true) to 7 (Completely true). Higher scores on this scale indicate greater avoidance motivation (Cronbach's alpha = .83).

Finally, participants reported on the frequency and duration of mild (e.g. easy walking), moderate (e.g. easy bicycling) and strenuous (e.g. basketball) exercise that they had engaged in over the past week. For each level of exercise (i.e. mild, moderate and strenuous), participants indicated the frequency of exercise on an eight-point scale (1 = None; 8 = seven times or more) and the average duration of exercise on a seven-point scale (1 = 0–15 mins; 7 = 91+ mins) at that level. The total amount of exercise at each level was computed by multiplying the reported frequency by the reported duration.

Results

Experiences with stigma

The mean full-scale score for the Stigmatizing Situations Inventory was 0.51 (SD = 0.69), indicating that on average, participants in this study rarely experienced weight stigma. Indeed, the mean level of experienced stigma was lower than that reported by Myers and Rosen (1999) ($M = 1.90$) and by Friedman et al. (2005) ($M = 1.32$), both of which focused exclusively on obese participants. However, even in our predominantly non-obese sample, the full-scale scores in the present study ranged from 0 (Never) to 3.92

Table 2. Summary of regression model predicting exercise avoidance motivation

Predictor	B	β	p
Stigma	.71	.45	.00
BMI	.06	.21	.02
Age	-.02	-.03	.65
Body dissatisfaction	.14	.15	.13
Self-esteem	-.25	-.14	.12

(roughly Several times per year), with 85 percent of the sample experiencing some form of weight stigma at least once in their lives. Stigma experiences were also positively correlated with participants' BMI ($r = .46, p < .001$), indicating that heavier individuals were much more likely to report experiences with weight stigma than were leaner individuals. Table 1 shows the means for each subscale of the Stigmatizing Situations Inventory. The most frequently experienced forms of stigma were Comments from children (e.g. 'A child coming up to you and saying something like, "You're fat!"'), Comments from strangers (e.g. 'Having strangers suggest diets to you') and Being stared at (e.g. 'Groups of people pointing and laughing at you in public').

Associations with psychological variables

Consistent with previous research, stigma experiences were positively correlated with body dissatisfaction ($r = .39, p < .001$), indicating that individuals who experienced more frequent weight stigma also had higher levels of body dissatisfaction (this association held even when controlling for BMI; $r_{\text{partial}} = .23, p = .02$). Stigma experiences, however, were not significantly related to self-esteem ($r = -.12, p = .22$). This latter finding was somewhat unexpected given that previous research has found the Stigmatizing Situations Inventory to be moderately (and negatively) correlated with self-esteem (Friedman et al., 2005; Myers & Rosen, 1999), although a recent study by Puhl and Brownell (2006) also found no correlation between stigma experiences and self-esteem in a sample of over 2000 participants.

As predicted, stigma experiences showed a strong positive correlation with exercise-avoidance motivation ($r = .61, p < .001$), indicating that those individuals who have more frequent experiences with weight stigma are more likely to be motivated to avoid exercising.

The correlations between each of the subscales of the Stigmatizing Situations Inventory and avoidance motivation ranged from $r = .34$ to $r = .60$, all $ps < .001$. The largest correlations were observed for Comments from family ($r = .55, p < .001$) and Inappropriate comments from doctors ($r = .60, p < .001$), and the smallest correlations were observed for Job discrimination ($r = .34, p < .001$) and Being attacked ($r = .35, p < .001$).

We next conducted a linear regression analysis in which we regressed exercise-avoidance motivation on stigma experiences, self-esteem, body dissatisfaction, age and BMI. The overall regression model was significant, $F(5, 94) = 18.26, p < .001$, explaining 47 percent of the variance in exercise-avoidance motivation. The relation between stigma experiences and avoidance motivation was significant even when controlling for all other variables in the model ($B = .45, p < .001$). The only other significant predictor of avoidance motivation was BMI ($B = .21, p = .02$) (see Table 2).¹

Associations with exercise behavior

Contrary to our prediction, stigma experiences were not significantly correlated with mild, moderate or strenuous exercise ($rs = -.05, -.06$ and $-.10$, respectively; all $ps > .33$). Exercise-avoidance motivation, however, was negatively associated with both strenuous exercise ($r = -.25, p = .01$) and moderate exercise ($r = -.20, p < .05$), providing some evidence for the validity of the avoidance motivation measure. Avoidance motivation was not significantly correlated with mild exercise ($r = -.06, p = .57$).

In order to determine whether the associations with exercise behavior would be more pronounced among heavier participants, we next divided our sample into those individuals whose BMI was less than 25 ($n = 75$) and those individuals whose BMI was 25 and above ($n = 25$). The magnitude of the correlation between stigma experiences and avoidance motivation was much larger for heavier participants ($r = .76, p < .001$) than it was among leaner participants ($r = .25, p = .034$), $z = 3.03, p = .002$. The correlations between stigma experiences and exercise were modest for heavier participants, but were not statistically significant due to the small sample size ($r_{\text{strenuous}} = -.25, p = .22$; $r_{\text{moderate}} = -.16, p = .44$); for leaner participants, the correlations were essentially nil ($r_{\text{strenuous}} = -.01, p = .92$; $r_{\text{moderate}} = .05, p = .68$). Finally, the correlations between avoidance motivation and exercise behavior did not differ for heavier and leaner participants.

Discussion

The present study served as a preliminary examination of the relation between experiences with weight stigma and individuals' motivation to exercise. As predicted, individuals who experienced more frequent weight stigma also reported being more dissatisfied with their bodies and reported being more motivated to avoid exercise. These findings are consistent with a growing body of research indicating that weight stigma leads to poorer psychological functioning and to behaviors that are antithetical to weight management. For example, Friedman et al. (2005) found that experiences with weight stigma were related to lower self-esteem, increased depression and increased body dissatisfaction, and others have reported that individuals frequently overeat and avoid dieting in response to experiencing weight stigma (Myers & Rosen, 1999; Puhl & Brownell, 2006).

Unlike previous research on weight teasing among children and adolescents, the present study did not find a direct association between weight stigma and self-reported exercise behavior. We did, however, find that higher exercise-avoidance motivation predicted lower levels of moderate and strenuous exercise. One explanation for the lack of direct effect of stigma experiences on exercise behavior might be that our sample of participants was relatively non-obese, and that the impact of stigma on exercise behavior would be particularly apparent at higher levels of obesity. Another possibility is that the direct impact of stigma on exercise behavior occurs 'in the moment', and that more fine-grained analyses (such as daily-diary or experience-sampling methodologies) would be better suited to capture such a relation than retrospective self-reports of average weekly exercise. Examining the potential stigma-exercise link in obese adults using these types of methods would be a valuable endeavor for future research.

Although this study is a preliminary investigation, there are some important implications of the present findings. Physical activity and physical fitness provide health benefits regardless of an individual's weight status (Farrell, Braun, Barlow, Cheng, & Blair, 2002; Lee, Blair, & Jackson, 1999; Wie et al., 1999), and there is also some evidence that regular exercise facilitates weight loss and is important to weight maintenance (Anderson, Konz, Fredrich, & Wood, 2001; Jakicic, Marcus, Gallagher, Napolitano, & Lang, 2003; Wing, 1999). If weight stigma motivates

people to avoid exercising, then individuals might suffer doubly: (1) they would be less likely to experience the general health benefits of physical fitness; and (2) they would also be less likely to experience the benefits of losing weight (which might include reducing the amount of weight stigma that they experience).

The current findings also add to a growing literature demonstrating that comments about weight from individuals who are trying to be helpful can (perhaps unintentionally) be emotionally damaging, and can also be counterproductive to weight-management efforts. Family members and doctors have been cited as among the most common perpetrators of weight stigma (Puhl & Brownell, 2006), and in the present study, we found that comments from family members and comments from doctors had the strongest associations with exercise-avoidance motivation.²

Similar results have been found in research on social control (i.e. the attempts by others to encourage changes in one's behavior): positive comments from one's spouse can lead to positive changes in health behavior, whereas negative comments are at best ineffective and at worst lead to an increased frequency of negative health behaviors (Cohen & Lichtenstein, 1990; Tucker & Anders, 2001). Others have shown that comments from one's spouse can lead to increased negative affect, particularly when marital satisfaction and marital intimacy are low (Novak, 2006; Tucker, 2002). Taken together, these findings suggest that although comments and suggestions from close others can in some cases serve to promote weight-management efforts, individuals must also be sensitive to the nature of their comments and the impact that those comments might have on the recipient.

What is the mechanism through which weight stigma might influence exercise motivation and exercise behavior? One possibility is that weight stigma has its impact via two negative self-conscious emotions: embarrassment and shame. Embarrassment caused by actual or anticipated negative evaluations from others might motivate some people to actively avoid public exercise situations, such as fitness centers and swimming pools. Indeed, there is evidence (Ball, Crawford, & Owen, 2000) that overweight and obese individuals often feel too embarrassed to exercise. Moreover, there is anecdotal evidence from facilitators of behavioral weight-control programs that negative comments are commonly experienced by obese individuals who are exercising.³ In addition, stigma experiences can cause targets to feel shame, which is characterized by a wish

to hide, withdraw and avoid thinking about shameful aspects of the self (in this case, one's weight) (Tangney & Dearing, 2002). Feeling shame might in turn lead to an overall decrease in motivation and withdrawal from activities, including exercise. Future research examining the links between stigma, embarrassment/shame and motivation to engage in exercise behavior in adults would be highly valuable. Specifically, it would be important to determine whether the impact of weight stigma on exercise motivation and exercise behavior is best understood in terms of individuals' desire to avoid public exercise environments for fear of negative attention from others, or in terms of a general decrease in motivation and a desire to withdraw or hide.

One major limitation of the present study is that we had a relatively small sample consisting predominantly of non-obese individuals. Although we did have a range of BMI scores (17 to 38), only 25 of the 100 participants were overweight (i.e. had a BMI of 25 or higher) and only eight of the 100 were obese (i.e. had a BMI of 30 or higher). Thus, the generalizability of our sample is limited. It is important to note, however, that even our relatively non-obese participants reported experiencing weight stigma, with 85 percent reporting that they experienced at least some form of weight stigma at least once in their lives. If anything, it is likely to be the case that the relations among weight stigma, exercise motivation and exercise behavior would be even stronger among more obese individuals who experience a greater degree of weight stigma. Indeed, separating our sample into individuals whose BMI was less than 25 vs individuals whose BMI was 25 and above revealed that the magnitude of the correlation between stigma experiences and avoidance motivation was much larger for heavier participants than it was among leaner participants, and there was also some suggestion that stigma experience had a greater impact on heavier individuals' exercise behavior. A second limitation is that our data are cross-sectional in nature, and thus causal inferences cannot be drawn. The associations found in the present study indicate that the weight-stigma/exercise link warrants further investigation in longitudinal studies. Finally, the Exercise-Avoidance Motivation Scale was created specifically for the purpose of this study. Although the scale showed good internal consistency and there was some evidence of its validity, further psychometric testing and refinement of the scale would be worthwhile. For example, in the current version of the scale, two items refer to

motivation to lose weight. In a sample that is predominantly non-obese, a low level of motivation for weight loss could be seen as a healthy attitude rather than as low motivation to exercise. Rewording these two items to reflect 'a healthy weight' rather than weight loss could improve the scale by increasing its applicability to diverse samples.

In summary, we found preliminary evidence that weight stigma has the potential (through its impact on exercise motivation) to significantly decrease exercise behaviors, which could possibly increase the risk for the many health problems associated with excess weight. Further research is needed to clarify the nature of these associations. In addition, continued efforts to reduce the prevalence of weight stigma in our society are clearly needed. In light of the findings that common perpetrators of stigma are family members and doctors (in addition to strangers and peers), stigma reduction efforts need to be more widespread (Puhl & Brownell, 2006). Finally, creating exercise environments that are less threatening (i.e. that are more size-accepting, and that emphasize fitness and health rather than aesthetics) would help promote physical activity and would be of great benefit to the health and well-being of heavier individuals.

Appendix

Exercise-Avoidance Motivation Scale

The following statements describe reactions that some people have when they experience negative situations related to their weight. For example, this might include experiences when people make negative comments about your weight, are critical of your weight or generally make you feel uncomfortable about your weight. Using the following scale, please indicate the extent to which each response is true of you in those circumstances.

	1	2	3	4	5	6	7
	Not at all true						Completely true
1.	I avoid looking in the mirror so that I don't have to think about my weight.						
2.	I feel uncomfortable going to a gym where there are a lot of mirrors.						
3.	I avoid going out in public places because I am afraid that people will make comments about my size.						
4.	I avoid going to the gym when I know there will be a lot of thin people there.						

5. I think to myself, 'I can't lose weight, and so I will not try.'
6. If I go to the gym, there are some exercises or pieces of equipment that I avoid.
7. I feel unmotivated to try to lose weight.
8. I am too embarrassed to participate in physical activity in public places (e.g. gym or fitness club; walking outside in public; swimming in public, etc.).

Notes

1. Two participants could be considered outliers in terms of both stigma experiences and exercise-avoidance motivation, and an additional participant could be considered an outlier in terms of BMI. Excluding these participants from the regression analysis did not alter the pattern of results, although the magnitude of the relation between stigma and exercise-avoidance motivation was smaller, $\beta = .28$, $p = .005$.
2. An alternative interpretation of these findings is that family members and doctors are individuals with highly valued opinions whose comments are therefore more readily recalled and carry more emotional weight than comments from strangers and other individuals. This alternative interpretation does not discount the observed associations, but does change the focus from identifying family members and doctors as 'perpetrators' to identifying the mechanisms through which comments from family members and doctors impact the recipient. Future research is needed to further disentangle these two perspectives.
3. We thank an anonymous reviewer for this insight.

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