OBJECTIFIED BODY CONSCIOUSNESS AND ITS RELATION TO BODY DISSATISFACTION IN AFRICAN AMERICAN AND CAUCASIAN COLLEGE WOMEN

Ellen E. Fitzsimmons

A thesis submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Arts in the Department of Psychology (Clinical Psychology).

Chapel Hill
2010

Approved by:
Anna M. Bardone-Cone, PhD
Barbara L. Fredrickson, PhD
Eleanor K. Seaton, PhD
Donald H. Baucom, PhD
ABSTRACT

ELLEN E. FITZSIMMONS: Objectified Body Consciousness and its Relation to Body Dissatisfaction in African American and Caucasian College women (Under the direction of Anna M. Bardone-Cone, PhD)

In Western society, females often learn to view themselves from an observer’s perspective and to treat themselves as objects to be looked at (i.e., objectified body consciousness (OBC)). This study considered how objectification affects African American and Caucasian women by examining a model in which body shame and trait anxiety were tested as mediators of the relation between body surveillance (an element of OBC) and body dissatisfaction. Participants were 276 college women (97 African American, 179 Caucasian). At two time points, separated by about 5 months, participants completed the same questionnaires. Structural equation modeling indicated that the hypothesized half-longitudinal mediation model was not significant for either group, but an alternative model that examined body surveillance as a mediator of the relation between trait anxiety and body dissatisfaction was marginally significant for Caucasians. Results provide some support for the differential effects of OBC on women’s body dissatisfaction depending on race/ethnicity.
TABLE OF CONTENTS

LIST OF TABLES...........................................................................................................v

LIST OF FIGURES..........................................................................................................vi

ABBREVIATIONS..............................................................................................................vii

OBJECTIFIED BODY CONSCIOUSNESS AND ITS RELATION TO BODY DISSATISFACTION IN AFRICAN AMERICAN AND CAUCASIAN COLLEGE WOMEN...........................................................................1

Objectified Body Consciousness....................................................................................2

Body Dissatisfaction......................................................................................................5

A Multiple Mediation Model with Mediators of Body Shame and Trait Anxiety.............. 6

The Current Study.......................................................................................................9

Method.........................................................................................................................10

Participants..................................................................................................................10

Procedures...................................................................................................................11

Measures......................................................................................................................12

Analytic Strategy.............................................................................................................15

Results.........................................................................................................................18
Model Testing Procedures .......................................................... 19

Hypothesized Mediation Model of the Relation Between
Body Surveillance and Body Dissatisfaction .............................. 20

Modified Mediation Model of the Relation Between
Trait Anxiety and Body Dissatisfaction ................................. 21

Discussion .................................................................................. 23

REFERENCES .............................................................................. 41
LIST OF TABLES

Table

1. Correlations among and means and standard deviations of the measured variables for the African American and Caucasian college women.................................................................35

2. Goodness-of-fit indices.................................................................36

3. Mediation of the effect of body surveillance on body dissatisfaction through body shame and trait anxiety (Model 1) and of trait anxiety on body dissatisfaction through body surveillance (Model 2).................................................................37
LIST OF FIGURES

Figure

1. Conceptual model of the proposed multiple mediation design.................................................................38
2. Model 1 (hypothesized model).................................................................................................................39
3. Model 2 (modified model).........................................................................................................................40
ABBREVIATIONS

AA African Americans
BMI Body Mass Index
BULIT-R Bulimia Test – Revised
C Caucasians
CFI Comparative Fit Index
EDE Eating Disorder Examination
EDE-Q Eating Disorder Examination-Questionnaire
OBC Objectified Body Consciousness
OBCS Objectified Body Consciousness Scale
RMSEA Root Mean Square Error of Approximation
SRMR Standardized Root Mean Square Residual
STAI Spielberger State-Trait Anxiety Inventory
T1 Time 1
T2 Time 2
TLI Tucker-Lewis Index
OBJECTIFIED BODY CONSCIOUSNESS AND ITS RELATION TO BODY DISSATISFACTION IN AFRICAN AMERICAN AND CAUCASIAN COLLEGE WOMEN

Within dominant American culture, theorists have posited that the feminine body has been constructed as an object to be looked at (Fredrickson & Roberts, 1997; McKinley & Hyde, 1996) and sexually gazed upon (Spitzack, 1990). Because the female body exists in this sociocultural context, girls and women (often through experiences of sexual objectification) learn to view themselves from an observer’s perspective and to treat themselves as objects to be looked at (McKinley & Hyde, 1996). In addition to being reduced to mere objects, women are given the message that they have the ability to control their bodies, and that given the appropriate amount of effort they can comply with cultural standards (McKinley & Hyde, 1996). This external view of one’s own body is known as objectified body consciousness (OBC) and is hypothesized to result in negative outcomes for women who experience it (McKinley & Hyde, 1996). For instance, when one constantly views the self from the perspective of the other, it may lead to feelings of body shame and anxiety, which may in turn result in further mental health concerns, including body dissatisfaction (Buchanan, Fischer, Tokar & Yoder, 2008). Researchers have documented that objectification may lead to shame, feelings of anxiety, and body image disturbance in predominantly Caucasian samples (e.g., Knauss, Paxton, & Alsaker, 2008; Miner-Rubino, Twenge, & Fredrickson, 2002; Tiggemann & Lynch, 2001); yet, the correlates and consequences of objectification among African Americans are less clear. Given that this construct may vary considerably across racial and ethnic groups, the current study considered
how objectification affects women’s feelings of body dissatisfaction in a sample of both African American and Caucasian college women. This was assessed via a mediation model in which body shame and trait anxiety were tested as potential mediators of the relation between body surveillance, which is an element of objectification, and body dissatisfaction.

**Objectified Body Consciousness**

It is not uncommon for a woman to feel sexually objectified (often by men), as her “sexual parts or functions are separated out from her person, reduced to status of mere instruments, or else regarded as if they were capable of representing her” (Bartky, 1990, p. 35), when being subjected to the sexually objectifying gaze of another. OBC, as construed by McKinley and Hyde (1996), consists of both body surveillance and body shame components and is similar to Fredrickson and Roberts’ (1997) objectification theory, which also posits that females are acculturated to internalize the objectifying observer’s perspective of their bodies. The internalization of the “objectifying observer’s” (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998, p. 270) perspective of one’s body is known as self-objectification, which manifests itself in the act of body surveillance, a core component of OBC (Morandi & Huang, 2008). Thus, many women feel they must engage in constant body surveillance in order to ensure that they comply with cultural body standards of thinness (i.e., the thin ideal; Gilbert & Thompson, 1996; McKinley, 2004; Thompson & Stice, 2001), given that Western culture positions appearance, particularly a thin figure, as central to a woman’s value as a person (Rodin, Silberstein, & Striegel-Moore, 1984; Spitzack, 1990; Stice, 1994). Via self-surveillance, many women realize there is a discrepancy between what they see and what they ought to look like, and therefore, experience body shame and anxiety (McKinley & Hyde, 1996).
This framework explains why those in the dominant culture may engage in such surveillance (i.e., to obtain the cultural standard of beauty/the thin ideal), but do individuals who belong to a minority group believe that such standards apply to them and engage in body surveillance at rates similar to that of the majority group? Evidence suggests that, indeed, African American women may not believe these standards apply to them and likely do not engage in body surveillance as often as Caucasian women. In comparison to Caucasian women, African American women hold a more fluid definition of beauty and view a wider range of body sizes as attractive and acceptable (Allan, Mayo, & Michel, 1993). Moreover, thinness is not as highly valued or desired by African American women or men (Greenberg & LaPorte, 1996; Vaughan, Sacco, & Beckstead, 2008). Further, African American women tend to be less concerned with losing weight than their Caucasian counterparts, make less of an effort to achieve the thin ideal, and tend not to compare themselves to the Caucasian thin ideal (given how dissimilar this image is from themselves) (Abrams, Allen, & Gray, 1993; Frisby, 2004; Gray, Ford, & Kelly, 1987; Thomas & James, 1988). Interestingly, Hebl, King, and Lin (2004) found that when put in a self-objectifying situation (i.e., trying on a one-piece swimsuit), both African American and Caucasian women experienced negative outcomes (e.g., body shame, poor math performance). However, these researchers also found that African American women displayed lower levels of trait self-objectification in comparison to Caucasian women (Hebl et al., 2004). Similarly, in a study of low-income women, Breitkopf, Littleton, and Berenson (2007) found that Caucasian women showed significantly higher levels of body surveillance than African American individuals.

These differences in trait objectification may exist for several reasons. For instance, Breitkopf and colleagues (2007) hypothesize that because African American women are
more likely to define attractiveness in a multifaceted way (e.g., including such things as style and personality), they likely spend less time worrying about what others think about their physical appearance. Another reason for the differences in objectification between groups may be a lack of “fat talk” among African American women. This term is used to describe conversations with peer group members that focus on negative aspects of one’s appearance, diet, or the need to lose weight and has become the norm among young Caucasian women (Nichter & Vuckovic, 1994). In her conversations with adolescents, Nichter (2000) found that African American girls were much less likely to be obsessed with their weight or engage in fat talk. Given that fat talk can be objectifying (i.e., directs attention on the body), it may serve as an explanation for the differences between groups on levels of objectification (Gapinski, Brownell, & LaFrance, 2003). At the same time, it is acknowledged that preexisting differences in levels of objectification may direct some but not others to fat talk, which then may serve as a maintenance mechanism for objectification. Finally, it may be that African American women are not typically exposed to the types of images that may be particularly self-objectifying for them. For example, Harrison and Fredrickson (2003) found that Caucasian adolescents’ state self-objectification increased after exposure to lean female athletes (e.g., gymnasts) but not after exposure to nonlean female athletes (e.g., basketball players); in contrast, for participants of color, an increase in state self-objectification was apparent only in response to nonlean female athletes. The authors posited that these racial/ethnic differences were likely driven by differences in the adolescents’ ideas regarding the ideal female body type, whereby what was most salient and personally relevant to the adolescent increased thoughts of her own body shape and size, resulting in increased self-objectification (i.e., Caucasians likely found the lean athletes’ bodies to resemble their ideal,
while adolescents of color likely found the larger, fuller bodies of the nonlean athletes to be more in line with their ideal) (Harrison & Fredrickson, 2003). This suggests that, in general, most images that African American women are exposed to might not be particularly objectifying for them (e.g., most of the images in the media are lean images).

**Body Dissatisfaction**

Body dissatisfaction has been found to be one of the “most consistent and robust risk and maintenance factors for eating pathology” (Stice, 2002, p. 833) and has been described as a “normative discontent” among Caucasian American women (Rodin et al., 1984). For instance, among college samples, rates of body dissatisfaction as high as 80% have been reported (Silberstein, Striegel-Moore, Timko, & Rodin, 1988). In general, the preponderance of evidence suggests that despite their larger body sizes, African American women tend to be more satisfied with their bodies in comparison to Caucasian women (e.g., Akan & Grilo, 1995; Altabe, 1998; Barry & Grilo, 2002; Story, French, & Resnick, 1995). Meta-analytic work has indicated that although Caucasian women may indeed be more dissatisfied with their bodies (i.e., evaluative aspect of body image dissatisfaction with a focus on weight and shape (rather than on things such as hair)) than African American women, average effect sizes are typically in the small to moderate range (Grabe & Hyde, 2006; Wildes, Emery, & Simons, 2001). Indeed, several researchers have begun to challenge the notion that body dissatisfaction is greater among Caucasians than African Americans (e.g., Wilfley, Schreiber, Pike, Striegel-Moore, Wright, & Rodin, 1996), and some have suggested that this gap will continue to narrow as African American women assimilate into the dominant society, idealize Caucasian identity, and reject their own African American identity (Abrams et al., 1993). Interestingly, evidence suggests that differences in body dissatisfaction likely peak
just after the age of 20 when many women are attending college (Roberts, Cash, Feingold, & Johnson, 2006).

Theories regarding the objectification of the body suggest that the development of body dissatisfaction can be partly explained by OBC (Fredrickson & Roberts, 1997; McKinley, 1998; McKinley & Hyde, 1996). Miner-Rubino and colleagues (2002) note that self-objectification reflects concern for physical appearance without an evaluative component, and it is hypothesized that such objectification will have many consequences, one of which may be the evaluative outcome of dissatisfaction with one’s body. Of course, given cultural standards of thinness and unrealistic ideals, “self-objectification and body dissatisfaction [often] go hand-in-hand” (Miner-Rubino et al., 2002, pp. 151-152).

Specifically, when an individual focuses attention on herself and has an awareness of cultural standards of beauty but cannot reduce the discrepancy between the two, she feels bad (Carver & Scheier, 1981). Indeed, researchers have found that the body surveillance component of OBC may lead to body dissatisfaction in Caucasian samples (e.g., Knauss et al., 2008; Muehlenkamp, Swanson, & Brausch, 2005), but to date, research on the nature of this relation within an African American sample is limited. Mitchell and Mazzeo (2009) found that a single latent construct representing thin-ideal internalization and body monitoring was associated with body dissatisfaction in both African American and Caucasian undergraduate women. Further, Buchanan and colleagues (2008) found that body surveillance and skin-tone-specific surveillance were predictive of skin-tone dissatisfaction. Yet, what is still unknown is how a measure of body-specific surveillance may lead to feelings of weight and shape dissatisfaction among African American women.

**A Multiple Mediation Model with Mediators of Body Shame and Trait Anxiety**
In general, little is known about the extent to which African American women experience OBC or the manner in which this construct, particularly the surveillance component, may be differentially related to body dissatisfaction in Caucasians and African Americans. Further, there remains a need to assess the potential pathways by which body surveillance may lead to feelings of body dissatisfaction within these populations. Thus, in this study, two such potential mediators of the relation between body surveillance and body dissatisfaction were assessed: body shame and trait anxiety.

We investigated body shame and trait anxiety as mediators of the relation between body surveillance and body dissatisfaction by means of a multiple mediation model, which allows the researcher to examine a set of probable mediators, control for other mediating effects, decrease parameter bias (i.e., bias is often introduced when several simple mediation hypotheses are each tested within a simple mediator model; Judd & Kenny, 1981), and pit competing theories/mediators against each other within a single model (Preacher & Hayes, 2008).

Previous work has underscored the relations between body surveillance, body shame and body dissatisfaction in predominantly Caucasian samples. Noll and Fredrickson (1998) and Tiggemann and Lynch (2001) conceptualized body shame as an outcome of body surveillance. As previously mentioned, when an individual aware of cultural standards of beauty focuses attention on her own body in terms of how it appears to others (i.e., body surveillance), she may feel shame when she is not able to achieve such standards (i.e., body shame). Other work has shown that higher surveillance is typically related to lower body esteem and body dissatisfaction (e.g., McKinley, 1999; McKinley & Hyde, 1996). Buchanan and colleagues (2008) found that, similar to findings from Caucasian samples (e.g., Noll &
Fredrickson, 1998; Tiggemann & Slater, 2001; Tylka & Hill, 2004), African American women’s body surveillance predicted body shame. In terms of explaining the relation between these three constructs, Knauss and colleagues (2008) found that the relation between body surveillance and body dissatisfaction was mediated by body shame in a sample of Caucasian adolescent girls. To our knowledge, no study has assessed body shame as a potential mediator between body surveillance and body dissatisfaction within an African American sample.

We also tested trait anxiety as a mediator between body surveillance and body dissatisfaction. McKinley and Hyde (1996) and Fredrickson and Roberts (1997) purported that viewing oneself from the point of view of an observer would result in appearance anxiety, in addition to shame. Research has indicated that, indeed, greater levels of self-objectification are associated with greater anxiety regarding one’s appearance or social physique (as compared to those with lower levels of self-objectification) in predominantly Caucasian samples (e.g., Greenleaf & McGreer, 2006; Melbye, Tenenbaum, & Eklund, 2008; Roberts & Gettman, 2004). Relatedly, even the anticipation of objectification in a non-body focused situation (i.e., “small talk” with a stranger) can result in anxiety; namely, participants who anticipated interactions with a male and a “male gaze” experienced greater social physique anxiety than those who anticipated a female gaze (Calogero, 2004). In general, Fredrickson and Roberts posit that not knowing exactly when, where, and how one’s body will be evaluated creates anxiety about potential exposure, and consistent with this notion, studies show that women experience more appearance anxiety than men (e.g., Dion, Dion, & Keelan, 1990; Hart, Leary, & Rejeski, 1989). Miner-Rubino and colleagues (2002) came to the conclusion that self-objectification leads to increased levels of appearance anxiety but
also speculated that this type of vigilance may lead to more general symptoms of anxiety, too. They found that those who scored high on self-objectification also scored high on neuroticism, which captures elements of anxiety. Additionally, Cameron and Ferraro (2004) found that higher levels of trait anxiety were associated with greater body dissatisfaction. However, given the cross-sectional nature of these studies, the temporal orderings of these relations are unknown. Overall, there is a need to examine the relations between self-objectification, a pure measure of anxiety, and body dissatisfaction, and to our knowledge, this is the first study to test anxiety as a mediator in the relation between body surveillance and body dissatisfaction.

**The Current Study**

First, we compared levels of the independent (i.e., body surveillance) and dependent (i.e., body dissatisfaction) variables across groups. Given the aforementioned prior research, we hypothesized that Caucasian women would display higher levels of body surveillance and body dissatisfaction than African American women.

Second, we examined the correlation between body surveillance and body dissatisfaction among both African American and Caucasian women. We hypothesized that these constructs would be more strongly positively correlated among Caucasian women than African American women.

Finally, while researchers have examined the relation between OBC and body dissatisfaction (i.e., Forbes, Jobe, & Revak, 2006; Knauss et al., 2008; McKinley, 1998, 2006), few have tested possible mediation models explaining this linkage and fewer still have examined these variables in an African American sample (i.e., Buchanan et al., 2008; Mitchell & Mazzeo, 2009). In the present study, we tested a model in which the body
surveillance component of OBC contributes to greater body shame and trait anxiety, which in turn lead to more body dissatisfaction among college women (see Figure 1). It was hypothesized that body shame and anxiety would each partially mediate the direct relation between body surveillance and body dissatisfaction. It was further hypothesized that because objectification theory emphasizes a dominant culture framework, this model would hold better for Caucasian women. However, given a lack of knowledge about how this theory holds for African Americans and the possibility that standards of beauty are changing for these women (e.g., Freedman, Carter, Sbrocco, & Gray, 2007), it was believed that the hypothesized relations would serve to at least partially explain African American women’s body dissatisfaction (albeit to a lesser degree than Caucasian women). This model was examined prospectively, allowing for a better test of causal hypotheses than a cross-sectional design would provide.

Method

Participants

Participants were 276 women attending a Midwestern university; 97 (35%) described themselves as African American/Black, and 179 as Caucasian non-Hispanic/White. Efforts were made to oversample African American women, given research interests in this population, and recruitment occurred both through introductory psychology courses and through campuswide recruitment strategies (e.g., flyers, email distribution lists). For African American participants, the mean age was 19.04 years ($SD = 1.59$); for Caucasian participants, the mean age was 18.58 years ($SD = 1.06$). For African American participants, mean body mass index (BMI) was 24.18 kg/m$^2$ ($SD = 4.66$); for Caucasian participants, mean BMI was 22.22 kg/m$^2$ ($SD = 2.79$). Highest parental education was used as a proxy for socioeconomic
status. On average, the highest education attained by parents of the African American women was 15.80 years ($SD = 2.81$), whereas for Caucasian women, the mean was 16.42 years ($SD = 2.57$). Age ($t(143) = -2.56, p = .012$) and BMI ($t(134) = -3.80, p < .001$) were significantly different across groups, while highest parental education was not ($t(274) = 1.85, p = .065$). However, because age was not significantly correlated with our dependent variable, body dissatisfaction, for either African American or Caucasian women, we did not believe it to be important to control for the effects of this variable. Thus, only BMI was included as a covariate in testing our models.

**Procedures**

At two time points, separated by about 5 months, participants completed the same set of questionnaires as part of a study presented as an investigation of personality and eating patterns. Questionnaires were presented in a fixed order and were administered to groups of participants (typically from 5 to 25 per group) after obtaining written consent. Questionnaire completion took 45 minutes to one hour, and participants received course credit or remuneration (e.g., $10 gift certificate to a local shopping mall) for their involvement. Of the Time 1 (T1) participants, significantly more Caucasian women (156 of 179; 87.2%) than African American women (70 of 97; 72.2%) completed Time 2 (T2), $\chi^2(1, N = 276) = 9.52, p = .002$. Completers were compared to noncompleters both in the full sample and within racial group using $t$-tests; these groups were not significantly different from each other on body surveillance, body shame, trait anxiety, body dissatisfaction, or BMI. Thus, the completers appear to be representative of the participants who began the study on the study variables, minimizing attrition concerns. Data from the full sample ($N = 276$) were used to examine correlations and levels of the study variables across groups, and data from the 226
completers were used in the prospective analyses to elucidate the prospective relations among body surveillance, body shame, trait anxiety, and body dissatisfaction. This study was reviewed and approved by the university’s Institutional Review Board.

Measures

Because most questionnaires related to body objectification and body dissatisfaction have been validated on predominantly Caucasian samples, the psychometrics presented below refer to findings from largely Caucasian samples unless otherwise noted.

Demographics. Demographic data for age, parents’ highest levels of education attained, and race/ethnicity were collected via a set of questions created for this study. Regarding race/ethnicity, participants were provided a list including, Caucasian, African American, Hispanic, Asian, Native American, and other race/ethnicity and instructed to check as many as applied in terms of their racial/ethnic background. Women who selected only “African American” or only “Caucasian” were included in these analyses.

Body surveillance. Body surveillance, or “viewing the body as an outside observer” (p. 181) was measured at both time points with the Body Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996). This subscale consists of eight items that are rated on a 7-point Likert scale ranging from strongly disagree to strongly agree, with higher scores indicating higher levels of surveillance or habitual body monitoring and thinking of one’s body in terms of how it looks rather than how one feels. McKinley and Hyde reported a coefficient alpha of .89 in a sample of student and nonstudent women, and in the current study, alpha was .72/.79 for African American women and .89/.88 for Caucasian women at T1 and T2, respectively. Construct validity is demonstrated by high correlations with public self-consciousness ($r = .73$) and nonsignificant relations with private
self-consciousness (McKinley & Hyde, 1996). No known test of this subscale’s psychometric properties has been conducted using an African American sample.

**Body shame.** The Body Shame subscale of the OBCS (McKinley & Hyde, 1996), administered at both time points, is a 7-item subscale that quantifies “feeling shame when the body does not conform [to cultural standards]” (p. 181). Items are rated on an 7-point Likert scale ranging from strongly disagree to strongly agree, with higher scores indicating higher levels of body shame and feelings of being a bad person if one does not fulfill cultural expectations of one’s body. McKinley and Hyde reported a coefficient alpha of .75; in the current sample, alpha was .86/.85 for African American women and .87/.80 for Caucasian women at T1 and T2, respectively. Construct validity is demonstrated by the subscale’s strong negative correlation with body esteem ($r = -.51$; McKinley & Hyde, 1996). No known test of this subscale’s psychometric properties has been conducted using an African American sample.

**Trait anxiety.** Trait anxiety was assessed at both time points using the 20-item trait anxiety scale of the Spielberger State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970). Trait anxiety refers to the “relatively stable individual differences in anxiety proneness” (Spielberger et al., 1970, p. 3). Participants responded to items about their general tendency to display anxiety (e.g., feel nervous or tense) using a 4-point Likert scale ranging from almost never to almost always. Novy, Nelson, Goodwin, and Rowzee (1993) investigated the reliability of the trait anxiety scale within African American and Caucasian female samples and found Cronbach’s alphas of .93 and .94, respectively. The trait anxiety scale has been found to have excellent test-retest reliability (.97; Metzger, 1976), and construct validity is demonstrated by the fact that scores for the state anxiety scale items
consistently vary in the face of different stressors, while the scores for the trait scale items do not (Hedberg, 1972). Additionally, Brown and Duren (1988) reported validity of the state-trait anxiety distinction of the STAI in an African American sample. In the current study, alpha was .92/.91 for African American women and .92/.93 for Caucasian women at T1 and T2, respectively.

**Body dissatisfaction.** Body dissatisfaction was assessed at both time points via the Weight Concern and Shape Concern subscales of the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994), a measure that was derived from the Eating Disorder Examination (EDE) interview (Fairburn & Cooper, 1993). The EDE-Q assesses disordered eating psychopathology over the past four weeks, and these two subscales focus on weight and shape dissatisfaction. Body dissatisfaction was operationalized by combining the weight and shape concern subscales so as to capture multiple dimensions of the construct, and because previous work has indicated that these two subscales generally load onto one underlying factor (Peterson et al., 2007). The EDE-Q is one of the most commonly used measures of disordered eating attitudes and behaviors in clinical and community populations (Anderson & Williamson, 2002), and its subscales have good internal consistency (alphas of .89 and .93 for the Weight Concern and Shape Concern subscales, respectively; Luce & Crowther, 1999) and convergent validity (Fairburn & Beglin, 1994; Grilo, Masheb, & Wilson, 2001). Bardone-Cone and Boyd (2007) reported that the temporal stability of the EDE-Q Weight Concern and Shape Concern subscales was similarly adequate across samples of African American and Caucasian women. In this sample, alpha was .92/.92 for African American women and .94/.94 for Caucasian women at T1 and T2, respectively.
**BMI.** Participants reported on their current weight and height at T1, and we used this information to compute BMI by dividing weight in kilograms by height in meters squared. This index controls for weight variations due to height, yielding a measure of relative weight. There is evidence that individuals are generally accurate with their self-reported weights (Shapiro & Anderson, 2003). Tiggemann and Lynch (2001) found that BMI was uncorrelated with body surveillance and body shame (in a sample of older adult women), but McKinley (1999) found that BMI was significantly negatively related to body surveillance for middle-age women and positively related to body shame for both college- and middle-age women. Additionally, BMI is one of the most consistent predictors of increased body dissatisfaction, with higher BMIs typically being associated with greater body dissatisfaction (e.g., McCabe & Ricciardelli, 2003). As such, analyses were run both controlling for and without controlling for BMI.

**Analytic Strategy**

To test our first two hypotheses, we utilized data from the full sample at T1. We investigated our first hypothesis, regarding mean differences, using independent samples *t*-tests. In order to test our second hypothesis, we examined correlations between body surveillance and body dissatisfaction separately for African American and Caucasian women. To see whether the correlations were significantly different, we used the Fisher *r*-to-*z* transformation.

We investigated the third proposed study hypothesis by testing: 1) the total indirect effect of body surveillance on body dissatisfaction through body shame and trait anxiety, 2) the specific indirect effect of body surveillance on body dissatisfaction through body shame, and 3) the specific indirect effect of body surveillance on body dissatisfaction through trait
anxiety. We tested these effects using data from the study completers, so as to examine these relations prospectively. Because the assumption of normality of the sampling distribution of the total and specific indirect effects was questionable given our small sample sizes (i.e., this sampling distribution is normal only in very large samples, and in general, the total indirect effect is rarely normal), we used the bootstrapping method, which is recommended when assumptions may not be met (Preacher & Hayes, 2008). Bootstrapping was used to obtain indirect effects estimates and to test their significance via confidence intervals. Additionally, multiple group modeling was utilized to examine whether the hypothesized model fit differentially for African American and Caucasian college women. Mplus Version 5.21 (Múthen & Múthen, 2007) was used to run these analyses.

The total indirect effect associated with the two proposed mediators was tested using the formula $a_1b_1 + a_2b_2$, where the two terms represent the indirect effect of body surveillance on body dissatisfaction through body shame and the indirect effect of body surveillance on body dissatisfaction through trait anxiety (see Figure 1). As per Preacher and Hayes (2008), calculating the specific indirect effects (i.e., $a_1b_1$ and $a_2b_2$) involved several steps. Using the prospective analyses that were completed on the 70 African American cases as an example, the first step was to take a bootstrap sample of 70 cases that was generated using random sampling with replacement (so that a given case can be selected as part of a bootstrap sample not at all, once, twice, or multiple times). Next, the regression coefficients ($a_i$ and $b_i$) and the indirect effect estimates ($a_ib_i$) were calculated based on the bootstrap sample. This process of creating a bootstrap sample and calculating regression coefficients and the indirect effect estimates for that given bootstrap sample was repeated 5,000 times, so that 5,000 estimates of the total and specific indirect effects of body surveillance on body dissatisfaction were
obtained. (Preacher and Hayes recommend that this process be repeated at least 1,000 times and recommend at least 5,000 resamples for final reporting.) The mean of these 5,000 estimates was then calculated for the total and specific indirect effects. If zero was not included in the 95% confidence interval, then we concluded that the indirect effect was significant.

Of note, for these prospective analyses, we utilized a pair of longitudinal tests as per Cole and Maxwell (2003). These researchers point out that mediation hypotheses tested against cross-sectional data can be very biased and misleading; further, mediation models tested within longitudinal designs allow for more rigorous inferences about causal relations. Since our data come from two time points, “half-longitudinal” tests were employed in this study (Cole & Maxwell, 2003). We first estimated the paths in the regression of the T2 mediators onto T1 body surveillance controlling for T1 mediator values. Then we estimated the paths in the regression of T2 body dissatisfaction onto the T1 mediators controlling for T1 levels of body dissatisfaction. Assuming that the conditions for stationarity (i.e., stable casual relationship between two variables; Kenny, 1979) are met, paths between T1 mediators and T2 body dissatisfaction would be equal to the paths between T2 mediators and a hypothetical T3 body dissatisfaction. Under this assumption, the $a_i b_i$ product terms provide estimates of the meditational effect of body surveillance on body dissatisfaction through body shame and trait anxiety.

Using the bootstrapping technique, we were also able to test the hypothesis that the two specific indirect effects were equal in size. In this case, testing whether the specific indirect effect of body surveillance on body dissatisfaction through body shame was significantly different from the specific indirect effect of body surveillance on body
dissatisfaction through trait anxiety. If zero was contained in the 95% confidence interval of the contrast, the two indirect effects could not be distinguished in terms of their magnitude. Contrasts identify the unique abilities of each mediator to account for the effect of body surveillance on body dissatisfaction above and beyond other mediators. Thus, to the degree that the mediators are correlated (i.e., collinearity), specific indirect effects may be attenuated and unique contributions may not exist. Similarly, using the bootstrapping technique, we were able to test the hypothesis that the two specific indirect effects were equal in size across racial/ethnic groups, as well as whether the total indirect effect of body surveillance on body dissatisfaction was equal in size across groups.

Cole and Maxwell (2003) purport that this approach is superior to the methods typically applied to “half-longitudinal designs” (e.g., testing the prospective relations between the mediators and the dependent variable but examining only the contemporaneous relations between the independent variable and the mediators). Although this set of analyses is what is recommended when there are two waves of data with all variables in the model measured at each wave (Cole & Maxwell, 2003), we note that two limitations emerge. First, although we can test whether the mediators are partial mediators, we cannot test whether they completely mediate the relation between our independent and dependent variables. Second, the assumption of stationarity may not hold; if this assumption is false, \(a_i b_j\) estimates will likely be biased. Problematically, without at least three waves of data, the assumption of stationarity cannot be tested. Despite these limitations, Cole and Maxwell suggest that failing to control for prior levels of the dependent variables will likely lead to more problems than failing to take into account potential violations of stationarity.

Results
Table 1 contains means and standard deviations for both African American and Caucasian women for the study variables at T1, as well as their correlations. Regarding mean differences of the study variables at T1, t-tests revealed that Caucasian women experienced significantly higher levels of body shame ($t(274) = 2.60, p=.010$) and body dissatisfaction ($t(274) = 3.76, p<.001$) than African American women. Neither levels of body surveillance ($t(274) = 1.14, p=.255$) nor trait anxiety ($t(270) = 1.66, p=.098$) differed across groups. Regarding correlations, all variables in the hypothesized mediation model were correlated in the expected direction. Using Fisher’s r-to-z transformations to compare the correlation coefficients across the samples, we found a marginally significant group difference for the correlation between body surveillance and body dissatisfaction ($z = -1.84, p=.066$), where the magnitude of this correlation was marginally greater for Caucasian women. No other correlations between variables included in the hypothesized mediator model were significantly different across groups. It is of note that BMI was significantly positively correlated with all study variables for African American women but only significantly positively correlated with body dissatisfaction for Caucasian women. In line with these findings, we found significant group differences for the correlations between body shame and BMI ($z = 3.00, p=.003$) and between body dissatisfaction and BMI ($z = 3.87, p<.001$), where the strengths of these correlations were significantly greater for African American women. Further, a marginally significant group difference was found for the correlation between body surveillance and BMI ($z = 1.83, p=.067$), with these constructs being more highly correlated for African American women.

**Model Testing Procedures**
Hypothesized Mediation Model of the Relation Between Body Surveillance and Body Dissatisfaction

Given that our hypothesized model included multiple mediators and data from two time points, structural equation modeling (SEM) was conducted with Mplus Version 5.21 (Múthen & Múthen, 2007) in order to test the proposed model. In our model testing, because the same constructs were modeled at multiple time points, we allowed its indicators (i.e., scores at T1 and T2) to be correlated over time. Overall model fit was examined using established goodness-of-fit indices. The comparative fit index (CFI; Bentler, 1990) and the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973) were examined, with cut-off values approaching .95 said to indicate a good fit to the model (Hu & Bentler, 1999). Additionally, to account for model complexity, the root mean square error of approximation (RMSEA; Steiger, 1990) was also examined. It has been suggested that RMSEA values of less than .08 indicate that the model is a reasonable approximation of the analyzed data (Browne & Cudeck, 1993). Further, some research has found that the RMSEA is among the fit indices least affected by sample size, which sets this statistic apart from many other fit indices that are sample-dependent or that have characteristics of their distribution that depend on sample size (Bollen, 1989; Marsh, Balla, & Hau, 1996). Finally, the standardized root mean square residual (SRMR) was examined. Research has suggested that values less than .05 indicate well-fitting models (Byrne, 1998); however, values as high as .08 are deemed acceptable (Hu & Bentler, 1999). Thus, the overall fit of the model was determined by using a combination of the results from the fit indices and the significance of the standardized path coefficients.

The hypothesized model (Figure 1) was designed to examine the prospective relation (via a half-longitudinal approach, Cole & Maxwell, 2003) between body surveillance and
body dissatisfaction, considering the mediating variables of body shame and trait anxiety.
The hypothesized model was tested, followed by modifications to improve the overall model fit. As seen in Table 2, the hypothesized model fit the data well; however, path coefficients were generally very small and only the path between body shame and body dissatisfaction for Caucasian women was significant (see Figure 2). Additionally, the specific indirect effects were not significant for either group, and in comparing the size of specific indirect effects across groups, no significant differences emerged. Further, the total indirect effect of body surveillance on body dissatisfaction was not significantly different from zero for either group (and the size of this effect was not significantly different across groups) (see Table 3).³

Modified Mediation Model of the Relation Between Trait Anxiety and Body Dissatisfaction

Given the non-significance of indirect effects in our hypothesized model, modifications were made at a post-hoc level (Model 2). In the hypothesized model, it was believed that a specific behavior (i.e., body surveillance) would significantly contribute to a broad tendency (i.e., trait anxiety). Although we had reasons to believe that body surveillance would lead to trait anxiety (i.e., based on the previously mentioned work and speculations of Fredrickson & Roberts (1997), McKinley & Hyde (1996), and Miner-Rubino et al. (2002)), it may be that it is more appropriate to conceptualize this specific behavior as an outcome of a broad tendency. Since trait anxiety is defined as “a vulnerability to respond anxiously to stress and psychological threat” (Reiss, 1997, p. 204), perhaps it makes more sense to examine body surveillance as a behavior that might follow from an underlying tendency to respond anxiously. As such, we tested a model whereby body surveillance would act as a mediator of the relation between trait anxiety and body dissatisfaction. In this
case, we conceptualized trait anxiety as a construct that might lead to a specific behavior and that this specific behavior would account for the relation between anxiety and dissatisfaction with one’s body. Body shame was thus not included in the model as a potential mediator of the relation between trait anxiety and body dissatisfaction because of the focus on examining a behavioral intermediary of this relation. As with the hypothesized model, a half-longitudinal design was utilized and bootstrapping techniques were employed.

The modified model provided an excellent fit for the data (see Table 2), with both model paths significant for the sample of Caucasian women and neither significant for the sample of African American women (see Figure 3). Additionally, for the Caucasian women, the indirect effect of trait anxiety on body dissatisfaction through body surveillance was marginally significant ($p=.092$). However, this was not significantly different from the indirect effect of trait anxiety on body dissatisfaction that was apparent for the African American women (see Table 3).

Overall, as seen in Table 2 and Figure 2, the hypothesized model showed a good fit for the data but only one path coefficient was significant; that is, the path between body shame and body dissatisfaction was significant for Caucasian women. Instead, the modified model provided the best fit for the data for the Caucasian women, and the effect of trait anxiety on body dissatisfaction was marginally significantly mediated through increased body surveillance. Of note, because BMI was significantly different across groups and because BMI is typically correlated with body dissatisfaction, all analyses were re-run controlling for BMI. Although BMI was always significantly predictive of the given outcome variable, general model fit and patterns of significance remained the same whether
or not this covariate was included in the model. As such, results without BMI as a covariate are presented for the sake of parsimony.  

**Discussion**

Overall, the present study sought to extend findings regarding how objectification affects women’s feelings of body dissatisfaction in a sample of African American and Caucasian college women. Results indicated that Caucasian women experienced significantly higher levels of body shame and body dissatisfaction than African American women. This conforms to prior research (e.g., Breitkopf et al., 2007; Hebl et al., 2004; Story et al., 1995). Interestingly, neither levels of trait anxiety nor body surveillance differed across groups. The fact that trait anxiety did not differ across groups was consistent with prior work (e.g., Novy et al., 1994); however, the finding that the racial/ethnic groups reported similar levels of body surveillance was unexpected and contrary to trait self-objectification findings in other work (e.g., Hebl et al., 2004).

Why might the African American and Caucasian females in this sample have similar levels of body surveillance? On the one hand, it is possible that both African American and Caucasian women engaged in body surveillance as a means to help them achieve the Western thin ideal image. Previous research has indicated that African American women on predominantly Caucasian college campuses (which characterizes the university from which this sample was obtained) have a higher risk for eating disorders and more eating disorder symptoms compared to African American women on historically Black campuses (e.g., Gray et al., 1987; Williams, 1994). On predominantly Caucasian college campuses, it may be that the risk for eating disorders is the same for both groups since all women, regardless of racial/ethnic group, may be striving to reach the same ideal (i.e., Western thin ideal)
On the other hand, it may be that both groups of women were compelled to engage in such surveillance but as a means to obtain different, culturally-influenced standards of beauty. As aforementioned, Harrison and Fredrickson (2003) found that Caucasian females’ state self-objectification increased after exposure to lean female athletes; in contrast, participants of color exhibited increased state self-objectification after exposure to nonlean female athletes only, suggesting that both groups of women self-objectified, albeit for different reasons. Since body surveillance in and of itself does not indicate why an individual is monitoring her body, what standard she is comparing her body to (e.g., thin ideal v. “thicker” ideal), or how monitoring makes her feel, future research should continue to examine other constructs in relation to body surveillance in order to help explain the reasons that college women of different racial/ethnic backgrounds may engage in similar levels of this behavior.

Results indicated that the correlation between body surveillance and body dissatisfaction was marginally more positively correlated among Caucasian women than African Americans women. Research has indicated associations between body surveillance and body dissatisfaction in samples of Caucasian women (e.g., Knauss et al., 2008; Muehlenkamp et al., 2005), but to date, research on the nature of this relation among African American women is limited and unclear (i.e., Buchanan et al., 2009; Mitchell & Mazzeo, 2009). It is important to note that while these constructs were marginally significantly more positively correlated among Caucasians than African Americans, body surveillance and body dissatisfaction were still highly positively correlated among the African American women ($r = .53, p<.001$). Future research should aim to clarify for which African American women these constructs typically go hand-in-hand and for which they do not. A pattern of
correlations of note is that BMI was significantly positively correlated with all study variables for African American women but only significantly positively correlated with body dissatisfaction for Caucasian women. Some researchers have suggested that African American women’s body image is more realistic than that of Caucasian women (Striegel-Moore et al., 2000); results of this study provide further support for the finding that African American women who display body image disturbance are more likely to actually be overweight than Caucasian women who exhibit similar symptoms (Abrams et al., 1993).

In testing the hypothesized model, we sought to extend earlier, cross-sectional tests of the relation between body surveillance and body dissatisfaction by showing how the model fit the data: a) within a half-longitudinal framework, b) when examining anxiety in the more general sense (as opposed to anxiety specific to appearance), and c) when applied to both African American and Caucasian college women. Although the hypothesized model fit well for both groups, neither specific nor total indirect effects were significant for either group, and only the path between body shame and body dissatisfaction was significant for the Caucasian women. In contrast to earlier findings for Caucasian adolescents (i.e., Knauss et al., 2008), body shame did not mediate the relation between body surveillance and body dissatisfaction. This discrepancy could have been due to the fact that these relations were examined among college women in the current study or the fact that we controlled for autoregressive paths (e.g. the relation of body dissatisfaction at T1 with body dissatisfaction at T2) since the inclusion of these paths and the utilization of a half-longitudinal design provided more rigorous tests of the presumed antecedents of a given construct. However, for the Caucasian women, there was at least some indication that body shame might lead to subsequent body dissatisfaction. In the case of trait anxiety as a mediator of the relation
between body surveillance and body dissatisfaction, it may be that only domain-specific anxiety (i.e., appearance/social physique anxiety) acts as a mediator of this relation, or similar to body shame, it could have been that trait anxiety was not a strong mediator of this relation once autoregressive paths were controlled. Alternatively, it can be argued that it makes more conceptual sense to examine body surveillance as a behavior that might result from trait anxiety. Thus, a modified model was examined, whereby body surveillance was conceptualized as a mediator of the relation between trait anxiety and body dissatisfaction.

Results of the present study suggest that, indeed, the relation between trait anxiety and body dissatisfaction may be explained at least in part by increased levels of body surveillance for Caucasian women. The demonstration that body surveillance marginally significantly mediated the relation between initial levels of trait anxiety and later body dissatisfaction, controlling for initial levels of body dissatisfaction, may help begin to explain the way in which anxiety serves as a distal vulnerability factor for body dissatisfaction among Caucasian women. Among a sample composed primarily of Caucasian women, McKinley and Randa (2005) found that anxiety regarding attachment (i.e., worry and concern with rejection and abandonment) predicted body satisfaction; they also found a positive relation between attachment anxiety and body surveillance. These authors posited that it may be that women who are high in anxiety regarding attachment use body surveillance as a strategy to control rejection and additional anxiety, which in turn, often leads to poor body image. The present study extends these findings by considering a general tendency to display anxiety and how this relates to body surveillance, and in turn, body dissatisfaction. In the case of African American women, body surveillance was not found to mediate the relation between trait anxiety and body dissatisfaction. Perhaps for African
Americans, underlying tendencies to respond anxiously do not necessarily lead to body surveillance or body dissatisfaction. Schlenker and Leary (1982) posit that anxiety sometimes involves a perceived discrepancy between others’ and one’s standards and often depends on the importance of the standard; thus, if that standard is more lenient or flexible, as has often been reported to be the case in terms of how African American females feel about their bodies (e.g., Parker, Nichter, Vuckovic, Sims, & Ritenbaugh, 1995), anxiety may not be as clearly related to body surveillance and body dissatisfaction for this group. On the other hand, White and Grilo (2005) found that body dissatisfaction was predicted in part by anxiety for African American but not Caucasian adolescent girls. Given the limited work and mixed findings on the relations between trait anxiety, objectification, and body dissatisfaction, future research should continue to assess these relations in diverse samples.

The current study has several strengths, including the focus on the correlates and consequences of objectification theory for African American women. More specifically, this study expands our current knowledge regarding the relation between body surveillance and body dissatisfaction in African American college women. In general, objectification theory has been understudied among African American women, and this study adds to the growing body of literature on how this theory may apply to ethnic minority groups. Also, the half-longitudinal mediation model, which is recommended when there are two waves of data with all variables in the model measured at each wave, allowed for a better approximation of causal relations among the study variables than a cross-sectional design (Cole & Maxwell, 2003). Finally, the exploration of trait anxiety as a mediator of the relation between body surveillance and body dissatisfaction is novel and adds to our understanding of self-objectification and its consequences. Examining trait anxiety addressed questions posed by
several researchers (e.g., Miner-Rubino et al., 2002) as to whether trait anxiety would serve as a mediator of this relation as appearance anxiety has been found to in similar mediation models (e.g., Greenleaf & McGreer, 2006; Melbye et al., 2008). Although this was not the case, body surveillance was found to marginally significantly mediate the relation between trait anxiety and body dissatisfaction for Caucasian women.

Some limitations of the current study include generalizability, the small sample size, and the absence of psychometric data for African American women for the subscales of the OBCS. Although the use of an undergraduate sample is appropriate because of the high prevalence of body dissatisfaction among college women (e.g., Silberstein et al., 1988), the generalizability of these findings to other groups is unclear. It will thus be necessary to examine OBC and its relation to body dissatisfaction in community samples of African American and Caucasian women representing a greater range of ages and socioeconomic statuses. It will likely also be fruitful to test these relations among women at historically Black colleges, because African American participants in this study were students at a predominantly Caucasian university (about 84% Caucasian and 6% African American) and because group norms and sociocultural factors play an important role in propagating the thin ideal and negative body image. We also note that the small sample size may have made it difficult to detect significant path coefficients and indirect effects. Using Monte Carlo methods to estimate power in a mediation model with two mediating variables, Thoemmes, MacKinnon, and Reiser (in press) ran a power analysis for a sample size of 110 with small values of $a_1$ and $b_1$ paths (i.e., set to values less than .39) and medium and large values of $a_2$ and $b_2$ (i.e., set to values between .39 and .59 and above .59, respectively). Results indicated that power to detect the mediated effect $a_1b_1$ was very low at .10, while power to detect the
mediated effect $a_2b_2$ was very high at .99. Generalizing from these results, the small sample size of the current study might have been too low to find real effects that were small in magnitude. Future research may thus wish to test complex mediator models involving OBC and body dissatisfaction in larger samples. Finally, interpretation of the current study findings is constrained by the question of whether the OBCS, which has been found to be reliable and valid among Caucasian women (McKinley & Hyde, 1996), is also psychometrically adequate for African American women; this is a question that future research should address.

Future work examining OBC in African American and Caucasian women should continue to test complex models of its relation to body dissatisfaction. For instance, it may be of interest and importance to examine the role that females’ perceptions of ideal body size and their actual body size play within this model. Further, it may be worth examining how females’ perceptions of the body sizes men desire influence the relation between OBC and body dissatisfaction. Examining these questions would provide researchers with a more nuanced conceptualization of how OBC may be associated with body dissatisfaction for women with varied racial/ethnic backgrounds. It may also be of interest to elucidate how the act of body surveillance affects a woman’s tendency to engage in social comparison (Festinger, 1954). Hesse-Biber, Leavy, Quinn, and Zoino (2006) conceptualized objectification theory as an explanation as to why women are particularly susceptible to social comparison (especially in relation to their bodies). However, to date, no known test of the relations between these two theoretical frameworks has been undertaken. Doing so would provide us with a more comprehensive understanding of the social psychological underpinnings of body image disturbance and eating disorders. Future work should include
assessments of racial identity and acculturation, as well (Wang & Sue, 2005). Such data would permit testing whether the relation between body surveillance and body dissatisfaction varies depending on level of association with dominant White culture. It may also be fruitful to identify and utilize alternative ways of assessing body surveillance (e.g., number of times an individual weighs herself/looks in the mirror). This would provide researchers with an alternate method of examining a construct that has typically been measured via attitudinal tendencies. Finally, future research may wish to examine whether body surveillance and body dissatisfaction mutually build upon one another in a downward spiral fashion. For example, researchers may wish to examine whether initial levels of body dissatisfaction predict subsequent levels of body dissatisfaction, partly as a function of predicting increased body surveillance.

In conclusion, the current study investigated the potential differential effects of OBC and trait anxiety on college women’s body dissatisfaction. While the hypothesized multiple mediator model was not significant for either group, our data show that for Caucasian women, body surveillance marginally significantly mediated the relation between trait anxiety and body dissatisfaction using a half-longitudinal design. Our findings suggest that for Caucasian women at least, targeting anxiety and body surveillance, a component of OBC, may be therapeutically relevant in terms of reducing body dissatisfaction. Based on the results of this study, reasonable targets of intervention for African American women are less clear; however, based on mean levels of and correlations between the study variables, we suspect that reducing anxiety, body surveillance, and body shame, would have some impact on reducing the body dissatisfaction of at least some African American women, as well. Future research should include a more detailed examination of the role of culture and
ethnicity in the relation between OBC and body image that includes consideration of women’s internalization of the thin ideal and racial/ethnic identity, among other culturally relevant constructs. Such lines of research will provide us with a more thorough and complete understanding of the relation between OBC and body dissatisfaction among women of various racial/ethnic backgrounds.
Endnotes

1 In the case of the t-tests that examined age and BMI across groups, Levene’s tests, which test the hypothesis that the variances in the groups are equal, were significant, meaning that the assumption of homogeneity of variances was violated. Thus, test statistics reported for age and BMI across groups are those for which equal variances were not assumed.

2 The time points were separated by 5 months for pragmatic reasons, so that both T1 data collection (which occurred in the fall semester) and T2 data collection (which occurred in the spring semester) could occur in an academic year, so as to achieve a good retention rate. Of note, other research has used time periods of less than 1 year in predicting change in body dissatisfaction among adolescent and undergraduate females (e.g., Presnell, Bearman, & Stice, 2004 – 9 months; Striegel-Moore, Silberstein, Freischl, & Rodin, 1989 – 8 months).

3 Although we conceptualized body dissatisfaction as an important outcome due to its being a robust predictor of eating disorder symptomatology (Stice, 2002), we were interested in whether predicting actual eating disordered behavior (rather than body dissatisfaction) would lead to different results. Using the Bulimia Test – Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991) as our outcome, the hypothesized model fit the data well (CFI = .994, TLI = .980, RMSEA = .059, SRMR = .044), but path coefficients were small and nonsignificant for both African American and Caucasian women. Further, no indirect effects emerged as significant for either group nor were there any differences in the size of these indirect effects across groups. Finally, the total indirect effect of body surveillance on bulimic symptoms was not significantly different from zero for either group (and the size of this effect was not significantly different across groups).
Despite the fact that previous research has conceptualized body surveillance, body shame, and body dissatisfaction as distinct and separate constructs (e.g., Knauss et al., 2008; Tiggemann & Lynch, 2001), factor analysis was used in order to empirically assess the closeness of these constructs. The factorability of the OBCS Body Surveillance and Body Shame items and the Weight Concern and Shape Concern items of the EDE-Q was examined (for a total of 28 items being factor analyzed) for the full sample at T1. Several well-recognized criteria for the appropriateness of factor analysis were used (e.g., Kaiser-Meyer-Olkin measure of sampling adequacy, Bartlett’s test of sphericity, communalities > .3). Given appropriate overall indications, factor analysis was conducted with all 28 items. Using Kaiser’s criterion of retaining factors with eigenvalues greater than 1 and oblimin rotation (i.e., a form of oblique rotation; assumes that we have good theoretical reason to suppose that the factors are related), five factors were initially extracted. However, this criterion is accurate when there are less than 30 variables and communities after extraction are greater than .7 or when sample size exceeds 250 and the average communality is greater than .6 (Field, 2005). Only six communalities exceeded .7 and the average of the communalities was .555. On both grounds, Kaiser’s rule might not be accurate in this case. Thus, the scree plot was examined and a three factor solution was preferred because of its previous theoretical support (support for these constructs being distinct and unique), the leveling off of eigenvalues on the scree plot after three factors, and the insufficient primary loadings and difficulty in interpreting the fourth and fifth factors. A confirmatory factor analysis, using oblimin rotation and specifying that three factors should be extracted, was conducted, with the three factors explaining 51% of the variance. The only item that very clearly, primarily, and relatively highly mapped onto a factor that it was not expected to map onto was one of
the OBCS Body Shame subscale items: “I would be ashamed for people to know what I really weigh.” This item primarily loaded onto the body dissatisfaction factor with a loading of .56 (other loadings were: -.12 onto body surveillance and .24 onto body shame). From a theoretical and practical standpoint, this seemed like the most problematic of the loadings; however, in the original validation of the OBCS, McKinley and Hyde (1996) found that this item had the lowest loading on the Body Shame subscale of all items included in that subscale (loading of .50). All analyses utilizing the Body Shame subscale of the OBCS were rerun using a new body shame subscale – one that did not include the problematic item in the calculation of the subscale score. Model fit and patterns of significance for path coefficients and indirect effects were relatively the same as when the models were run including the problematic item; thus, results with the original Body Shame subscale of the OBCS are presented. Overall, items generally mapped onto their respective factors. This argues for the conceptual “distance” between study variables and their use as separate constructs in the mediation models.
Table 1

*Correlations Among and Means and Standard Deviations of the Measured Variables for the African American (n = 97) and Caucasian (n = 179) College Women*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
| 1. OBCS, Body Surveillance |      |      |      |      |      | AA: M = 4.72, SD = 1.02  
|                  |      |      |      |      |      | C: M = 4.88, SD = 1.19 |
| 2. OBCS, Body Shame | AA: .52*** | -    |      |      |      | AA: M = 2.87, SD = 1.39  
|                  | C: .58*** |      |      |      |      | C: M = 3.30, SD = 1.27 |
|                  | C: .49*** | C: .55*** |      |      |      | C: M = 41.43, SD = 10.50 |
|                  | C: .68*** | C: .71*** | C: .55*** |      |      | C: M = 2.91, SD = 1.48 |
| 5. BMI            | AA: .23*  | AA: .47*** | AA: .26*  | AA: .61*** | -  | AA: M = 24.18, SD = 4.66  
|                  | C: .00    | C: .13   | C: .08   | C: .21**   |      | C: M = 22.22, SD = 2.79 |

*Note.* AA = African Americans. C = Caucasians. OBCS = Objectified Body Consciousness Scale. Variables are continuous, with higher values reflecting higher levels of the construct. Possible ranges for the study variables are as follows: OBCS subscales (1-7), Spielberger Trait Anxiety (20-80), Body Dissatisfaction (0-6). *p<.05. **p<.01. ***p<.001.
Table 2

*Goodness-of-Fit Indices*

<table>
<thead>
<tr>
<th>Model</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>RMSEA (90% CI)</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 (hypothesized)</td>
<td>.988</td>
<td>.963</td>
<td>.078</td>
<td>.026-.125</td>
<td>.041</td>
</tr>
<tr>
<td>Model 2 (modified)</td>
<td>1.000</td>
<td>1.004</td>
<td>.000</td>
<td>.000-.091</td>
<td>.024</td>
</tr>
</tbody>
</table>
Table 3

Mediation of the Effect of Body Surveillance on Body Dissatisfaction Through Body Shame and Trait Anxiety (Model 1) and of Trait Anxiety on Body Dissatisfaction Through Body Surveillance (Model 2)

<table>
<thead>
<tr>
<th></th>
<th>Point Estimate</th>
<th>SE</th>
<th>p</th>
<th>Bootstrapping Percentile 95% CI</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model 1 (hypothesized)</strong></td>
<td></td>
<td></td>
<td></td>
<td>Upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AA:</td>
<td>(a_1b_1) (through shame)</td>
<td>-.003</td>
<td>.016</td>
<td>.839</td>
<td>-.051</td>
<td>.020</td>
</tr>
<tr>
<td></td>
<td>(a_2b_2) (through anxiety)</td>
<td>-.021</td>
<td>.025</td>
<td>.412</td>
<td>-.100</td>
<td>.007</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>-.024</td>
<td>.027</td>
<td>.372</td>
<td>-.095</td>
<td>.011</td>
</tr>
<tr>
<td>C:</td>
<td>(a_1b_1) (through shame)</td>
<td>.001</td>
<td>.017</td>
<td>.966</td>
<td>-.033</td>
<td>.036</td>
</tr>
<tr>
<td></td>
<td>(a_2b_2) (through anxiety)</td>
<td>-.001</td>
<td>.006</td>
<td>.841</td>
<td>-.025</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>-.001</td>
<td>.017</td>
<td>.976</td>
<td>-.033</td>
<td>.034</td>
</tr>
<tr>
<td>Contrasts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AA:</td>
<td>through shame v. through anxiety</td>
<td>.017</td>
<td>.033</td>
<td>.596</td>
<td>-.031</td>
<td>.112</td>
</tr>
<tr>
<td></td>
<td>through shame v. through anxiety</td>
<td>.002</td>
<td>.019</td>
<td>.919</td>
<td>-.034</td>
<td>.045</td>
</tr>
<tr>
<td>C:</td>
<td>through shame v. through anxiety</td>
<td>.004</td>
<td>.024</td>
<td>.865</td>
<td>-.040</td>
<td>.055</td>
</tr>
<tr>
<td></td>
<td>through shame: C v. AA</td>
<td>.019</td>
<td>.026</td>
<td>.453</td>
<td>-.011</td>
<td>.103</td>
</tr>
<tr>
<td></td>
<td>through anxiety: C v. AA</td>
<td>.024</td>
<td>.032</td>
<td>.461</td>
<td>-.028</td>
<td>.097</td>
</tr>
<tr>
<td></td>
<td>TOTAL: C v. AA</td>
<td>.002</td>
<td>.002</td>
<td>.476</td>
<td>-.003</td>
<td>.006</td>
</tr>
<tr>
<td><strong>Model 2 (modified)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AA:</td>
<td>(ab) (through surveillance)</td>
<td>.001</td>
<td>.002</td>
<td>.561</td>
<td>-.001</td>
<td>.006</td>
</tr>
<tr>
<td>C:</td>
<td>(ab) (through surveillance)</td>
<td>.003</td>
<td>.001</td>
<td>.092</td>
<td>.000</td>
<td>.007</td>
</tr>
<tr>
<td>Contrasts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>through surveillance: C v. A</td>
<td>.002</td>
<td>.002</td>
<td>.476</td>
<td>-.003</td>
<td>.006</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* AA = African Americans. C = Caucasians. CI = confidence interval. shame = body shame. anxiety = trait anxiety. surveillance = body surveillance. Parameters based on 5,000 bootstrap samples.
Figure 1. Conceptual model of the proposed multiple mediation design. Body surveillance (X) is hypothesized to exert indirect effects on body dissatisfaction (Y) through body shame (M_1) and trait anxiety (M_2).
Figure 2. Model 1 (hypothesized model). AA = African Americans. C = Caucasians. Because of the half-longitudinal nature of this design, two pairs of longitudinal tests were utilized: 1) Path a in the regression of $M_1/M_2$ at T2 onto X at T1 controlling for T1 $M_1/M_2$ and 2) Path b in the regression of Y at T2 onto $M_1/M_2$ T1 controlling for Y at T1. Path coefficients are standardized, ***$p<.001$. 

$M_1$ Body Shame

$M_2$ Trait Anxiety

Y Body Dissatisfaction

X Body Surveillance

AA: .14/ C: .003

AA: .13/ C: .03

AA: -.02/ C: .21***

AA: -.11/ C: -.03

$M_1$ Body Shame

$M_2$ Trait Anxiety

Y Body Dissatisfaction

X Body Surveillance

AA: .14/ C: .003

AA: .13/ C: .03

AA: -.02/ C: .21***

AA: -.11/ C: -.03
Figure 3. Model 2 (modified model). AA = African Americans. C = Caucasians. Because of the half-longitudinal nature of this design, a pair of longitudinal tests was utilized: 1) Path a in the regression of M at T2 onto X at T1 controlling for T1 M and 2) Path b in the regression of Y at T2 onto M T1 controlling for Y at T1. Path coefficients are standardized, *p<.05.
References


Schumacker (Eds.), *Advanced structural equation modeling: Issues and techniques* (pp. 315-353). Hillsdale, NJ: Erlbaum.


