Racial/ethnic Differences in Body Mass Index: The Roles of Beliefs about Thinness and Dietary Restriction

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Abstract

The greater BMI of African American relative to Caucasian women is implicated in racial/ethnic disparities in health outcomes. The principal aim of the current study was to evaluate a theoretical account of racial/ethnic differences in BMI. Thin-ideal internalization, the perceived romantic appeal of thinness, dietary restriction, weight, and height were assessed via self-report measures on a sample of female undergraduates of African American (*n* = 140) and Caucasian (*n* = 676) race/ethnicity. Using structural equation modeling, support was obtained for the primary hypothesis that racial/ethnic differences in BMI are explained by Caucasian women's greater thin-ideal internalization and perceived romantic appeal of thinness, thereby resulting in greater levels of dietary restriction. Current findings illustrate the potential for racial/ethnic differences in sociocultural standards of appearance to influence racial/ethnic disparities in physical health, of which BMI is a marker, via effects on weight control behavior.

Keywords

Racial/ethnic differences; thin-ideal internalization; body mass; dietary restriction

Approximately 66% of U.S. adults now qualify as overweight or obese (Ogden et al., 2006). Although the majority of Caucasian and African American adults are overweight or obese, the distributions of these conditions across race/ethnicity vary by gender: While being overweight and obese are similarly distributed across African American and Caucasian men

at 69% and 71%, respectively, they are less comparably distributed across race/ethnicity within women, with 82% of African American women and 58% of Caucasian women meeting criteria for being overweight or obese (Ogden et al., 2006). Racial/ethnic differences in body mass index (BMI) among women likely play a role in racial/ethnic disparities in adverse health outcomes, such as diabetes (Cowie et al., 2006). Thus, illumination of the factors that underlie racial/ethnic differences in BMI would seem to be an important step toward reducing racial/ethnic disparities in related undesirable health outcomes. The primary purpose of the current investigation was to evaluate a theoretical model to account for racial/ethnic differences in BMI among women.

While BMI is indisputably influenced by genetic factors, its precipitous rise over the last two decades is largely attributed to the development of a toxic environment that has discouraged physical activity while fostering increases in caloric consumption (Wadden, Brownell, & Foster, 2002) and inattention to physiological hunger and satiety cues (Tribole & Resch, 1995). To the extent that BMI reflects variation in weight management practices such as dietary restriction, it would be expected that Caucasian females more frequently and consistently perform this weight control behavior, both to healthy and unhealthy degrees, than African American females. Empirical studies corroborate this hypothesis, overwhelmingly demonstrating that Caucasian females are more likely than African American females to report engaging in dietary restriction (Akan & Grilo, 1995; Franko & Striegel-Moore, 2002; Gluck & Geliebter, 2002; Neff, Sargent, McKeown, Jackson, & Valois, 1997; Neumark-Sztainer et al., 2002; Neumark-Sztainer, Story, Falkner, Beuhring, & Resnick, 1999; Wildes & Emery, 2001).

Although racial/ethnic differences in dietary restriction have been reliably documented, the nature of the relationship between dietary restriction and its intended goal, weight control, is less clear. While experimental manipulations of dietary restriction have demonstrated the expected result that dietary restriction produces weight loss (Ditschuneit & Flechtner-Mors, 2001; Presnell & Stice, 2003; Wadden et al., 2004), some studies of naturalistic dietary restriction have yielded counterintuitive findings whereby dietary restriction predicts an increase, rather than a decrease, in body mass (e.g., Field et al., 2003; Klesges, Isbell, & Klesges, 1992; Neumark-Sztainer et al., 2006) or fails to predict change in body mass over time (Heatherton, Mahamedi, Striepe, Field, & Keel, 1997). Possible explanations of this finding include the questionable validity of some self-report measures of dietary restriction (Stice, Fisher, & Lowe, 2004) and the tendency toward disinhibition (i.e., binge eating), which covaries with dietary restriction and may be the critical variable that is responsible for weight gain (van Strien, Engels, van Staveren, & Herman, 2006).

The relationship between naturalistic dietary restriction and BMI is further obfuscated by the previous identification of a quadratic component to this relationship in a prospective, longitudinal study of a community sample of adolescents (Stice, 1998). In this study, dietary restriction was positively related to body mass, measured via self-reported height and weight, at lower to moderate levels of dietary restriction and negatively related to body mass at higher levels of dietary restriction (Stice, 1998). The divergence in findings regarding the relationship between naturalistic dietary restriction and weight gain may be attributable to different methods of measuring dietary restriction across studies. Confidence in the validity

of Stice's findings is buttressed by the fact that one of the measures of dietary restriction used in this study, the Dietary Intent Scale (DIS; Stice, Mazzotti, Krebs, & Martin, 1998), evidenced superior validity relative to four other extant self-report measures of dietary restriction in a recent psychometric investigation (Stice et al., 2004).

Thin-ideal internalization, or subscription to sociocultural standards of female thinness and attractiveness (Thompson & Stice, 2001), appears to be an important contributing factor to dietary weight control behavior, as evidenced by a meta-analysis documenting a prospective link between thin-ideal internalization and dietary restriction (Stice, 2002). Thus, recent explanations for racial/ethnic differences in BMI and weight control behavior have highlighted the potential role of physical appearance ideals. Research has demonstrated that standards of attractiveness for Caucasian women emphasize thinness more so than standards of attractiveness for African American women, thereby providing Caucasians with a greater psychological incentive to attain and maintain a low body weight (e.g., Mastria, 2002; Neff et al., 1997). As expected, Caucasian females have consistently demonstrated greater thin-ideal internalization than African American females (Perez & Joiner, 2003; Powell & Kahn, 1995; Shaw, Ramirez, Trost, Randall, & Stice, 2004; Wildes & Emery, 2001).

Racial/ethnic disparities in social acceptance and reinforcement as a function of BMI have also been documented. For example, lower BMI predicts an increased likelihood of dating among Caucasian women but is not reliably predictive of dating behavior for African American and other minority groups (Vaughan, Stewart, & Sacco, 2004), and larger body sizes of female mates are preferred by African American males relative to Caucasian males (Powell & Kahn, 1995; Sargent & Kemper, 1996). In addition, larger African American women are viewed more positively by others than thinner African American women (Wade & DiMaria, 2003). Taken together, these findings illustrate that racial/ethnic differences in standards of physical attractiveness are grounded in social reality, with a higher premium placed on low BMI for Caucasian women relative to African American women by others.

As dating and mating are of paramount importance to women in early adulthood, it seems that they would seek to enhance their desirability to prospective and/or existing dates and mates. The greater thin-ideal internalization of Caucasian women may therefore imply a stronger incentive relative to African American women to engage in dietary restriction, which, at sufficiently high levels, would increase their approximation of sociocultural ideals of attractiveness and, hence, their desirability to men. To evaluate this explanation of racial/ethnic differences in BMI, the current study was guided by two principal aims: 1) replicate previous findings of racial/ethnic differences in thin-ideal internalization, dietary restriction, and BMI, and 2) extend these findings by evaluating these variables in the context of an integrative, parsimonious model. Given previously identified racial/ethnic differences in romantic desirability as a function of thinness, a secondary aim was to assess the contribution of the perceived romantic appeal of thinness to weight management behavior. In the proposed model, race/ethnicity was expected to predict both thin-ideal internalization and the perceived romantic appeal of thinness, which were then hypothesized to predict dietary restriction independently of each other. Dietary restriction was then expected to evidence a curvilinear relationship with body mass, based on the results of Stice (1998). Lastly, racial/ethnic differences in BMI were expected to be accounted for by the

intervening variables in the proposed model at higher levels of dietary restriction only, as it is only at higher levels that dietary restriction has born an association with its intended goal, that of lower body mass, in previous research (Stice, 1998).

Method

Participants

Because young adulthood has been identified as a high-risk period for weight gain (Burke & Bild, 1996), the current study was limited to women between the ages of 18 and 30. Participation in the study was further restricted to females who were Caucasian or African American, heterosexual, and unmarried. The latter two inclusion criteria were intended to ensure that the measure of the perceived romantic appeal of thinness, which includes items about dating and perceived desirability to the opposite sex as a function of thinness, would be relevant to participants.

Participants were recruited from a larger pool of undergraduate students enrolled in psychology courses at a large, southeastern university through Experimentrak, an online data management system. A total of 847 students participated in the study in exchange for extra credit points in their psychology courses. Using listwise deletion, 31 participants were dropped from analyses for providing invalid values of weight and/or height, thereby reducing the total sample size to 816. Data were not missing on any other variables.

The 816 participants who comprised the final sample were predominantly Caucasian (n = 676, 83%), and the average age of participants was 19.93 (SD = 2.18). The majority (n = 485, 59%) reported an exclusive romantic relationship (e.g., exclusively dating, cohabiting, or engaged), with the remainder categorized as single (n = 125, 15%), casually dating (n = 204, 25%), or divorced (n = 2, 0.2%). Consistent with expectation for a college student sample, the majority of participants indicated that their fathers (63%, n = 489) and mothers (68%, n = 515) had at least one to three years of college and classified their fathers' (60%, n = 553) and mothers' (52%, n = 423) occupations in one of the top three categories (e.g., major, lesser, or minor professional) of a list of occupations ranked by status (Hollingshead, 1957).

Statistical comparisons on available demographic data of participants who were excluded from analyses to participants who were included revealed no group differences in age, relationship status, maternal and paternal educational attainment, or maternal and paternal occupational status (all ps > .05); however, race/ethnicity was unequally distributed across the two groups, with African American participants disproportionately represented among those excluded (χ^2[1, N = 847] = 6.85, p < .01). Of the 151 African American participants, 11 (7%) were excluded from analyses due to implausible or invalid data, whereas 20 of the 696 (3%) Caucasian participants provided unusable data.

Because of the differential attrition across racial/ethnic groups, it was suspected that the results obtained on the African American group were characterized by particularly limited generalizability to other African American females, even within a college student population. To address this concern, African American participants whose data were

included in analyses were compared to those whose data were excluded from analyses on all demographics and model variables. No group differences were present, indicating that the African American females who were included in analyses were generally comparable to those excluded from analyses.

Measures/Variables

Demographics—Basic demographic information, such as age, race/ethnicity[1], sexual orientation, relationship status, and parental occupational status and educational attainment were assessed by self-report. The latent variable race/ethnicity was represented by a single indicator that was dummy coded (Caucasian = 1, African American = 0), and the error variance term (e.g., theta-delta parameter) for the indicator was fixed at 5% of observed variance.

Participants' socioeconomic status was represented by their parents' highest levels of education and current occupational status, as assessed by the Hollingshead Index of Social Position (ISP; Hollingshead, 1957). The items assessing mothers' and fathers' highest levels of education consisted of seven rank-ordered response options that ranged from 1 (*professional degree*) to 7 (*less than seven years of school*). The item used to assess the occupations of mothers and fathers was slightly modified from the original ISP to include two additional options for those unemployed and receiving public assistance and those unemployed and not receiving public assistance. The modified item thus consisted of nine response options ranked by status that ranged from 1 (Higher executive of large company, proprietor, or major professional) to 9 (*Unemployed and not receiving public assistance*). Both items served as the sole indicators for the latent constructs parent educational attainment and parent occupational status, with the error variance term (e.g., theta-delta parameter) for each indicator fixed at 5% of observed variance.

Body mass index—Self-reported height and weight were used to calculate BMI (kg/m^2), which has been demonstrated to be a valid measure of adiposity. Self-reported height and weight have been shown to be highly correlated ($r = .94, .95$) with measured height and weight, respectively, in a nationally representative sample of adolescents (Goodman, Hinden, & Khandelwal, 2000), indicating that self-reported BMI corresponds closely to actual BMI. BMI was represented by a latent variable with a single indicator whose error variance term (e.g., theta-epsilon parameter) was fixed at 3% of observed variance based on previous research demonstrating a correlation of .97 between self-reported and actual BMI (Attie & Brooks-Gunn, 1989).

Thin-ideal internalization—Thin-ideal internalization was assessed with the 9-item General Internalization subscale of the Sociocultural Attitudes Toward Appearance Scale-3 (SATAQ-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004), which captures the desire to resemble and the tendency to compare one's physical appearance to those of prominent media figures. Response options range from 1 (*Definitely disagree*) to 5 (*Definitely agree*); high scores indicate greater thin-ideal internalization. The excellent psychometric properties of scores on this scale have been demonstrated in previous research (Thompson et al., 2004). Internal consistency estimates for scores in the current study were

excellent (Cronbach's alpha: overall sample, $\alpha = 0.96$; African Americans, $\alpha = 0.95$; Caucasians, $\alpha = 0.96$). The latent variable thin-ideal internalization was represented by three three-item parcels created based on rational clustering of item content to ensure that the parcels were conceptually interchangeable with one another and thus equally representative of the latent construct per Kline's (2005) recommendations. Parcel scores were the mean of the items for each parcel.

Perceived romantic appeal of thinness—The scale assessing the perceived romantic appeal of thinness (PRATS; Vaughan, Sacco, & Beckstead, 2006) was developed[2] for the current study and consists of the following four items: "How thin I am affects how desirable I am to men," "How toned my body is influences how attractive I am to men," "How slim I am determines my likelihood of getting dates," and "How slender I am determines my likelihood of being sought out by a man to have a romantic relationship." Response options range from 1 (*Definitely disagree*) to 5 (*Definitely agree*), with high scores connoting strong endorsement of the belief that thinness enhances one's romantic appeal in the eyes of men. Scores on the PRATS evidenced acceptable internal consistency in the current investigation (Cronbach's alpha: overall sample, $\alpha = 0.89$; African Americans, $\alpha = 0.88$; Caucasians, $\alpha = 0.88$). The latent construct perceived romantic appeal of thinness was represented by three indicators, one of which was the mean of the first two items on the scale, the other two of which consisted of a singe item.

Dietary restriction—Two measures, the Dutch Eating Behavior Questionnaire—Restraint subscale (DEBQ-R; van Strien, Frijters, van Staveren, Defares, & Deurenberg, 1986) and Dietary Intent Scale (DIS; Stice et al., 1998), were used to represent the latent construct dietary restriction. The DEBQ-R and DIS contain 10 and nine items, respectively, with response options on both scales ranging from 1 (*Never*) to 5 (*Always*) and higher scale scores connoting greater dietary restriction over the past six months.

Past research has supported the reliability and validity of scores on the DEBQ-R (e.g., Stice et al., 1998; van Strien et al., 1986) and the DIS (Stice et al.; Stice et al., 2004). In the current study, internal consistency estimates for scores on both the DEBQ-R and DIS were excellent for the overall sample and African Americans and Caucasians (all alphas exceeded .93). To represent the latent variable dietary restriction, three item parcels, each consisting of approximately equal numbers of items from the DEBQ-R and DIS, were generated based on rational clustering of item content (Kline, 2005). Parcel scores were the mean of each parcel's items.

The hypothesized curvilinear relationship between dietary restriction and BMI was suggested by scatterplots and confirmed in preliminary regression analyses within each of the racial/ethnic groups and in the overall sample. Thus, a latent quadratic component of dietary restriction was included in the model and represented by a single indicator per the recommendations of Ping (1998). Based on a strategy designed to reduce the positive bias associated with parameter estimates for higher-order terms, relevant parameters for the quadratic latent variable (i.e., variance) and its indicator (i.e., error variance, factor loading) were generated from corresponding parameters of the latent linear component of dietary restriction and its indicators.

Procedure

After enrolling in Experimentrak, students completed a demographics questionnaire to determine their eligibility for several studies in the psychology department. Students who satisfied this study's inclusion criteria were then given the option of participating in the current study, the purpose of which they were informed was to "shed light on how people's thoughts and feelings about their body weight are related to their weight management attitudes and behaviors." Questionnaires were completed online in the following order[3]: DIS, DEBQ-R, PRATS, SATAQ, weight, height, sexual orientation, relationship status, parent education, and parent occupation.

Results

Data Analysis Overview

First, racial/ethnic differences in thin-ideal internalization, the perceived romantic appeal of thinness, dietary restriction, and BMI were examined. Next, structural equation modeling (SEM) with latent variables was used to evaluate the hypothesized model of racial/ethnic differences in BMI. SEM was conducted with maximum likelihood estimation using LISREL 8.72 (Joreskog & Sorbom, 2005). This analysis was accomplished in three phases: 1) a confirmatory factor analysis was conducted to confirm the viability of the measurement model, 2) the full model including structural relationships among the latent variables was estimated to examine overall model fit, and 3) mediation analyses of racial/ethnic differences in BMI by the proposed chain of variables were conducted. Conceptually, mediation occurs when the effect of the independent variable is exerted on the dependent variable through an intervening variable (Baron & Kenny, 1986). To provide a formal test of mediation, the significance of the indirect effect of race/ethnicity on BMI was evaluated with confidence interval (CI) estimation for three-path (i.e., four-variable) mediation effects, which was accomplished via the empirical asymmetric CI test for mediation with products of coefficients (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; MacKinnon, Lockwood, & Williams, 2004) using a SAS macros program written by Antonio A. Morgan-Lopez for 3-path mediation (MacKinnon, 2006; Patock-Peckham & Morgan-Lopez, 2006).

Racial/ethnic Differences on Model Variables

Racial/ethnic group differences on composite scores of the observed variables (SATAQ, PRATS, DEBQ-R, DIS, BMI) were evaluated with t-tests of significance and effect sizes. Age, parent education, and parent occupation were evaluated as possible covariates using ANCOVA, but their inclusion did not confound the relationship between race/ethnicity and any of the dependent variables. Thus, the results of the simpler, unadjusted t-tests are reported instead and presented, along with means, standard deviations, and effect sizes, in Table 1. Because multiple *t*-tests were conducted, the Bonferroni adjustment was used to maintain an alpha of .05 for the experimentwise error rate.

As expected, Caucasian women evidenced greater levels of thin-ideal internalization and the belief that thinness enhances their romantic desirability, more frequent practicing of dietary restriction, and lower BMI than African American women. The descriptive statistics for racial/ethnic differences in BMI very closely resemble those reported in a large, national

multisite study of weight gain trends in similarly aged women (Burke & Bild, 1996). According to Cohen's (1992) categorization of effect sizes, racial/ethnic differences in thin-ideal internalization, the perceived romantic appeal of thinness, dietary restriction, and BMI represented effects in the medium range.

Measurement Model

The measurement model for latent constructs with multiple indicators (the perceived romantic appeal of thinness, thin-ideal internalization, dietary restriction) was evaluated with a single group, three-factor confirmatory factor analysis ($N = 816$). The model was specified so that indicators loaded uniquely on the latent factor they represented. Although the model was rejected ($\chi^2[24, N = 816] = 60.79, p < .001$), other fit indices less influenced by sample size indicated excellent model fit (RMSEA = 0.04, CFI = 1.00, standardized RMR = 0.02, GFI = 0.98). The viability of the measurement model is further confirmed by the fact that all indicators loaded highly on their respective latent factors, with completely standardized factor loadings ranging from .94 to .97 for thin-ideal internalization, .82 to .89 for the perceived romantic appeal of thinness, and .96 to .97 for dietary restriction.

Structural Model

Parent education and parent occupational status were initially included as covariates of race/ethnicity in the structural model, but because they neither confounded relations between race/ethnicity and its dependent variables (thin-ideal internalization, the perceived romantic appeal of thinness, and body mass) nor made significant contributions to these variables, they were excluded from the model in the interest of parsimony. The single-group analysis indicated that the model, displayed in Figure 1, was rejected ($\chi^2[48, N = 816] = 232.27, p < .001$), but other fit indices suggested adequate model fit (RMSEA = .06, CFI = .98, standardized RMR = .05, GFI = .96). Consistent with hypotheses, race/ethnicity was significantly predictive of the perceived romantic appeal of thinness and thin-ideal internalization such that Caucasians evidenced higher levels of these variables than their African American counterparts. Also as expected, both the perceived romantic appeal of thinness and thin-ideal internalization significantly and positively predicted dietary restriction, and the significant quadratic effect of dietary restriction indicated a curvilinear relationship between dietary restriction and BMI. Per recommendations of Aiken and West (1991), this curvilinear relationship was further explicated by computing the standardized simple slopes for the relationship between dietary restriction and BMI at three levels of dietary restriction, its mean and one standard deviation above and below its mean. The relationship between dietary restriction and BMI was significant and positive at both one standard deviation below the mean (slope = .96, $p < .001$, point = [1.58, 21.46]) and at the mean of dietary restriction (slope = .26, $p < .001$, point = [2.52, 24.07]). However, at one standard deviation above the mean of dietary restriction, the standardized simple slope was significant and negative (slope = −.44, $p < .001$, point = [3.45, 24.05]). Thus, individuals in lower and upper ranges of dietary restriction were generally characterized by lower BMI, while individuals in the moderate range of dietary restriction evidenced greater BMI.

Mediation Analysis

Finally, the hypothesis that the relationship between race/ethnicity and BMI would be mediated by the proposed intervening variables at higher levels of dietary restriction was tested. Given the quadratic component of the relationship between dietary restriction and BMI, the procedure for evaluating moderated mediation (Morgan-Lopez & MacKinnon, 2006) was extended to the evaluation of mediation in the current study. Moderator effects refer to a variable's interaction with another variable, and because a quadratic effect is merely a variable's interaction with itself, the application of techniques for assessing moderated mediation was deemed appropriate to the evaluation of mediation in the context of a quadratic effect. This procedure typically involves assessing mediation at each level of the moderator or, in this case, the three levels of dietary restriction for which slopes were previously estimated. Because the expectation that the proposed negative relationship between the most proximal mediator, dietary restriction, and the dependent variable, BMI, would hold only at higher levels of dietary restriction was previously confirmed, mediation analyses were limited to higher levels of dietary restriction.

Confidence intervals (CI) for three-path mediation effects were then estimated for each of the two indirect paths from race/ethnicity to BMI at higher levels of dietary restriction using the empirical asymmetric CI test for mediation with products of coefficients (e.g., MacKinnon et al., 2002). As hypothesized, at higher levels of dietary restriction, the relationship between race/ethnicity and BMI was mediated by the perceived romantic appeal of thinness and dietary restriction (mediated effect = −.26, [CI = −.38, −.16]), as well as by thin-ideal internalization and dietary restriction (mediated effect = −.24, [CI = −.34, −.15]). Because the direct effect of race/ethnicity on BMI continued to be significant after controlling for the most proximal mediator, dietary restriction, partial rather than full mediation was demonstrated.

Discussion

The first hypothesis, that of racial/ethnic differences in thin-ideal internalization, the perceived romantic appeal of thinness, dietary restriction, and body mass, was confirmed. The current findings regarding racial/ethnic differences converge with those of other studies demonstrating greater subscription to the thin ideal (Perez & Joiner, 2003; Powell & Kahn, 1995; Shaw et al., 2004), higher levels of dietary restriction (Akan & Grilo, 1995; Gluck & Geliebter, 2002; Neumark-Sztainer et al., 1999), and lower body mass (Burke & Bild, 1996; Ogden et al., 2006) among Caucasian relative to African American women.

Results also conformed to expectation with regard to the proposed theoretical model of racial/ethnic differences in BMI. Specifically, the present results provide support for the following pathway through which Caucasian females may attain and maintain lower body mass relative to African American females: Caucasian females' greater subscription to beliefs concerning the premium placed on thinness in evaluations of attractiveness and romantic desirability produces greater levels of dietary restriction for weight control, which translates into lower body mass at sufficiently high levels of dietary restriction. The current findings illustrate the potential for racial/ethnic differences in beliefs about appearance to influence racial/ethnic disparities in physical health, of which BMI is a marker, via effects

on weight control behavior. The contribution of the internalization of sociocultural appearance ideals to the racial/ethnic differential in BMI among women has been suggested by others (e.g., Roberts, Cash, Feingold, & Johnson, 2006), but the current investigation represents the first attempt of which we are aware to subject this explanation for racial/ ethnic differences in BMI to empirical scrutiny in the context of an integrative, theoretical model.

Confidence in the specific pathways of the integrative model supported by this study is enhanced because the present results closely resemble past findings. The positive relationship between thin-ideal internalization and dietary restriction observed in the current study is consistent with past findings (Stice, 2002). In addition, the curvilinear relationship between dietary restriction and BMI echoes the findings from an earlier study that used the same continuous measures of dietary restriction (Stice, 1998); i.e., BMI was lowest at lower and higher levels of dietary restriction, with greater body mass observed at moderate levels of dietary restriction.

The findings regarding the relationship between dietary restriction and BMI are consistent with the notion that dietary restriction may be effective at lowering BMI only beyond a sufficiently high threshold of dietary restriction. Specifically, it appears that dietary restraint must be practiced persistently and pervasively in one's overall pattern of eating habits to attain and/or maintain the intended goal of low BMI. This inference dovetails with experimental findings demonstrating that dietary restriction, when effectively accomplished, yields the expected result of weight loss (Ditschuneit & Flechtner-Mors, 2001; Wadden et al., 2004). In contrast, individuals who endorsed moderate levels of dietary restriction, where BMI was higher, may attempt to control their weight through dietary restriction but are unsuccessful at practicing dietary restriction reliably, consuming excessive calories despite the desire and intention not to do so. Individuals at lower levels of dietary restriction, who were generally characterized by lower body mass, may effectively control their weight through an alternative strategy, such as physical activity or intuitive eating (Tribole & Resch, 1995), in which eating behavior is governed by physiological signals of hunger and satiety rather than emotional and situational cues. Intuitive eating has been shown to correlate negatively with both eating pathology and BMI in cross-sectional research (Tylka, 2006), potentially indicating that it is an adaptive style of eating in terms of its benefits to both mental and physical health. By relying on physiological cues to decide when to begin and discontinue eating, intuitive eaters may naturally (i.e., without conscious, cognitive effort) limit their caloric intake to the extent necessary to maintain a low body weight.

One implication of the finding that lower levels of BMI were observed at both lower and higher levels of dietary restriction is that weight control may be effectively accomplished through more than one behavioral strategy. The current results suggest that, if dietary restriction is the method of choice, it must be practiced consistently. Given that research on naturalistic dietary restriction has documented a prospective link with eating disordered behavior (Stice, 2001; Stice & Agras, 1998), however, this message should be carefully communicated in practice, with the distinction between healthy and unhealthy methods of weight loss and maintenance explicitly delineated. For example, when carried out in the context of a formal weight loss program, where emphasis is placed on restricting dietary

intake in a healthy manner (e.g., eating a balanced deficit diet), dietary restriction actually decreases depression and binge eating and improves body image and self esteem (Crerand et al., 2007; Wadden et al., 2004). For some individuals, dietary restriction may not be the method of choice for weight management, and they may be able to maintain a healthy BMI through alternative methods such as intuitive eating (Tribole & Resch, 1995).

With regard to reducing racial/ethnic disparities in BMI among young women, the current findings indicate that, insofar as the perceived social rewards of thinness are less salient to African American women than Caucasian women, the effectiveness of weight loss interventions for African American women may be enhanced by emphasizing other benefits of attaining and maintaining a healthy body weight, such as an increase in energy and decrease in the risk of developing diabetes, hypertension, and heart disease.

Exclusive reliance on self-report measures may have yielded inflated estimates of path coefficients as a result of common method variance. Also, counterbalancing the order of questionnaires was precluded by technological limitations, thus allowing for the possibility that order effects may have influenced the results. While self-reported height and weight may have been systematically distorted because of social desirability biases, this concern is attenuated by evidence that self-reported and measured height and weight are highly congruent. In addition, the external validity of the current findings is limited by the college student sample, which is likely characterized by a higher socioeconomic status than similarly aged women in the general population. Also, although the current model fit the data well, other theoretical models of racial/ethnic differences in BMI may be comparably adequate. Thus, while the current study afforded an opportunity to disconfirm the proposed theoretical model, it cannot offer conclusions regarding the model's superiority to competing theoretical models of racial/ethnic differences in BMI. Although the theoretical model specifies the temporal order of the variables and implies causal relationships among the variables, the cross-sectional design of the current study precludes inferences of temporal precedence or causality.

Given support for the proposed model in a cross-sectional context, prospective, longitudinal investigations would be a logical next step, allowing for examination of the temporal relationships among model variables. To ascertain the generalizability of the current findings to non-college student populations, the model should be evaluated in a community sample of women who span a broader spectrum of socioeconomic strata. The utility of the theoretical model itself may be enhanced by the inclusion of other relevant weight control behavior, such as physical activity (Wadden et al., 2002) and intuitive eating (Tribole & Resch, 1995). In addition, support for the model would be strengthened by the replication of current findings with more objective methods of measuring adiposity and dietary restriction. Finally, as the model evaluated here represents only one of many possible models of racial/ethnic differences in BMI, future research should examine other models that incorporate and compare other possible contributors and barriers to weight management behavior, such as social support, weight control self-efficacy, and self-regulatory processes, that may contribute to the racial/ethnic differential in BMI among young women.

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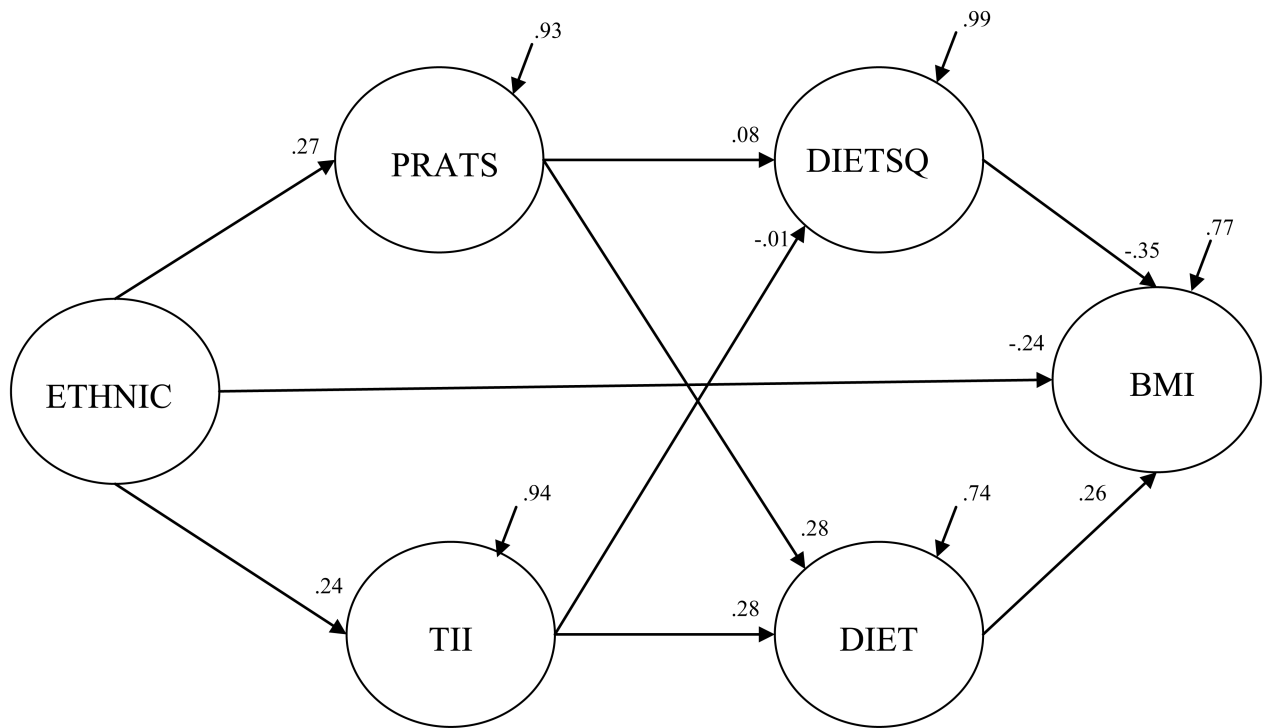
Figure 1.
Path diagram depicting the structural relations for the hypothesized model ($N = 816$). The numbers in the figure are standardized path coefficients; all paths were significant at $p < .01$ except for the paths from the perceived romantic appeal of thinness to the quadratic component of dietary restriction and thin-ideal internalization to the quadratic component of dietary restriction (which were both nonsignificant, ps > .05). Disturbances of the endogenous variables ($1 - R^2$) convey the proportion of variance that is not accounted for by influences depicted in the model. ETHNIC = race/ethnicity, PRATS = perceived romantic appeal of thinness, TII = thin-ideal internalization, DIET = linear component of dietary restriction, DIETSQ = quadratic component of dietary restriction, BMI = body mass. Race/ethnicity was coded so that Caucasian = 1, African American = 0.

Table 1

Means, Standard Deviations, t-tests, and Effect Sizes for Racial/ethnic Differences in Thin-ideal Internalization, the Perceived Romantic Appeal of Thinness, Dietary Restriction, and Body Mass Index

Variable/Measure	Caucasian ($n = 676$)		African American ($n = 140$)		t	Cohen's d
	M	SD	M	SD		
SATAQ	3.50	1.09	2.74	1.09	-7.51^{*}	.70
PRATS	3.58	.88	2.93	1.04	-6.87^{*}	.67
DEBQ-R	2.66	.98	2.27	.95	-4.35^{*}	.40
DIS	2.49	.94	2.11	.89	-4.42^{*}	.42
BMI	23.20	4.52	25.68	6.02	4.61^{*}	.47

Note. SATAQ = General Internalization subscale of Sociocultural Attitudes Toward Appearance Scale-3; PRATS = perceived romantic appeal of thinness scale; DEBQ-R = Dutch Eating Behavior Questionnaire—Restraint subscale; DIS = Dietary Intent Scale; BMI = Body Mass Index.

*
$p < .001$.