

Examining Prospective Mediation Models of Body Surveillance, Trait Anxiety, and Body Dissatisfaction in African American and Caucasian College Women

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Abstract Within dominant U.S. culture, the feminine body has been positioned as an object to be looked at and sexually gazed upon; thus, females often learn to view themselves from an observer’s perspective and to treat themselves as objects to be looked at (i.e., self-objectification). Self-objectification often results in negative outcomes, such as body dissatisfaction, among Caucasian samples, but the correlates and consequences of self-objectification among African Americans are less clear. Given that this construct may vary considerably across racial/ethnic groups, the current study considers how self-objectification affects both African American and Caucasian college women’s body dissatisfaction. This was assessed via two prospective mediation models that utilized bootstrapping techniques. In the first model, trait anxiety was tested as a mediator of the relation between body surveillance, the behavioral indicator of self-objectification, and body dissatisfaction; in the second model, body surveillance was examined as a mediator of the relation between trait anxiety and body dissatisfaction. Participants at Time 1 were 276 undergraduate women attending a Midwestern university in the U.S.; 97 (35%) described themselves as African American/Black, and 179 as Caucasian non-Hispanic/White; at Time 2, 70 African American females and 156 Caucasian females provided data. At these two time points, separated by about 5 months, participants completed the same set of questionnaires. Results indicated that the first mediation model was not significant for either group, but the second model was significant for the Caucasian women. Results provide some

support for the differential effects of self-objectification on women’s body dissatisfaction depending on race/ethnicity.

Keywords Self-objectification · Body surveillance · Body dissatisfaction · Anxiety · Race/ethnicity

Introduction

Within dominant U.S. culture, theorists have posited that the feminine body has been constructed as an object to be looked at (Fredrickson and Roberts 1997; McKinley and Hyde 1996) and sexually gazed upon (Spitzack 1990). Because the female body exists in this sociocultural context, girls and women often learn to view themselves from an observer’s perspective and to treat themselves as objects to be looked at (i.e., self-objectification; Fredrickson and Roberts 1997; McKinley and Hyde 1996). This internalization of the “objectifying observer’s” (Fredrickson et al. 1998) perspective of one’s body is thought to manifest itself in the act of body surveillance (Moradi and Huang 2008). That is, self-objectification describes a perspective or view of oneself, while body surveillance is the active, cognitive and behavioral manifestation of such a viewpoint (Fitzsimmons-Craft 2011). For example, body surveillance may involve thinking about how one’s body looks, rather than how it feels or what it can do, or thinking about how one’s clothes fit the body. Elevations of such self-objectification and body surveillance may lead to negative outcomes such as anxiety and body image disturbance in predominantly Caucasian samples (e.g., Buchanan et al. 2008; Knauss et al. 2008; Miner-Rubino et al. 2002; Slater and Tiggemann 2002, 2010; Tiggemann and Lynch 2001); yet, the correlates and consequences of self-objectification and body surveillance among African Americans are less clear. Given that this construct may vary

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considerably across racial and ethnic groups, the current study considered how body surveillance affects women's feelings of body dissatisfaction, in a model involving anxiety, in a sample of both African American and Caucasian undergraduate women from the United States. Both correlational analyses and prospective mediation models involving bootstrapping techniques were used. This study addresses important gender issues and adds to our existing knowledge of self-objectification and body surveillance by using longitudinal data and a racially/ethnically diverse sample and by being the first study to examine trait anxiety in relation to body surveillance. Prior research on these variables that is reviewed here has been conducted using samples from both the United States and Australia unless otherwise noted.

Although this research was conducted in the United States, findings are likely generalizable to college women in other Western-influenced countries, as well. For example, Australian culture, like U.S. culture, emphasizes the importance of thinness for women and previous research has indicated that levels of body dissatisfaction are very similar across these two Western countries for Caucasian women (e.g., Slater and Tiggemann 2010; Swami et al. 2010). Furthermore, Caucasian women from these countries have been found to consistently report substantial levels of self-objectification (Slater and Tiggemann 2010). Thus, findings from the current study (at least those regarding the Caucasian women) are expected to generalize to college women in the United States, Australia, and perhaps to other Western-influenced countries, as well.

Self-Objectification

Objectification theory (Fredrickson and Roberts 1997) posits that females are acculturated to internalize an observer's perspective of their bodies. This internalization is known as self-objectification, which manifests itself in the act of body surveillance (Moradi and Huang 2008). Many women feel they must engage in constant body surveillance in order to ensure that they comply with dominant cultural standards of thinness (i.e., the thin ideal; Gilbert and Thompson 1996; McKinley 2004; Thompson and Stice 2001) and to avoid negative judgments from others (Aubrey 2006).

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 racial/ethnic minority group believe that such standards apply to them and engage in body surveillance at rates similar to that of the majority group? Some evidence suggests that African American women may not believe the narrowly defined thin ideal applies to them. In comparison to Caucasian women, African American women tend to hold a more fluid definition of beauty and to view a wider range of body sizes as attractive and acceptable (Allan

et al. 1993; Gordon et al. 2010). Moreover, thinness tends not to be as highly valued or desired by African American women or men (Greenberg and LaPorte 1996; Vaughan et al. 2008). Regarding self-objectification and its indicator body surveillance, researchers have found that African American college women display lower levels of trait self-objectification in comparison to Caucasian college women (Hebl et al. 2004). Similarly, in a study of low-income women, Breitkopf et al. (2007) found that African American women showed significantly lower levels of body surveillance than Caucasian individuals.

These differences in trait self-objectification and body surveillance may exist for several reasons. For instance, Breitkopf et al. (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 may spend less time worrying about what others think about their physical appearance. Indeed, researchers have found that while Caucasian girls tend to have a rather fixed and narrow concept of the ideal female – “a living manifestation of the Barbie doll” (Parker et al. 1995, p. 106) – African American girls tend to be more concerned with broadly “looking good” (p. 108). The African American girls in Parker et al.'s (1995) study explained that regardless of a girl's body size, shape, weight, skin color, or other features, she could “look good” via her personality, clothing, grooming, style, and attitude. In general, African American views of beauty tend to be more flexible than those of Caucasian women and have a tendency to go beyond physical characteristics alone (Parker et al. 1995), which might leave them less susceptible to body surveillance, at least in terms of a focus on the thin ideal, and/or its negative consequences.

Another reason for the differences in self-objectification and body surveillance between groups may be that African American women tend to engage in less “fat talk” (i.e., conversations with peer group members that focus on negative aspects of one's appearance, diet, or the need to lose weight) than Caucasian women, (Nichter 2000; Nichter and Vuckovic 1994). Given that fat talk can be objectifying because it directs attention on the body and given that it is more prevalent among Caucasian than African American adolescents (Nichter 2000), it may serve as one potential explanation for Caucasian women having higher levels of self-objectification than African American women (Gapinski et al. 2003).

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 U.S. women

(Rodin et al. 1984). For instance, among college samples, rates of body dissatisfaction as high as 80% have been reported (Heatherton et al. 1995; Neighbors and Sobal 2007; Silberstein et al. 1988; Spitzer et al. 1999; Vohs et al. 2001). In general, evidence tends to suggest that African American women are more satisfied with their bodies in comparison to Caucasian women (e.g., Akan and Grilo 1995; Altabe 1998; Barry and Grilo 2002; Baugh et al. 2010; Gordon et al. 2010; Roberts et al. 2006; Story et al. 1995; Wildes et al. 2001). Meta-analytic work has indicated that although Caucasian women may indeed be more dissatisfied with their bodies (i.e., weight and shape dissatisfaction) than African American women, average effect sizes are typically in the small to moderate range (Grabe and Hyde 2006). Further, some research has challenged the notion that body dissatisfaction is greater among Caucasians than African Americans (e.g., DeLeel et al. 2009; Shaw et al. 2004; Wilfley et al. 1996), and research has indicated that African American women who idealize Caucasian identity and reject their own African American identity are more likely to demonstrate disordered eating attitudes (Abrams et al. 1993; Botta 2000). Indeed, Wildes et al. (2001) indicated that the mean effect size for studies examining the effect of acculturation on eating pathology in African American samples was .23. Interestingly, evidence suggests that differences in body dissatisfaction likely peak just after the age of 20 when many women are attending college (Roberts et al. 2006).

The development of body dissatisfaction has been theorized to be partly explained by self-objectification and its behavioral manifestation, body surveillance (Fredrickson and Roberts 1997; McKinley 1998; McKinley and Hyde 1996). Given dominant 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) for Caucasian women. 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 badly (Carver and Scheier 1981). Indeed, researchers have found that body surveillance may lead to body dissatisfaction in Caucasian samples (e.g., from Switzerland – Knauss et al. 2008; from the United States – Muehlenkamp et al. 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 habitual body monitoring (which included both the constructs of self-objectification and body surveillance) was associated with body dissatisfaction in both African American and Caucasian undergraduate women. Further, Buchanan et al. (2008) found that body surveillance and skin-tone-specific surveillance were predictive of skin-tone dissatisfaction. Thus, it seems that we are only beginning to understand whether and how body-specific surveillance

may lead to feelings of body dissatisfaction among African American women. This study is one of just a handful to examine the consequences of self-objectification in this group.

Mediation Models Considering Body Surveillance, Trait Anxiety, and Body Dissatisfaction

In order to better understand the relation between body surveillance and body dissatisfaction, we tested two mediation models. In the first model (Model 1; see Fig. 1), we examined trait anxiety as the mediator of the body surveillance-body dissatisfaction relation. McKinley and Hyde (1996) and Fredrickson and Roberts (1997) purported that via body surveillance, many women realize there is a discrepancy between what they see and what they feel they ought to look like, which leads to appearance anxiety among other negative outcomes (e.g., shame). Research has indicated that, indeed, greater levels of self-objectification are associated with greater anxiety regarding one’s appearance or social physique in predominantly Caucasian samples (e.g., Greenleaf and McGreer 2006; Melbye, et al. 2008; Roberts and Gettman 2004). Miner-Rubino et al. (2002) found that self-objectification was associated with 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 global 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 trait-like anxiety, and body dissatisfaction, and to our knowledge, this is the first study to test more general levels of anxiety as a mediator in the relation between body surveillance and body dissatisfaction.

In Model 1, it is believed that a specific behavior (i.e., body surveillance) will significantly contribute to a broad tendency (i.e., trait anxiety). Although we have reasons to believe that body surveillance will lead to more general anxiety based on the previously mentioned work linking

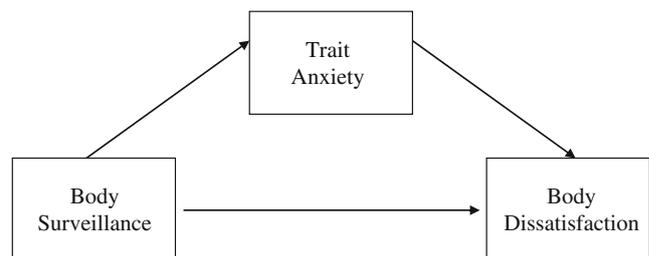


Fig. 1 Conceptual version of Model 1. Trait anxiety as a mediator of the relation between body surveillance and body dissatisfaction

body surveillance and appearance/social physique anxiety and speculations of Fredrickson and Roberts (1997), McKinley and 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. That is, body surveillance can arguably be conceptualized as a behavior that might follow from an underlying tendency to respond anxiously, which, to date, is a possibility that has not yet been tested in the literature. However, some research has conceptualized body surveillance as a safety behavior that individuals may engage in response to anxiety (Fitzsimmons-Craft et al. 2012a). Thus, anxiety may lead to body surveillance, which in turn, may lead to dissatisfaction with the body. As such, we also tested a model (Model 2; see Fig. 2) where body surveillance was tested as a mediator of the relation between trait anxiety and body dissatisfaction. Thus, this model is similar to Model 1 in that examines the relations between trait anxiety, body surveillance, and body dissatisfaction; however, in Model 2, trait anxiety is expected to lead to body surveillance, whereas the reverse is expected in Model 1. For all of the aforementioned reasons, we believed it was necessary and important to examine both of these models.

The Current Study

Overall, the aim of the current study is to extend existing empirical research on body surveillance, the indicator of self-objectification, and its relation to body dissatisfaction by using a longitudinal design and a racially/ethnically diverse sample and by examining the role of trait anxiety in this relation. Our first two hypotheses are the following:

Hypothesis 1: Caucasian women will display significantly higher levels of body surveillance and body dissatisfaction when compared to African American women.

Hypothesis 2: Body surveillance and body dissatisfaction will be more strongly positively correlated among Caucasian women than African American women.

We will also examine two mediation models of interest. We will first test a model in which body surveillance contributes

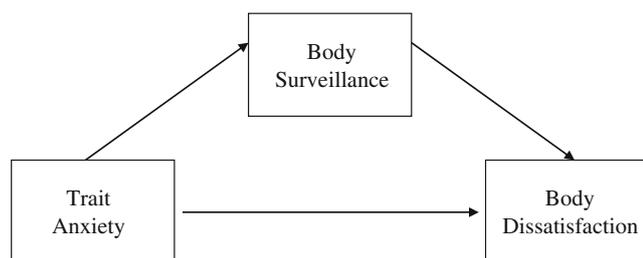


Fig. 2 Conceptual version of Model 2. Body surveillance as a mediator of the relation between trait anxiety and body dissatisfaction

to greater trait anxiety, which in turn leads to more body dissatisfaction among college women (Model 1; see Fig. 1).

Hypothesis 3: We hypothesize that trait anxiety will partially mediate the direct relation between body surveillance and body dissatisfaction and that because objectification theory emphasizes a dominant culture framework, this model will 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 et al. 2007), it is believed that the hypothesized relations will serve to at least partially explain African American women's body dissatisfaction (albeit to a lesser degree than Caucasian women).

We will also examine a model in which body surveillance serves as a mediator of the relation between trait anxiety and body dissatisfaction (Model 2; see Fig. 2); this possibility is seen as more exploratory.

Research Question 1: Will body surveillance mediate the trait anxiety-body dissatisfaction relation for either the African American or Caucasian women? Will this model provide a more accurate fit to the data for one group over the other?

Both models will be examined prospectively, that is, using longitudinal data. We chose to examine the proposed study models using longitudinal data given that the prospective examination of the relations between objectification-related constructs has been virtually non-existent for African American women up until this point. Additionally, the use of longitudinal data allows for a better approximation of causal relations among the study constructs than cross-sectional data allow for (Cole and Maxwell 2003). As noted by Cole and Maxwell (2003) and Maxwell and Cole (2007), cross-sectional studies may provide biased and potentially misleading information on mediational processes.

We additionally chose to examine group differences in BMI (body mass index), to examine correlations between BMI and the study constructs, and to run the study models both with and without controlling for BMI. This is because BMI, which is one of the most consistent predictors of body dissatisfaction (e.g., Jones 2004; McCabe and Ricciardelli 2003), is reliably higher in African American than Caucasian women on average (e.g., Grabe and Hyde 2006).

Method

Participants

Participants were 276 women attending a Midwestern university in the U.S.; 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 campus-wide recruitment strategies (e.g., flyers, email distribution lists to the African American undergraduate students at the university). For African American participants, the mean age was 19.04 years (range: 18–28; $SD=1.59$); for Caucasian participants, the mean age was 18.58 years (range: 18–27; $SD=1.06$). For African American participants, mean 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, $t(274)=1.85$, $p=.065$.

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. The time points were separated by 5 months for pragmatic reasons, so that both Time 1 (T1) data collection (which occurred in the fall semester) and Time 2 (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 one year in predicting change in body dissatisfaction among adolescent and undergraduate females (e.g., Presnell et al. 2004 – 9 months; Striegel-Moore, Silberstein, Frensch, & Rodin, 1989 – 8 months).

Questionnaires were presented in a fixed order and were administered to groups of participants (typically from five to 25 per group) after obtaining written consent. Questionnaire completion took 45 min to 1 hr, and participants received course credit or remuneration (e.g., \$10 gift certificate to a local shopping mall) for their involvement. Of the T1 participants, significantly more Caucasian women (156 of 179; 87.2%) than African American women (70 of 97; 72.2%) completed 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, trait anxiety, body dissatisfaction, or BMI. Thus, given that the completers looked very similar to the noncompleters on these constructs, the completers appear to be representative of the participants who began the study on the study variables. This minimizes attrition concerns, or concerns that the completers were qualitatively different from the noncompleters.

Data from the full sample ($N=276$) at T1 and from the 226 completers at T2 were used to examine correlations and levels of the study variables across groups, and data from the 226 completers were used in the prospective mediation analyses to elucidate the prospective relations among body surveillance, trait anxiety, and body dissatisfaction. This study was reviewed and approved by the university's Institutional Review Board.

Measures

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.

Body Surveillance

Body surveillance, or "viewing the body as an outside observer" (p. 181; McKinley and Hyde 1996) was measured at both time points with the Body Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley and Hyde 1996). This subscale consists of eight items that are rated on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) and averaged to create a subscale score, with higher scores indicating higher levels of surveillance and thinking of one's body in terms of how it looks rather than how one feels. Construct validity is demonstrated by high correlations with public self-consciousness ($r=.73$) and nonsignificant relations with private self-consciousness (McKinley and Hyde 1996). McKinley and Hyde (1996) reported a coefficient alpha of .89 in a sample of predominantly Caucasian student and nonstudent women, and Buchanan et al. (2008) reported an alpha of .70 among a sample of African American college women. In the current study, alpha was .72/.79 for African American women and .89/.88 for Caucasian women at T1 and T2, respectively.

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 et al. 1970). Participants responded to items about their general tendency to display anxiety (e.g., feel nervous or tense) using a 4-point scale ranging from 1 (*almost never*) to 4 (*almost always*), and items were summed to form a scale score. Novy et al. (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). 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 twelve items that comprise the Weight Concern and Shape Concern subscales of the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn and Beglin 1994), a measure that was derived from the Eating Disorder Examination (EDE) interview (Fairburn and Cooper 1993). These subscales assess eating disorder psychopathology over the past 4 weeks with items rated on a 7-point scale such that higher scores reflect greater weight/shape concern. Body dissatisfaction was operationalized by combining the Weight Concern 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 items that comprise these two subscales were averaged to create a “body dissatisfaction” score. The EDE-Q is one of the most commonly used measures of disordered eating attitudes and behaviors in clinical and community populations (Anderson and Williamson 2002), and its subscales have good internal consistency (alphas of .89 and .93 for the Weight Concern and Shape Concern subscales, respectively; Luce and Crowther 1999) and convergent validity (Fairburn and Beglin 1994; Grilo et al. 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, which is often associated with the outcome variable of body dissatisfaction (Jones 2004; Stice 1998). There is evidence that individuals are generally accurate with their self-reported weights (Shapiro and Anderson 2003).

Results

Means of and Correlations among the Study Variables Across Groups

Table 1 contains the means and standard deviations for both the African American and Caucasian women on the study

variables at T1 and T2. Overall, the African American and Caucasian women reported mean levels of body surveillance above the measure’s mid-point and mean levels of trait anxiety below the measure’s mid-point. The Caucasian women reported mean body dissatisfaction at the mid-point of the scale, while the African American women reported mean body dissatisfaction below the mid-point. Multivariate analyses of variance (MANOVAs) revealed that as a set, the study constructs (i.e., body surveillance, trait anxiety, body dissatisfaction, and BMI) significantly differed across groups at both T1, $F(4,267)=15.34, p<.001$, and T2, $F(4,216)=8.03, p<.001$. Independent samples *t*-tests geared toward testing Hypothesis 1 revealed that Caucasian women experienced significantly higher levels of body dissatisfaction than African American women at both T1 and T2 (at T1, Cohen’s $d=.47$, medium effect size; at T2, Cohen’s $d=.37$, small effect size). Levels of body surveillance did not significantly differ across groups at T1, but this difference did reach the level of significance at T2 (Cohen’s $d=.36$, small effect size).

Table 2 contains correlations between the study variables at both T1 and T2 for both groups. Regarding the comparison of the correlations between body surveillance and body dissatisfaction, we found a group difference ($z=1.84, p=.066$) that was approaching significance at the $p<.05$ level at T1, whereby the relation between body surveillance and body dissatisfaction was stronger for Caucasian women ($r=.68$) than for African American women ($r=.53$). Similar results were obtained at T2, although the significance of the group difference was slightly less (which may be attributable to the smaller sample sizes given that the magnitudes of the correlations were nearly identical to those obtained at T1) ($z=1.57, p=.116$). Thus, these group differences were not actually statistically significant but were close to it. Also of note, results indicated that BMI was significantly more highly correlated with body dissatisfaction for the African American women ($r=.61$ at T1) compared to the Caucasian women ($r=.21$ at T1) (at T1, $z=-3.87, p<.001$; at T2, $z=-2.85, p=.004$). BMI was also more highly correlated with body surveillance for the African American women ($r=.23$ at T1) than Caucasian women ($r=.00$ at T1); the magnitude of this group difference approached significance (at T1, $z=-1.84, p=.066$; at T2, $z=-1.89, p=.059$). These results indicate that for African American women, body dissatisfaction and body surveillance are likely more closely tied with actually being overweight than is the case for Caucasian women.

Model Testing Procedures

We investigated the proposed mediation models specified in Hypothesis 3 and Research Question 1 by testing the indirect effect of body surveillance on body dissatisfaction through trait anxiety (Model 1) and the indirect effect of trait anxiety on body dissatisfaction through body surveillance (Model 2).

Table 1 Means of the measured variables at Time 1 (T1) and Time 2 (T2) for the African American ($n=97$ at T1, $n=70$ at T2) and Caucasian ($n=179$ at T1, $n=156$ at T2) college women

	Time 1	Time 2
1. OBCS, Body Surveillance	AA: $M=4.72, SD=1.02$ C: $M=4.88, SD=1.19$ $t(274)=1.14, p=.255$ Cohen's $d=.14$	AA: $M=4.54, SD=1.06$ C: $M=4.93, SD=1.10$ $t(224)=2.50, p=.013$ Cohen's $d=.36$
2. Spielberger Trait Anxiety	AA: $M=39.18, SD=11.13$ C: $M=41.43, SD=10.50$ $t(270)=1.66, p=.098$ Cohen's $d=.21$	AA: $M=38.57, SD=10.53$ C: $M=41.56, SD=11.10$ $t(219)=1.87, p=.063$ Cohen's $d=.28$
3. Body Dissatisfaction	AA: $M=2.19, SD=1.60$ C: $M=2.91, SD=1.48$ $t(274)=3.76, p<.001$ Cohen's $d=.47$	AA: $M=2.23, SD=1.49$ C: $M=2.79, SD=1.55$ $t(224)=2.55, p=.011$ Cohen's $d=.37$
4. BMI	AA: $M=24.18, SD=4.66$ C: $M=22.22, SD=2.79$ $t(134)=-3.80, p<.001$ Cohen's $d=-.51$	AA: $M=24.54, SD=4.79$ C: $M=22.57, SD=2.89$ $t(92)=-3.19, p=.002$ Cohen's $d=-.50$

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 Body Surveillance subscale (1–7), Spielberger Trait Anxiety (20–80), Body Dissatisfaction (0–6)

We examined these indirect effects using data from the study completers so as to examine these relations prospectively.

For these prospective analyses involving two time points, we utilized a “half-longitudinal” design (Cole and Maxwell 2003). Using Model 1 as an example, we first estimated the path in the regression of the T2 mediator (i.e., trait anxiety) onto T1 body surveillance controlling for T1 trait anxiety values (i.e., the *a* path). Then we estimated the path in the regression of T2 body dissatisfaction onto T2 trait anxiety controlling for T1 levels of body dissatisfaction (i.e., the *b* path). The *ab* product term then provides an estimate of the meditational effect of body surveillance on body dissatisfaction through trait anxiety. Because the assumption of normality of the sampling distribution of these indirect effects was questionable given our small sample sizes (i.e.,

this sampling distribution is normal only in very large samples, and in general, indirect effects are rarely normal), we used the bootstrapping method, which is recommended when assumptions may not be met (Preacher and Hayes 2008). Bootstrapping (using 5,000 resamples) was used to obtain estimates of the indirect effects and to test their significance via confidence intervals. Additionally, multiple group modeling was utilized to examine whether the hypothesized models fit differentially for African American and Caucasian college women. Mplus Version 5.21 (Muthén and Muthén 2007) was used to run these analyses.

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. General model fit and patterns of significance remained the

Table 2 Correlations among the measured variables at Time 1 (T1) and Time 2 (T2) for the African American ($n=97$ at T1, $n=70$ at T2) and Caucasian ($n=179$ at T1, $n=156$ at T2) college women

	1	2	3	4
1. OBCS, Body Surveillance	–	T1: .49*** T2: .51***	T1: .68*** T2: .67***	T1: .00 T2: .01
2. Spielberger Trait Anxiety	T1: .60*** T2: .58***	–	T1: .55*** T2: .58***	T1: .08 T2: .11
3. Body Dissatisfaction	T1: .53*** T2: .53***	T1: .58*** T2: .54***	–	T1: .21** ^a T2: .28*** ^a
4. BMI	T1: .23* T2: .28*	T1: .26* T2: .22	T1: .61*** ^a T2: .61*** ^a	–

OBCS Objectified Body Consciousness Scale. Correlations for the African American women are below the diagonal, and correlations for the Caucasian women are above the diagonal. * $p<.05$. ** $p<.01$. *** $p<.001$. ^aStrength of the correlation coefficient is significantly different across the groups at the $p<.05$ level

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.

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 and Lewis 1973) were examined, with cut-off values approaching .95 said to indicate a good fit to the model (Hu and 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 and 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 et al. 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 and Bentler 1999). A combination of these fit indices and the significance of standardized path coefficients were used to determine the overall fit of the models.

Model 1: Trait Anxiety as a Mediator of the Relation Between Body Surveillance and Body Dissatisfaction

As noted in Fig. 3, Model 1 provided a modest fit to the data; further, path coefficients were small and only one was significant (aside from those from T1 to T2 of the same construct). Contrary to our hypothesis (Hypothesis 3), the

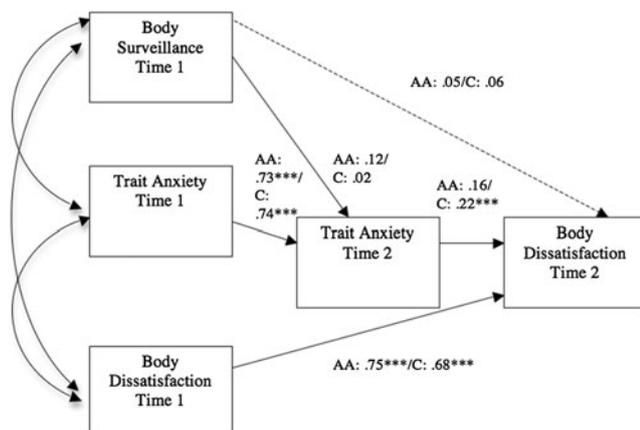


Fig. 3 Model 1. AA = African Americans. C = Caucasians. Correlations among the Time 1 variables are the same as the correlations in Table 2. Model degrees of freedom = 4. Goodness-of-fit indices: CFI: .980, TLI: .900, RMSEA: .165 (90% CI: .095-.242), SRMR: .022. Path coefficients are standardized. *** $p < .001$

indirect effect of body surveillance on body dissatisfaction through trait anxiety was not significantly different from zero for either group (and the size of this effect was not significantly different across groups; see Table 3); in other words, there was no evidence to support that trait anxiety mediated the body surveillance-body dissatisfaction link for either group.

Model 2: Body Surveillance as a Mediator of the Relation Between Trait Anxiety and Body Dissatisfaction

Model 2 provided a good fit to the data (see Fig. 4), with both model paths of interest (i.e., the path between T1 trait anxiety and T2 body surveillance and the path between T2 body surveillance and T2 body dissatisfaction) significant for the sample of Caucasian women and only one significant for the sample of African American women (see Fig. 2). Additionally, for the Caucasian women, the indirect effect of trait anxiety on body dissatisfaction through body surveillance was significant ($p = .032$); that is, results indicated that body surveillance partially mediated the relation between trait anxiety and body dissatisfaction for the Caucasian women but not for the African American women. However, this indirect effect for Caucasian women 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).

Discussion

The present study sought to extend findings regarding how body surveillance 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 dissatisfaction than African American women. This conforms to prior research (e.g., Breitkopf et al. 2007; Hebl et al. 2004; Story et al. 1995). While body surveillance did not differ across groups at T1, this construct did differ across groups at T2, with Caucasian women reporting significantly higher levels of body surveillance than African American women at this time point. Levels of trait anxiety did not differ across groups, which is also consistent with prior work (e.g., Novy et al. 1993). In line with expectations, results indicated that body surveillance and body dissatisfaction were more positively correlated among Caucasian women than African American women, although this did not reach significance. However, we note that given that body surveillance and body dissatisfaction were still highly positively correlated among the African American women (at T1 and T2: $r = .53$, $p < .001$), future research should aim to clarify for which African American women these constructs typically go

Table 3 Mediation of the effect of body surveillance on body dissatisfaction through trait anxiety (Model 1) and of trait anxiety on body dissatisfaction through body surveillance (Model 2)

	Point Estimate	SE	p	Bootstrapping Percentile 95% CI	
				Lower	Upper
Model 1					
Estimate of the Indirect Effect of Surveillance on BD Through Anxiety					
African Americans:	.029	.028	.304	-.005	.118
Caucasians:	.004	.019	.818	-.030	.048
Contrast of the Indirect Effect Across Groups					
Caucasians v. African Americans	-.025	.034	.471	-.115	.029
Model 2					
Estimate of the Indirect Effect of Anxiety on BD Through Surveillance					
African Americans:	.001	.003	.719	-.005	.008
Caucasians:	.007	.003	.032	.001	.014
Contrast of the Indirect Effect Across Groups					
Caucasians v. African Americans	.006	.005	.221	-.003	.015

CI = confidence interval. Anxiety = trait anxiety. Surveillance = body surveillance. BD = body dissatisfaction. Model 1 involves trait anxiety as a mediator of the relation between body surveillance and body dissatisfaction. Model 2 involves body surveillance as a mediator of the relation between trait anxiety and body dissatisfaction. Parameters based on 5,000 bootstrap samples

“hand-in-hand” and for which they do not. For example, it may be that these constructs are closely tied for African American women who have internalized the thin ideal and more loosely tied among those who have not.

Results also indicated that BMI was more closely tied with body dissatisfaction and body surveillance for the African American women than was the case for the Caucasian women. These results are in line with prior work that has found that African American women typically do not report body dissatisfaction unless they are actually overweight, while Caucasian women tend to report body dissatisfaction across a broader array of weights (e.g., Fitzgibbon et al. 2000). That is,

for Caucasian women, whether they are thin, average, or heavy, they may see a discrepancy between themselves and the thin ideal and want to be thinner. These results lend some support to the idea that the same may be true of body surveillance, as well – that BMI may be more closely tied with body surveillance for African American women than Caucasian women. Thus, it may be that the relations between BMI, body surveillance, and body dissatisfaction are complex and multifaceted for African American women. While African American women may not experience body dissatisfaction (and perhaps body surveillance) at the same rates as Caucasian women, these results lend support to the notion that at least some African American women may value thinness, or at least not being overweight, to some degree. This notion is in line with past research, which found that African American and Caucasian adolescent females idealized thin television images to the same degree (Botta 2000). Further, the relationship between BMI and body dissatisfaction for African American women may have sources other than the thin ideal. For example, given the current focus on obesity prevention and intervention, perhaps some African American women feel body dissatisfied at heavier weights from a health perspective.

As noted above, results regarding whether the Caucasian women experienced higher levels of body surveillance than the African American women were mixed. The findings that emerged at T2 are consistent with previous findings regarding group differences on body surveillance (e.g., Hebl et al. 2004). Regarding the similar levels of body surveillance that emerged across groups at T1, it is important to note that these similar levels of body surveillance tell us nothing about why an individual is monitoring her body or what

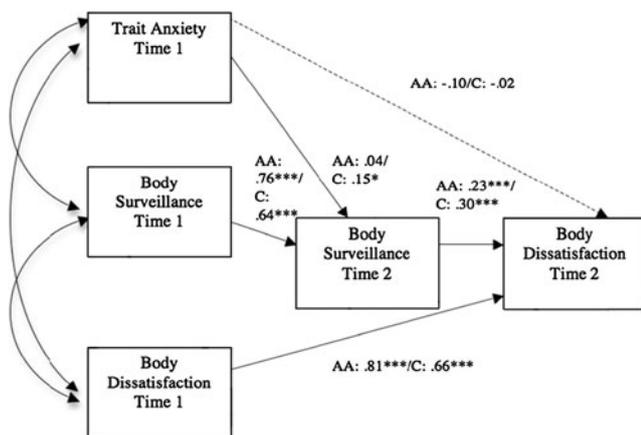


Fig. 4 Model 2. AA = African Americans. C = Caucasians. Correlations among the Time 1 variables are the same as the correlations in Table 2. Model degrees of freedom = 4. Goodness-of-fit indices: CFI: .997, TLI: .986, RMSEA: .062 (90% CI: .000-.153), SRMR: .018. Path coefficients are standardized. *p < .05. ***p < .001

standard she is comparing her body to (e.g., thin ideal v. “thicker” ideal). Thus, 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). 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; Mulholland and Mintz 2001). 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. For example, Harrison and Fredrickson (2003) found that while Caucasian females’ state self-objectification increased after exposure to lean female athletes, 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. Future research should assess motivations for 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 (as indicated by the T1 results).

In testing Model 1, 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. This model fit only modestly for both groups, the indirect effect was not significant for either group, and the size of the indirect effect was not significantly different across groups. It may be that only domain-specific anxiety (i.e., appearance anxiety) acts as a mediator of the relation between body surveillance and body dissatisfaction. Further, it could be that trait anxiety was not a strong mediator of this relation in a prospective design with initial levels of anxiety and body dissatisfaction controlled for, since the use of a half-longitudinal design provided a more rigorous examination of this mediation model than a cross-sectional design would have allowed for.

Results of the present study demonstrated that body surveillance significantly partially mediated the relation between trait anxiety and later body dissatisfaction (Model 2) for Caucasian women, thus potentially beginning to explain the way in which anxiety may serve as a distal vulnerability factor for body dissatisfaction for this group. Among a sample

composed primarily of Caucasian women, McKinley and Randa (2005) found that anxiety regarding attachment (i.e., worry and concern with rejection) predicted low 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, with body surveillance, in turn, often leading 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. Thus, according to the results of this study, underlying tendencies to respond anxiously are less likely to lead to body dissatisfaction via body surveillance for African American women compared to Caucasian women. However, 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, self-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 body surveillance for African American women. Of note, prospective examination of the relations between objectification-related constructs has been virtually non-existent for African American women up until this point. Also, the half-longitudinal mediation model allowed for a better approximation of causal relations among the study variables than a cross-sectional design would have allowed (Cole and Maxwell 2003). Finally, the exploration of trait anxiety as a mediator of the relation between body surveillance and body dissatisfaction was a novel extension. 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 and McGreer 2006; Melbye et al. 2008); our findings suggest that anxiety specific to appearance, rather than general anxiety, may be what is critical.

Some limitations of the current study include the small sample size, which precluded us from carrying out an even more rigorous half-longitudinal mediation analysis – that is, examining the relations between the T1 independent variable and T2 mediator and between the T1 mediator and the T2 dependent variable, which would have involved estimating more free parameters than the current study had power for (Schreiber et al. 2006). Additional limitations include the absence of psychometric data for African American women for the body surveillance subscale of the OBCS and

generalizability. Although the use of an undergraduate sample is appropriate because of the high prevalence of body dissatisfaction among college women (e.g., Neighbors and Sobal 2007), the generalizability of these findings to other groups is unclear. It will thus be necessary to examine body surveillance 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. For example, it may be that African American women at historically Black colleges are both less likely to engage in body surveillance focused on the thin ideal and experience negative consequences from such behavior.

Future work examining body surveillance in African American and Caucasian women should continue to test complex models of its relation to body dissatisfaction. For instance, it may be worth examining how females' perceptions of the body sizes men desire influence the relation between body surveillance and body dissatisfaction. As indicated by Fallon and Rozin (1985), in a primarily Caucasian sample, women believed men like women more slender than men actually report that they like. For women who hold this perception, it may be that they engage in more body surveillance than women who hold more realistic perceptions regarding what men like, which in turn leads to increased body dissatisfaction. Future work should include assessments of racial identity and acculturation, as well (Wang and 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, some research has begun to suggest that African American women may self-objectify, but in different ways than Caucasian women. For example, Buchanan et al. (2008) found that body surveillance and skin-tone-specific surveillance were predictive of skin-tone dissatisfaction in a sample of African American college women. Future research should thus continue to investigate whether African American women self-objectify on different dimensions, such as on skin-tone (as opposed to, or more so than, thinness).

In conclusion, the current study investigated the potential effects of body surveillance and trait anxiety on college

women's body dissatisfaction. Our data show that for Caucasian women, body surveillance significantly partially mediated the relation between trait anxiety and body dissatisfaction using a half-longitudinal design. This suggests that, for Caucasian women, targeting anxiety and body surveillance may be therapeutically relevant in terms of reducing body dissatisfaction. For example, various forms of body surveillance (e.g., body checking, persistently surveying the body) have been suggested as important treatment targets in cognitive-behavioral therapy for eating disorders (Fairburn 2008). It may be that building awareness of and working toward decreasing these behaviors would lead to a decrease in dissatisfaction with the body (Fitzsimmons-Craft et al. 2012b). Many women have been socialized to assume that such surveillance is natural and necessary, and thus, interventions should also aim to challenge such assumptions. 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 body surveillance and anxiety 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 self-objectification and body image that includes consideration of women's internalization of the thin ideal, ideal standards of beauty, and racial/ethnic identity, among other culturally relevant constructs. Such lines of research will provide us with a more thorough understanding of the relation between self-objectification and body dissatisfaction among women of various racial/ethnic backgrounds.

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