Stereotype Threat and the Exercise/ Dietary Health Intentions of Overweight Women

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Abstract

Overweight individuals face significant prejudice and discrimination in daily life yet it is not well understood how factors associated with prejudice and discrimination (i.e. negative social stereotypes) impact overweight individuals' exercise/dietary health intentions. It is proposed that the Model of Stereotype Threat may serve as a useful theoretical tool for interpreting the situational impact of negative stereotypes on the health intentions of overweight individuals. Analyses with a community sample of 100 clinically overweight women showed that priming overweight women to think about weight-related stereotypes led to significantly diminished exercise and dietary health intentions.

Keywords

- *health intentions*
- *obesity*
- *stereotype threat*
- *threat concerns*
- *weight status*

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STEREOTYPE threat is conceptualized as a sense of social identity threat produced by an individual when confronted with a negative, self-relevant stereotype that they are in danger of confirming to the self or others as being true (Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995). Though the Model of Stereotype Threat has received considerable attention in the domains of academic and athletic performance, few studies have tested whether this model is applicable to stereotyped identities and outcomes beyond these domains. Research exists documenting the numerous negative stereotypes that characterize overweight individuals (e.g. Puhl & Brownell, 2006), yet it is unclear as to how overweight individuals may be impacted by these stereotypes. Some researchers (e.g. Meyer, 1995, 2003) have proposed that negatively stereotyped individuals internalize their stereotyped status, which ultimately leads to stereotype-consistent behavior. Still, other researchers (e.g. Crocker, 1999; Crocker & Major, 1989; Steele & Aronson, 1995) have suggested that the effects of negative stereotypes are primed in specific situations. To address these gaps in the literature the Model of Stereotype Threat (Steele & Aronson, 1995) was proposed and tested as a theoretical tool for interpreting the situational impact of negative stereotypes on the health intentions of overweight women.

Overweight individuals are subject to considerable prejudice and discrimination (Carr & Friedman, 2005; Crandall, 1994; Puhl & Brownell, 2003, 2006; Puhl, Moss-Racusin, Schwartz, & Brownell, 2008; Vartanian & Shaprow, 2008). A review by Puhl and Brownell (2006) identified numerous domains in which overweight individuals are subject to prejudice and discrimination including, but not limited to, employment, health care, educational opportunities and health insurance. Weight-related prejudice/discrimination exists in part, because one's weight status is widely viewed as a controllable condition (see Puhl & Brownell, 2003) and because of the prevalence and potency of negative social stereotypes pertaining to overweight individuals that serve as functional antecedents of prejudice and discrimination (Devine, 1989). Puhl and Brownell (2006, p. 1802) identified a number of weight-related stereotypes that may contribute to prejudice and discrimination such as the beliefs that overweight people are mean, stupid, ugly, unhappy, sloppy, lazy, lacking discipline, lacking motivation and lacking personal control. Many, if not all of these stereotypes have implications for the unfair evaluation and treatment of overweight individuals as well as the potential to impact the health behaviors of these individuals on a daily basis. The latter of these two outcomes remains an understudied phenomenon.

As researchers continue to identify weight-related social stereotypes and occurrences of anti-fat prejudice/discrimination, greater focus also needs to be placed on understanding how weight-related stereotypes impact those who are characterized by them. Existing theory postulates that stereotyped individuals ultimately come to internalize and identify with their stereotyped status (Allport, 1954; Meyer, 1995, 2003), which results in stereotype-consistent behavior. Accordingly, overweight individuals should come to identify with their stereotyped weight status and behave in a stereotype-consistent manner over time and across situations. Recent work by Wang, Brownell and Wadden (2004) appears to support this perspective by demonstrating samples of overweight individuals to exhibit implicit anti-fat bias (attributing negative characteristics to overweight people and positive characteristics to average weight people) when completing Implicit Association Tests (IATs). Though a plausible explanation, the individuals in Wang et al.'s research were recruited from clinical weight loss trials in an environment focused on weight and rich with contextual primes reminding the participants that their overweight status is not desirable. Instead of internalizing stigma associated with their weight status and manifesting it as implicit anti-fat bias it is questioned whether these participants were in fact contextually primed to react in a stereotype consistent manner. Crocker (1999), Crocker and Major (1989), Steele and Aronson (1995) and others have demonstrated that an internalization process may not be the catalyst for deleterious effects of stigma/stereotypes. Alternatively, these authors suggest that negative consequences may be driven by contextual primes that serve to remind an individual of their stereotyped or stigmatized status in situ. Research by both Crocker (1999) and Steele and Aronson (1995) demonstrates that in situations where stereotyped/stigmatized identities are not made salient (e.g. in-group gatherings, etc.) individuals that, according to the internalization perspective should manifest stereotype/stigma consistent outcomes, appear to have little if any consistent negative impact.

Since overweight individuals are characterized by a variety of different negative stereotypes (Puhl & Brownell, 2006), many of which may be contextually relevant to their daily exercise/dietary health

intentions and behaviors, the current study sought to determine whether exposure to these negative weight-related stereotypes would serve to degrade personal exercise/dietary health intentions among overweight women primed to think about their stereotyped status when compared to a sample of overweight women not primed to think about their stereotyped status. Rationale for expecting that negative weight-related stereotypes would impact the exercise/dietary health intentions of overweight individuals comes from recent work by Vartanian and Shaprow (2008). In a study of 100 female undergraduate students, the authors demonstrated that actual and/or perceived life experiences with weight-related stigma impacted women's exercise/diet motivation (intentions). Though not all women in Vartanian and Shaprow's study were overweight, the outcome proposed in the current study is similar to these authors (i.e. decreased behavioral intentions) and it was sought to examine this process through the lens of the empirically validated Model of Stereotype Threat. Determining whether the Model of Stereotype Threat is empirically supported as an explanatory mechanism for understanding the deleterious consequences of weight-related stereotypes would significantly extend current Stereotype Threat Model conceptualization. Further, this research may provide initial empirical support for an explanatory process of how overweight individuals are negatively impacted by the stereotypes that characterize them, which, in turn may lead to specific intervention strategies to counteract stereotype threat effects. The following paragraphs highlight major tenets and limitations of the Stereotype Threat Model.

The Model of Stereotype Threat

Stereotype threat is a social-situational phenomenon that arises when a stereotyped individual perceives the possibility of being evaluated on the basis of a negative stereotype, or of confirming that a negative stereotype is self-relevant (Spencer et al., 1999; Steele & Aronson, 1995). Individuals characterized by a negative stereotype relevant to a particular aspect of their social identity (e.g. females taking a test indicative of math ability) carry with them a situational burden that their performance may be interpreted in terms of an existing negative stereotype (O'Brien & Crandall, 2003). This additional burden is proposed to contribute to a sense of threat or apprehension, that when elicited in stereotype-relevant situations, may compromise an individual's performance on tasks associated with the negative stereotype.

According to Steele (1997), several conditions must be satisfied for stereotype threat to maximally operate. Vulnerability to stereotype threat requires that individuals have knowledge of existing stereotypes that are associated with their social identities and awareness that they risk being evaluated or confirming a negative stereotype in a given situation. Steele (1997) also noted that stereotype threat requires individuals to be identified with and committed to a stereotyped outcome (e.g. math performance) in order for stereotype threat to operate. Individuals with low or no identification or commitment to a stereotyped outcome should not experience stereotype threat because the threatened outcome is not integral to their overall identity. Even so, despite being aware of and identifying with a stereotyped outcome, it is not necessary for an individual to believe that a negative stereotype is self-relevant for it to produce a sense of stereotype threat (Steele, 1997). Merely being in a situation where a stereotype could apply to the self and facing the possibility of being viewed and/or judged in terms of that stereotype is sufficient to produce stereotype threat.

Overview of stereotype threat testing and findings

Stereotype threat effects have traditionally been assessed in circumscribed, laboratory-based situations (e.g. performance on a standardized math or verbal assessment or an athletic task). Numerous studies have concluded that activation of stereotype threat—through the process of experimentally priming negatively stereotyped identities—has deleterious consequences for the task-oriented performance of stereotyped individuals (e.g. Abrams, Eller, & Bryant, 2006; Aronson et al., 1999; Croizet & Claire, 1998; Gonzales, Blanton, & Williams, 2002; Inzlicht & Ben-Zeev, 2000; O'Brien & Crandall, 2003; Osborne, 2001; Quinn & Spencer, 2001; Spencer et al., 1999; Steele & Aronson, 1995; Stone, Lynch, Sjomeling, & Darley, 1999). Investigators have also tested the Stereotype Threat Model with diverse samples of individuals and groups commonly viewed as stigmatized, such as African Americans, Latinos, women, the economically disadvantaged

and the elderly (Abrams et al., 2006; Blascovich, Spencer, Quinn, & Spencer, 2001; Brown & Josephs, 1999; Davies, Spencer, Quinn, & Gerhardstein, 2002; Gonzales et al., 2002; O'Brien & Crandall, 2003) and those not traditionally viewed as stigmatized (e.g. Stone et al., 1999). A consistent finding within these featured studies is that virtually all individuals with identities negatively stereotyped in the domains of academic and athletic performance are subject to stereotype threat.

Limitations of stereotype threat literature

Although Steele (1997) asserted that many different identities characterized by negative stereotypes *should* be subject to stereotype threat effects, only a few studies have begun examining the relevance of the model to identities and outcomes beyond the domains of academic and athletic performance. Researchers that have tested extensions of the model have produced empirical support and provide rationale for extending the model to overweight individuals. Bosson, Haymovitz and Pinel (2004) recruited heterosexual, bisexual and gay men to take part in a study that assessed college students' interactions with children. The goal of this study was to determine whether gay and bisexual men, who are widely stereotyped as being pedophiles (but for whom their stereotyped identity is not visible), would experience stereotype threat when they were primed to think about their sexual orientation immediately prior to interacting with children—a domain that gay/bisexual men are negatively stereotyped in. Bosson and her colleagues demonstrated that gay and bisexual men experienced a form of stereotype threat and that this threat resulted in greater expression of non-verbal anxiety and ultimately compromised performance on a child interaction task compared to non-primed gay/bisexual men and heterosexual men.

Mediators and priming of stereotype threat

Stereotype threat is considered to be a multifaceted, situational phenomenon whose mediational path can be shaped by characteristics of the person (e.g. stigma consciousness, degree of identity with threatened outcome), characteristics of the situation (e.g. presence of outgroup or ingroup members) and the interaction of these factors (Davies et al., 2002). Considering this perspective, the salience of any proposed mediator in a given study will likely depend on: (1) the group that is being sampled; and (2) the situation in which stereotype threat is being tested (e.g. the dependent variable utilized). In choosing potential mediators for the current study, these factors were carefully considered and exercise/dietary self-efficacy was selected on the basis of empirical evidence from the study of stereotype threat as well as theoretical support from the Health Action Approach Model (Schwarzer, 1992; Schwarzer & Renner, 2000) (described below). Existing studies of stereotype threat have demonstrated that stereotype threat impacts academic and athletic performance by disrupting cognitive processes (e.g. attention, self-efficacy) and producing anxiety—which ultimately leads to diminished performance on a stereotyped task (Smith, 2004). Consistent with this perspective it was proposed that weight-related stereotype threat would negatively impact individuals' levels of exercise/dietary self-efficacy. Further, it was proposed that among individuals experiencing weight-related stereotype threat, an erosion of exercise/dietary self-efficacy should lead to decreased confidence to initiate/maintain a variety of challenging exercise/dietary health behaviors. As such, it was expected that primed overweight participants would ultimately report lower exercise/dietary health intentions compared to non-primed overweight participants because of the lower levels of exercise/dietary self-efficacy. Theoretical support for this assertion comes from the Health Action Process Approach Model (Schwarzer, 1992; Schwarzer & Renner, 2000), a prominent stage theory of health behavior, in which self-efficacy serves as the primary determinant of personal health intentions and ultimately personal health behaviors.

With regard to priming stereotype threat, the majority of researchers have used strategies involving face-to-face contact with an experimenter. Extension of stereotype threat to overweight individuals in real world settings requires consideration of the many probable routes, in addition to face-to-face contact, through which weight-related stereotype threat may arise. Given the community-based nature of our sample, the current study was developed to determine whether another common form of social interaction; namely, telephone conversations, would serve to prime stereotype threat among overweight women

The current study

The current study sought to test an expansion of the Stereotype Threat Model by determining the applicability of the Stereotype Threat Model to a sample of overweight women in the domain of exercise/dietary health intentions. Additionally, it was assessed whether exercise/dietary self-efficacy served as a mediator of stereotype threat effects. Considerable evidence indicates that overweight individuals in the United States (especially women) are widely stigmatized and discriminated against (Carr & Friedman, 2005; Crandall, 1994; Puhl, Moss-Racusin, Schwartz, & Brownell, 2008; Puhl & Brownell, 2003, 2006; Schwartz, Vartanian, Nosek, & Brownell, 2006; Vartanian & Shaprow, 2008) and negatively stereotyped in the domains of exercise/dietary health (Puhl, Schwartz, & Brownell, 2005; Wang et al., 2004). Coupled with the knowledge that overweight individuals are typically highly cognizant of the stereotypes that characterize them (Wang et al., 2004), the Model of Stereotype Threat was tested to determine if priming weight-related negative stereotypes would influence the exercise/dietary health intentions of overweight individuals.

Methods

Participants

Participants were 100 clinically overweight women (as defined by the Centers for Disease Control and Prevention body mass criteria (CDC, 2007)—see below for further description of the Body Mass Index). Recruitment was limited to women between the ages of 18–55 who were exercising for at least 30 minutes one or more times per week. Limiting recruitment age and to those women who were currently exercising provided greater consistency and assurance that participants were at least moderately committed to engaging in healthy behaviors.

Procedure

Prior to conducting this research all methods and procedures were approved by the Institutional Review Board of a large Midwestern university. Participants for this telephone interview study were recruited in person; through flyers placed at Curves for Women™ and other exercise facilities; and, through Internet announcements on several prominent exercise-related chat rooms. No significant differences between recruitment locations were identified with regard to the primary study variables. All participants were informed that the project was a study on the exercise and dietary habits of women. Participants provided verbal informed consent and were then randomly assigned to either the experimental (stereotype prime) or control (non-stereotype prime) conditions. The study commenced with several demographic questions followed by presentation of the experimental manipulation (described below). After listening to the experimental manipulation, participants in the experimental condition were asked to report their weight in pounds and their height in feet/inches. Participants in the control condition did not report this information until the conclusion of the study. Because this study was conducted via telephone, women not meeting weight the BMI requirements (i.e., ≥ 25) were also recruited into the study. Data from women who did not meet the BMI requirement were not retained for analytic purposes, but these women were still eligible for entry into the raffle drawing. At the conclusion of the experiment, all participants were debriefed as to the nature of the experiment, commended on their current exercise/dietary efforts and had their questions/concerns addressed. At the time of debriefing all participants were also provided with the contact information of the study PI, a study supervisor and a representative of the Institutional Review Board should any concerns arise (though none were reported). All participants were eligible for a raffle drawing with prizes of $100, $50 and $25 gift cards.

Materials

All participants first completed a brief set of demographic items that assessed their age, racial/ethnic identity, socioeconomic status (SES) and highest level of education attained.

Stereotype threat priming mechanism

Participants randomly selected for the experimental condition were read a brief vignette describing a fictitious five-year national study of women's exercise behaviors and dietary habits. The prime for the experimental condition was as follows:

> In 2004, psychologists at a major research institution completed a five-year, nationwide study, which examined the exercise behavior and dietary habits of 8000 women. The study looked at the exercise and dietary habits of these women over time and the association of their habits with

negative health outcomes. Overall, the results of this study clearly showed that poor exercise and dietary habits were associated with greater negative health outcomes. Furthermore, the researchers found that there were specific individual characteristics that distinguished the women who were most likely to have poor exercise and dietary habits from the women who were least likely to have poor exercise and dietary habits.

Following the prime, experimental participants were asked to report their current weight and height. In the control group, participants were read the same material *except* the final sentence regarding specific individual characteristics was omitted and participants in the control condition reported their weight and height at the conclusion of the study.

Health intention statements

A series of 11 exercise and dietary health-related intention statements were developed to assess participants' intentions to exercise and maintain a healthy diet when challenged by different personal and situational constraints. These statements were designed to be perceived by participants as challenging and realistic. Example items included: '*How likely is it that you will exercise even when you feel you have very little time?*' and '*How likely is it that you will break a diet during times when you are under great stress?*' Item responses could range from 1 'not at all likely' to 100 'completely likely'. Two items were reverse worded and responses to all items were averaged to create a composite health intentions score ranging from 1–100, with higher scores indicating higher health intentions. The Health Intentions Scale had acceptable internal reliability ($\alpha = .73$).

Exercise/dietary self-efficacy

Participants' perceived exercise and dietary self-efficacy was assessed with a modified version of Cancer Prevention Research Center's exercise self-efficacy scale (CPRC, 2004). The original scale consisted 18 items that assessed only exercise-related self-efficacy. This scale was modified to also include assessments of dietary self-efficacy and the number of items was reduced to seven. Example items included: '*How able are you to avoid giving in to the temptation to break a diet?*' and '*How able are you to stick to an exercise regimen when others do not want you to exercise?*' Item responses ranged from 1 (not at all) to 4 (highly) and a composite score was created by averaging participant's responses to all items. Higher average scores on the scale indicated increased levels of perceived exercise and diet self-efficacy. Internal reliability for the original 18-item scale ranged from a high of ($\alpha = .87$) to a low of ($\alpha = .77$). In the modified scale used in this study, internal reliability decreased significantly ($\alpha = .45$) but further investigation using factor analysis indicated that perceived efficacy within the dietary items as well as between the exercise and dietary items was highly variable. Due to the low internal reliability and limited number of items in the modified scale Nunally's correction for test length was conducted (Nunally, 1970). If the number of items in the modified CPRC scale were increased to 21, the internal reliability would be a more acceptable $\alpha = .71$.

Control variables

Several control variables were assessed for possible inclusion as covariates in the proposed analyses. These variables were self-esteem, participant body mass index (BMI) and current exercise/dietary habits. Self-esteem was assessed with the Rosenberg Self-Esteem Scale (Rosenberg, 1989). This scale is a 10-item Likert-type scale with responses ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). A composite score was created by averaging participants' responses to the items, with higher scores indicating greater levels of self-esteem. In the current study, the Rosenberg Self-esteem scale was found to have acceptable internal reliability ($\alpha = .86$).

Participant's current *body mass index* (BMI) was assessed for eligibility and as a potential control. To measure BMI, a participant's weight and height information were obtained (timing determined by experimental or control condition). Body mass and weight status were then calculated via a BMI equation devised by the Centers for Disease Control and Prevention (CDC, 2007). In the current study participants' BMI ranged from 25–53, $M = 30.00$; $SD = 5.24$. All participants with BMIs ≥ 25 were included in the analyses and mean BMIs of the control and experimental groups were statistically equivalent (Control $M = 29.77$ versus Experimental $M = 30.24$; $p = .65$).

Three additional control variables were assessed related to exercise and dieting (i.e. Have you been exercising for at least six months?; Do you exercise for 30 minutes one or more times per week?; Are you currently dieting?). These three 'yes' or 'no' items were summed to create a composite exercise/diet measure.

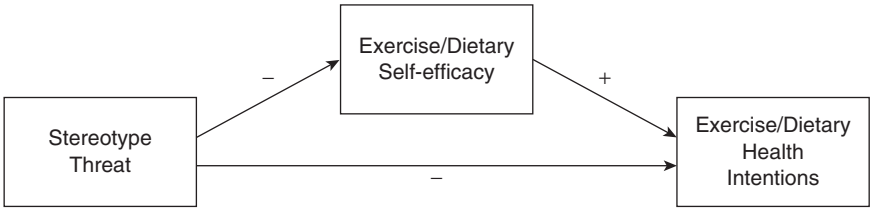

Figure 1. Proposed mediation model.

Overview of analyses

To test the proposed hypotheses, analysis of covariance (ANCOVA) was conducted to determine whether primed overweight women significantly differed from non-primed overweight women on dietary/exercise intentions. To test the proposed mediational model, a structural path analysis (SEM) was constructed using EQS 6.1 (Bentler, 1995). The number of participants required to maintain adequate power while conducting the most stringent statistical analysis was determined in conjunction with criteria published by Stevens (1996) who suggested that SEM requires the recruitment of at least 15 participants per included variable. Another commonly accepted SEM power indicator is the N:q ratio. The N:q ratio is considered a good assessment of power in SEM because it takes into consideration the complexity of the model to be estimated rather than simply the number of observed/measured variables in the model (Jackson, 2003). According to the N:q ratio the present sample size (N = 100) is sufficient to test our proposed model including covariates with an approximate 14:1 N:q ratio (where q represents the number of free parameter estimates). Prior to running the proposed mediation model (see Fig. 1); the data were examined for multivariate and univariate normality, skewness and kurtosis. As the multivariate normality assumption was not violated, maximum likelihood (ML) estimation method was used in the SEM analyses.

Results

Participants were racially homogenous with 94 percent women identified as White, 1 percent identified as Asian Pacific American, 1 percent identified as Hispanic, 1 percent identified as African American, 1 percent identified as multiracial or multiethnic and 2 percent identified as other. Age was fairly well distributed with a range of 18 to 55 years and an average age of 38.27 years (SD = 11.96). With respect to education, 3 percent completed some high school, 10 percent graduated from high school, 30 percent completed some college, 40 percent graduated from college, 4 percent completed some graduate school and 13 percent had a graduate degree. Participants were randomly assigned to either the experimental or control conditions with 48 participants in the experimental condition and 52 participants in the control condition. Statistical descriptions of all major study variables can be found in Table 1.

Table 1. Statistical descriptions of major study variables

Scale	*M*	*SD*	*Pos. range*	*Act. range*
Exercise/dietary intentions	60.10	13.91	1–100	27.00–88.18
Exercise/diet efficacy	3.09	.36	1–4	2.29–4.00
Self-esteem	3.25	.45	1–4	2.40–4.00

Stereotype threat main effect

The stereotype threat main effect was tested with analysis of covariance (ANCOVA). In this analysis, the stereotype threat condition (i.e. experimental vs control) served as the independent variable while the continuous measure of exercise/dietary health intentions served as the dependent variable. A correlation matrix was conducted and only participant age was found to significantly co-vary with exercise/dietary intentions and was statistically controlled for (see Table 2). The results of this analysis supported Hypothesis 1 (F (2, 97) = 7.69; p = .001). Specifically, overweight women who were in the experimental condition reported significantly lower exercise/dietary health intentions (M = 55.60; SD = 14.59) than overweight women in the control condition (M = 64.24; SD = 11.71); η_p^2 = .14.

Table 2. Correlation matrix of major study variables

	Health intentions	*Efficacy*	*BMI*	*Age*	*Esteem*	*Exer/diet*
Health intentions	–					
Efficacy	.66***	–				
BMI	.01	.09	–			
Age	.23*	.27**	.23*	–		
Esteem	.13	.27**	–.14	.15	–	
Exer/diet	.01	.01	–.04	.19	.20*	

*$p < .05$; **$p < .01$; ***$p < .001$

Mediation effects

A structural path analysis was used to develop and test the proposed mediation model. In the initial model, participant age, body mass index (BMI), self-esteem and current exercise/dietary habits were left free to float. Of the potential covariates tested, only participant age and self-esteem were retained in the final model because of their significant paths with exercise/dietary self-efficacy. In the final model, participants' experimental condition (primed versus not primed) served as the exogenous predictor variable; exercise/dietary self-efficacy served as the endogenous mediating variable and exercise/dietary health intentions served as the endogenous dependent variable. Analysis of the proposed model, with self-esteem and age included as covariates, indicated that the model was a good fit to the data (χ^2 (5) = 4.95, p = .42, *CFI* = 1.0, *RMSEA* = .00; CI.00-.13) (see Fig. 2). Examination of the individual pathways revealed significant paths between (1) stereotype threat with exercise/dietary self-efficacy and exercise/dietary health intentions and (2) exercise/dietary self-efficacy with exercise/dietary health intentions (see Fig. 2).

According to Kline (2005), researchers using SEM should test an alternative path model to rule out alternative explanations and provide greater insight into the temporal relationship between variables. The alternative model used in the current study was constructed by reversing the outcome and mediator positions (i.e. exercise/dietary efficacy becomes the outcome variable and exercise/dietary intention becomes the mediating variable). Testing this alternate model is theoretically plausible as intentions can also shape efficacy and expectancies. Findings from the test of the alternate model (χ^2 (5) = 10.87, p = .05; *CFI* = .92; *RMSEA* = .11; CI.00-.20) indicate that it did not fit the data as well as the proposed model, providing additional support for the temporal ordering of the proposed mediation model.

Discussion

The current study contributes to the literature in a couple ways. First, this research extends the scope of Steele and Aronson's (1995) Model of Stereotype Threat by demonstrating that this threat may impact the exercise/dietary health intentions of overweight women when weight is made contextually salient. Second, evidence was found to suggest that exercise/dietary self-efficacy may help explain the link between stereotype threat and personal health intentions among a sample of overweight women. Though this was only a cross-sectional study assessing behavioral intentions, it is believed that the current findings have significant theoretical, methodological and practical implications for future research and practice on obesity and stereotype threat. These implications are discussed in detail below.

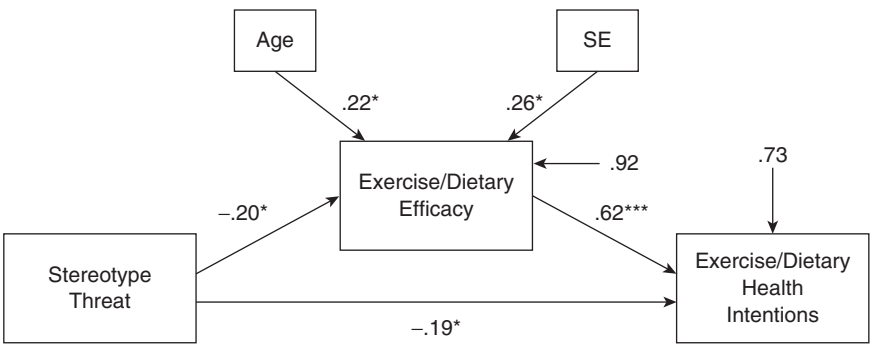

Figure 2. Proposed mediation model with controls and path coefficients.

Stereotype threat main effect

Since Steele and Aronson's seminal study in 1995, only a few researchers have begun to explore the potential range of stereotyped identities and outcomes that may be impacted by this threat. To address this theoretical gap, the Model of Stereotype Threat was tested to determine whether stereotype threat was salient to the exercise/dietary health intentions of overweight women. This population was selected because it is widely recognized that overweight individuals are characterized by potent negative stereotypes in the domains of exercise and dietary behavior (Puhl et al., 2005; Wang et al., 2004). Our decision to extend the Model of Stereotype Threat was further supported by the recent work of Vartanian and Shaprow (2008), which suggested that females' exercise/dietary health intentions are subject to influence by weight-related stigmas experienced in daily life. Considering the functional relationship between stereotypes and social stigmas (Devine, 1989) it is plausible to expect that negative stereotypes may also have a significant impact on overweight women's personal health intentions and behaviors.

Consistent with our hypothesis, overweight women who were primed to think about weight-related stereotypes reported lower levels of exercise/dietary efficacy and personal health intentions than a similar non-primed control group of overweight women, suggesting that these women may have experienced a form of stereotype threat. It is important to note that the main effect of stereotype threat on exercise/dietary health intentions remained significant despite controlling for age and considering that participant BMIs and patterns of current exercise/dietary behavior were statistically equivalent between groups. It could be argued that stereotype threat effects were not actually assessed because the focus of the study was on behavioral intentions (a form of motivation) and not on actual behavior. Given the close relationship that has been demonstrated between behavioral intentions and actual health behavior (Vartanian & Shaprow, 2008) the outcome of the current study is believed to be consistent with the Model of Stereotype Threat.

It is believed that overweight women in this study experienced weight-related stereotype threat due, at least in part, to the potency of negative stereotypes and discrimination burdening them in the United States (Carr & Friedman, 2005). Though participants' experiences with discrimination were not directly assessed in this study, many women informally mentioned previous encounters in which they had been verbally harassed in public and/or private settings. These women also acknowledged that the fear of being negatively evaluated and discriminated against by others had led them to avoid many activities and situations in which their weight was made particularly relevant—a finding that is consistent with Vartanian and Shaprow (2008). On a positive note women recruited from Curves™ noted that they preferred this setting to traditional facilities simply because the 'threat' of negative evaluation and discrimination was considerably reduced.

The main finding of the current study likely has important implications for the health behaviors and overall health of overweight individuals. If, as this study demonstrates, encounters with stereotype threat contribute to an erosion of exercise/dietary self-efficacy, personal health intentions and potentially health behaviors among overweight individuals, it can be expected that negative weight-related stereotypes may be successfully deterring many overweight individuals from initiating and/or maintaining healthy lifestyle regimens. Maintenance of adequate regimens of diet and exercise are considered to be the critical behavioral predictors of weight loss and improved physical health. When overweight individuals fail to initiate and/or maintain healthy exercise/dietary practices because of encounters with stereotype threat, their overweight status may be prolonged and even intensified contributing to myriad affiliated health conditions (e.g. heart disease, cancer, diabetes).

Stereotype threat mediation effects and priming

The current study explored the applicability of a potential mediator of stereotype threat; namely, perceived exercise/dietary self-efficacy. Results of the mediation path analysis supported the second hypothesis with exercise/dietary self-efficacy partially mediating the link between stereotype threat and personal health intentions. Proponents of the Health Action Process Approach Model suggest that perceived self-efficacy is perhaps the most salient predictor of health intentions and behaviors (Schwarzer, 1992; Schwarzer & Renner, 2000). According to Schwarzer and Renner (2000), perceived self-efficacy for a health behavior (i.e. one's belief that they have the skills necessary to perform a behavior) is critical to the motivation phase or development of a behavioral health intention. These authors also proposed and demonstrated that

perceived self-efficacy is crucial to the implementation and maintenance of health behaviors over time and across situations. If, as is suggested in the current study, that stereotype threat may serve to erode one's sense of behavioral self-efficacy, then an explanatory mechanism as to how stereotype threat may ultimately impede the health intentions and behaviors of overweight women begins to take shape. Additional research using a more psychometrically sound measure of behavioral self-efficacy is warranted.

Future directions

Future research on weight-related stereotype threat should focus on determining the specificity of this threat to overweight individuals. The current study provides initial evidence to show that overweight individuals may be subject to stereotype threat in instances where they are reminded of their stereotyped status, but it is not yet clear whether this threat is limited to individuals classified as overweight. One factor that will be addressed in future work is the potential moderating role of perceived weight status. Specifically, it may be possible that individuals not classified as overweight by BMI criteria actually perceive themselves to be overweight. Conversely, some overweight individuals may not perceive themselves to be overweight. Possessing a perceived weight status that is incongruent with actual weight status may serve to moderate stereotype threat effects.

Conclusion

Negative weight-related stereotypes are widely prevalent in all societies. Increasing the understanding of how and why these stereotypes impact the attitudes and behaviors of overweight individuals was the primary motivation for conducting this study. Historically, theory and research have focused on a process by which individuals come to internalize their stereotyped status; a process which ultimately leads them to behave in stereotype consistent ways. Findings from the current study and empirical work by Crocker (1999), Steele and Aronson (1995) suggest that the deleterious effects of stigma and negative stereotypes may be much more contextually determined. Our findings suggest that the Model of Stereotype Threat may be a useful theoretical tool for understanding and explaining the situational negative consequences of weight-related stereotypes.

Emerging research by Martens, Johns, Greenberg and Schimel (2006) in the domain of academic performance demonstrates that interventions addressing specific stereotype threats can be trained to negatively stereotyped individuals and that these interventions may serve to minimize negative threat effects. It is our hope that information gained from this and future studies on weight-related stereotype threat will result in a better understanding of the burden overweight individuals face in achieving optimal health and in the creation of interventions to effectively ameliorate this burden. Because weight status remains one of the few socially acceptable targets of stereotyping, prejudice and discrimination in society (Puhl & Brownell, 2006) the issues of how overweight individuals may be burdened by their status and how practitioners should respond to effectively minimize this burden should be at the forefront of psychological interest.

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