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Sex Roles
A Journal of Research

ISSN 0360-0025
Volume 65
Combined 7-8

Sex Roles (2011) 65:606-618
DOI 10.1007/s11199-011-9955-y

Springer

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ORIGINAL ARTICLE

Self-Objectification and Pregnancy: Are Body Functionality Dimensions Protective?

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Published online: 15 April 2011

Abstract Objectification theory contends that women are socialized to view their body as an object to be evaluated by others (Fredickson and Roberts 1997). In contrast, pregnancy may be a time that women are more attuned to their body's functionality. Extending objectification theory, we investigate relationships among body surveillance, awareness and appreciation of body functionality, depressive symptoms, and prenatal health behaviors among an online sample of 156 predominantly White, middle-class pregnant women from throughout the U.S recruited through maternity stores, message boards, listservs, and snowballing techniques. We examine whether higher levels of awareness and appreciation of body functionality may attenuate, and thereby possibly protect women from the negative effects of high body surveillance. We found that higher body surveillance was associated with depressive symptoms and, although not significant, tended to be associated with engagement in unhealthy prenatal behaviors. Awareness and appreciation of body functionality were each associated with fewer depressive symptoms and less engagement in unhealthy prenatal behaviors. Supporting our hypotheses, we found that at higher levels of appreciation of body functionality, the relationship between body surveillance and engagement in unhealthy behaviors was attenuated. However, in contrast to our hypotheses, the relationship between body surveillance and depression was stronger at higher levels of awareness of body functionality, and attenuated at lower levels. These findings suggest appreciation of body functionality may buffer negative effects of body surveillance. Future research examining these relationships over the course of pregnancy, and among ethnically and socioeconomically diverse women, is needed.

Keywords Self-objectification · Body functionality awareness · Body functionality appreciation · Pregnancy

Introduction

In North America and Western European cultures, dominant media imagery and cultural representations promote the notion that identity is created and manipulated through one's appearance, encouraging individuals to view their bodies as commodities or texts from which their values will be read (Rubin et al. 2003). Indeed, authors in the U.S. and U.K. have described the body as a project, manipulated and transformed to symbolize (or project) individual identity (Brumberg 1997; Shilling 1993). Women, in particular, are sent the message "you are what you look like" or "you are your body" (Nemeroff et al. 1996). Of course, not all women experience their body in these objectified terms at all times. Pregnancy, in particular, may be a time when women define themselves and are defined by others by what their bodies can do. Franzoi (1995) contends that there are two ways of thinking about one's body: as an *object* to

This research was supported by a dissertation grant from the Graduate and Professional Student Association of Arizona State University awarded to Lisa Rubin. We thank Carol Nemeroff and Nancy Felipe Russo for their support and helpful suggestions. We also extend our appreciation to the women who participated in this research.

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be evaluated by others, or as a *process* where "function is of greater consequence than beauty" (p. 417). Pregnancy may enable women to re-evaluate existing views of the body, seeing the body not only in terms of its appearance, but in terms of its functionality as well.

As many women will experience one or more pregnancies that they choose to carry to term (Guttmacher 2002), it is important to understand how they counter the negative effects of the pervasive notion "you are what you look like," as their body moves away from society's thin-ideal. Whereas research on objectification theory—mostly conducted in the U.S., with exceptions noted—has documented the negative psychological and experiential consequences of viewing one's body as an object, more recent studies have begun to explore positive (and non-objectified) dimensions of body image, including body responsiveness (Daubenmier 2005), body appreciation (Avalos et al. 2005), and body functioning (Avalos and Tylka 2006). In this study, we are interested in two relatively unexamined dimensions of body image that may be particularly important during pregnancy: awareness of body functionality and appreciation of body functionality. Through this study, we extend the current literature on objectification theory (Fredickson and Roberts 1997) by examining the interrelationships between body surveillance, awareness of body functionality, appreciation of body functionality, and two correlates of self-objectification, namely depressive symptoms and health behaviors. More specifically, we examine whether higher levels of awareness and appreciation of body functionality may attenuate, and thereby possibly protect women from the negative effects postulated by objectification theory, among an online sample of pregnant women in the U.S.

Body and Self-Image During Pregnancy

Self-ideal discrepancy theory proposes that greater discrepancy between one's actual and idealized body shape is related to body image dissatisfaction and higher levels of eating disturbance in women (Thompson et al. 1999). Pregnancy may place women's bodies at odds with the societal ideal of a slim and angular female body and, as such, might be expected to increase women's body dissatisfaction. In fact, there has recently been speculation that objectification and regulation of women's bodies during pregnancy is increasing (Dworkin and Wachs 2004). For example, a *New York* magazine article titled "The Perfect Pregnancy," published during the time of our data collection, discusses "the new pregnancy ideal" (Abraham 2004, p. 23), which is described as "a belly on two sticks" (p. 22); in other words, a body with a pregnancy "bump" but no additional body fat or curves. Maternity clothing has become more fitted, further emphasizing this new pregnancy ideal of a slender woman with a belly "bump", but an otherwise unchanged body. This focus on body shape may encourage body self-consciousness and surveillance during pregnancy.

Despite these observations, studies indicate that pregnant women experience stable, or even diminished body appearance dissatisfaction during pregnancy (Davies and Wardle 1994; Fairburn and Welch 1990; Matsuhashi and Felice 1991; Skouteris et al. 2005). One explanation for these findings is that while pregnancy may position women further away from society's "thin-ideal", it simultaneously moves them closer to another feminine ideal, namely, motherhood (Bailey 2001). Achievement of this "maternal ideal", meaning the fulfillment of the role of motherhood, through pregnancy may protect women against more direct sexual objectification and comparison against the "thin-ideal" by providing alternative criteria for judging self-worth. Moreover, as sexuality and motherhood are sharply separated and generally viewed as incompatible for women in the dominant U.S. culture, women may feel less pressure to fulfill the role of sex object. Feminist philosopher Iris Marion Young (1990) describes how the dominant culture's desexualization of the pregnant body can liberate pregnant women from sexual objectification:

> The leer of sexual objectification regards the woman in pieces, as the possible object of a man's desire and touch. In pregnancy, the woman may experience some release from this alienating gaze… the look that follows her…does not instrumentalize her with respect to another's desire (p. 167).

Similarly, in Bailey's (2001) qualitative study of the transition to motherhood among first-time mothers in the U.K., women "spoke time and again about having a newfound respect or admiration for their bodies" (p. 128). Specifically, she notes that these changes were associated with a re-conceptualization of femininity, which was no longer primarily defined in visual terms through achievement of a slender shape, but rather, through the "connection between their bodies and the needs of their babies" (p. 121), as one participant richly describes:

> I think I feel more confident…I think the image that is always put across, that you've got to be so slim and everything—it doesn't sort of count anymore when you're pregnant. You feel that your body's doing some *function* [emphasis added] that it's meant to—that it's designed to do. So it makes you feel your body—you know, positive about it (p. 119).

Bailey (2001) and Young (1990) suggest that through motherhood, and especially during pregnancy, other dimensions having to do with the body's functionality are important to body and self-image. Rather than seeing the

body and self primarily in terms of what one looks like, women may view their body and self in terms of what they can provide for their child. During pregnancy, this means creating a healthy environment for the fetus to develop. Consequently, the task of the motherhood role during pregnancy is to maintain a well-functioning body for the benefit of her future child. A benefit of this new orientation towards the body is that women may become aware of and appreciate their body's functional capacities as it supports a developing fetus during pregnancy, and provides for her child after birth through breastfeeding. Viewing the body in terms of its functionality may buffer the negative effects of viewing the body in terms of how it is viewed aesthetically by others.

As women's bodies are looked at and experienced differently during pregnancy, as they are recognized for what they can do and their connection to the motherhood role, pregnant women may be able to experience their own bodies through this lens. Appearance monitoring may still be important for some because of enduring societal messages linking women's worth with their body shape and appearance, but the consequences may be buffered by a focus on body functionality. For example, a study on self-objectification and breastfeeding attitudes and intentions among low-income pregnant women from a rural community in the Northeastern U.S. (89% European American), found that compared to women who had a more competence-based self-concept, women who had a more appearance-based self-concept reported more concerns that breastfeeding would be embarrassing and that breastfeeding would have a negative impact on their bodies (Johnston-Robledo and Fred 2008). Breastfeeding intentions were generally quite high (69% intended to breast or combination breast and bottle feed), and self-objectification constructs (e.g., body shame, body surveillance, appearance-based self-concept) were not associated with breast feeding intentions, perhaps suggesting that appearance-related aspects of feminine identity may take a "backseat" to the mothering role. In other words, the impact of high self-objectification on behavior or intentions may be diminished as women embody an alternate feminine ideal through pregnancy.

Self-Objectification and Body Functionality During Pregnancy

Objectification theory, developed by Fredickson and Roberts (1997), posits that the experience of living in a culture that objectifies the female body socializes girls and women to adopt an observer's view of their own self, or more simply stated, to "treat *themselves* as objects to be looked at and evaluated" (Fredickson and Roberts 1997, p. 177). Fredickson and Roberts (1997) propose several psychological and experiential consequences of objectification, including depression, shame, anxiety, interference with peak motivational states (i.e., "flow"), engagement in unhealthy behavior (e.g., disordered eating) and decreased awareness of internal bodily states. A burgeoning literature on objectification theory has found self-objectification to be related to unhealthy attitudes and behavior including body dissatisfaction (Strelan et al. 2003; Tiggemann and Slater 2001) and disordered eating (Muehlenkamp and Saris-Baglama 2002), and mental health problems such as depressed mood (Szymanski and Henning 2007; Tiggemann and Kurig 2004), in adolescent girls and women.

Among the effects of self-objectification proposed by Fredickson and Roberts (1997), awareness of internal body states has received considerably less attention than other areas. Roberts and Pennebaker (1995), upon reviewing a significant body of research on gender and perceptual cue use, speculate that relative to men, women may make more use of external cues to identify and define internal (bodily) states, whereas men tend to make greater use of internal physiological cues. Objectification theory proposes that vigilant monitoring of one's outward appearance may diminish perceptual resources for attending to one's inner body experiences. However, it is possible that events which promote attention to inner body experiences may be associated with less vigilant body surveillance (Daubenmier 2005).

Pregnancy may be one such experience associated with increased body awareness through increased connectedness to bodily functions and sensations. Physically, the pregnant body may demand women's attention, as bodily states, such as hunger or fatigue, may be more intense than among non-pregnant women. Moreover, knowledge that 'something' is developing inside may make pregnant women more attuned to their inner physical experiences, whether out of excitement, curiosity, or concern. In other words, pregnancy may focus women's attention fairly intensely on their bodily processes and functions.

While body image researchers have begun to incorporate an emphasis on body appreciation and body functioning, two potentially positive aspects of body image, various definitions and measures of these constructs have been used in research on eating behavior and body image (Avalos and Tylka 2006; Franzoi 1995; Shields et al. 1989). For example, Franzoi (1995) adapted the Body Esteem Scale in order to assess "Body as Process," including items "judged to be a body function" or "judged to be thought of in terms of what it did rather than how it looked" on this scale (p. 423). However, items on this measure (e.g., physical stamina, agility) do not necessarily reflect the functionality of the body during pregnancy. Daubenmier (2005) developed a measure to assess responsiveness to bodily sensations, a construct similar to the current study's definition of awareness of body functionality, but this measure does not address women's level of appreciation of their body's functionality. In addition, Avalos et al. (2005) developed the Body Appreciation Scale (BAS) to assess positive views of the body (regardless of actual appear-

ance), rejection of unrealistic ideals, as well as body acceptance and respect. Avalos and Tylka (2006) utilized the BAS, along with a reverse-scored version of the body surveillance subscale of the Objectified Body Consciousness Scale (OBC-BS; McKinley and Hyde 1996) as a measure of body function, in their study exploring a model of intuitive eating. Using this measure, Avalos and Tylka (2006) found body function to be a predictor of body appreciation.

Considered collectively, these studies suggest a growing interest in body functioning and related constructs, albeit with somewhat varied conceptualizations and approaches to its assessment. We conceptualize awareness of body functionality as how attuned one is to the functioning of their body; specifically, how much one focuses on the workings, sensations, and physiological needs of the body. We conceptualize appreciation of body functionality as how much one values the physical functioning of their body. As noted, our conceptualization of body functionality is broader than Daubenmier's (2005) concept of body responsiveness because we include both awareness *and* appreciation of body functionality. Yet our constructs are more narrowly defined than the BAS (Avalos et al. 2005) due to our exclusive focus on dimensions of body functionality. Our conceptualization of body functionality is different from Avalos and Tylka's (2006) adaptation of the OBC-BS subscale to measure body function, as we propose that body surveillance and awareness and appreciation of body functionality are distinct (although presumably negatively correlated) constructs. Moreover, neither Daubenmier's body responsiveness measure nor the BAS were published at the time of our data collection. For all these reasons, for the current study we created measures of awareness and appreciation of body functionality appropriate for a sample of pregnant women.

Depression, Health Behaviors, Self-Objectification, and Pregnancy

Identifying potential protective factors that may ward off the consequences of a negative body image, such as awareness of body functionality and appreciation of body functionality, is important for all women, and may be particularly critical for women during pregnancy. Women of childbearing age face a high risk of depression, and pregnancy can increase the risk of a depressive episode (Gaynes et al. 2005). Between 14% and 23% of women will experience a depressive disorder while pregnant (Yonkers et al. 2009), and depressive symptoms in a mother have been found to be associated with adverse reproductive outcomes in some studies, including low birth weight, shorter gestation, preterm delivery, increased risk for irritability and reduced activity and attentiveness (Yonkers et al. 2009). Moreover, depression during pregnancy increases women's risk of postpartum depression (U.S. Department of Health & Human Services 2009), which can have consequences for both mother and child. As depressive symptoms have been linked with body dissatisfaction (Keel et al. 2001), and self-objectification (Muehlenkamp and Saris-Baglama 2002) among non-pregnant women, understanding the relationship between depression and self-objectification among pregnant women may be particularly important.

A few studies have explored relationships between body image and depression among pregnant and postpartum women, although none have explicitly incorporated objectification theory or included measures of self-objectification, as we do here. For example, using a cross-sectional, observational design DiPietro et al.'s (2003) study of predominantly White, middle class pregnant women in the U.S. found that women with more depressed mood reported more negative body image and weight–restrictive behaviors at 36 weeks gestation. Walker et al. (2002) examined both body image and depression among low-income postpartum women residing in the Southwestern U.S. post-delivery and 6-weeks later. They found evidence that body image post-delivery was related to depression post-delivery and 6 weeks post-partum, among White, Hispanic, and African American women.

A more recent prospective design study assessed body dissatisfaction and depression during Australian women's second and third trimesters, and at three postpartum time-points (6 weeks, 6 months, 12 months) (Clark et al. 2009). Across time-points, women felt least fat during their 3rd trimester, and reported the least weight and shape salience during this time, with no difference in feelings of attractiveness across the time points. Depression was strongly related to body dissatisfaction across the two pregnancy time-points, and this association became even stronger during the postpartum period, suggesting the importance of early intervention, ideally during pregnancy. This study also supports the need for further research to examine whether and how potentially positive aspects (e.g., awareness and appreciation of body functionality) of the body relate to depression.

Like depression, health behaviors are especially important for the health of the mother and the developing fetus during pregnancy, and may be connected to women's feelings about their body during pregnancy. Certain health behaviors—particularly exercise, smoking, and eating behaviors—are also closely linked with women's body image (e.g., Lopez et al. 2008; Stice and Shaw 2003) including facets of self-objectification (Prichard and Tiggemann 2005; Tylka 2004). For example, both body shame and body surveillance have been linked with eating disorder symptomatology (Burney and Irwin 2000), and smoking behavior among women (Fiissel and Lafreniere 2006; Harrell et al. 2006). Greenleaf (2005) found that self-objectification was associated with being less physically active (i.e., less engagement with physical exercise, an important health behavior). However, among women who exercise regularly, Strelan et

al. (2003) found that suburban Australian women higher on self-objectification exercise more for appearance-related reasons, and less for functional reasons (e.g., mood, health). The relationship of self-objectification to health behaviors during pregnancy is unknown. Moreover, as Strelan et al's (2003) findings highlight, in regards to weight-related health behaviors, the distinction between healthy and unhealthy behavior is not always clear, and this may also be true during pregnancy. Thus, it may be important to understand relationships between women's health-related behaviors and their views of their body in terms of self-objectification *and* awareness and appreciation of body functionality. In the current study, we expect that attunement to the body's inner functioning, through both awareness and appreciation of the body's functionality may encourage women to engage more in positive prenatal health behaviors, such as eating a nutritious diet and exercising moderately. In other words, awareness and appreciation of body functionality may highlight positive aspects of embodiment that are connected to the maternal role, such as meeting the needs of the developing fetus, which may counter the importance of achieving the 'thin ideal'. Awareness of body functionality may support women's ability to identify their bodies' needs, whereas appreciation of body functionality may help women to act on those needs. To our knowledge, this is the first study to look at connections between aspects of self-objectification (specifically, body surveillance), depression, and health behaviors among pregnant women. Additionally, this is the first study to examine among pregnant women, how awareness and appreciation of body functionality might moderate the relationship of body surveillance and negative health outcomes.

Study Aims and Hypotheses

In this study, we extend the current literature on objectification theory to an important population: pregnant women. The aims of the current study are twofold. First, we examine how self-objectification (measured as body surveillance) relates to awareness and appreciation of body functionality, and two correlates of self-objectification, namely depressive symptoms and health behaviors among a sample of first-time pregnant women.

H1: We expect women with higher body surveillance to have lower awareness and appreciation of body functionality, more depressive symptoms, and poorer prenatal health behaviors.

A second aim of this study is to examine whether and how awareness and appreciation of body functionality relate to the effects of high self-objectification, namely depressive symptoms and prenatal health behaviors, within this sample of women.

H2: We expect awareness and appreciation of body functionality to be negatively related to depression levels and to engagement in unhealthy prenatal behaviors.

In addition, we examine whether awareness or appreciation of body functionality moderates the relationship of self-objectification and health outcomes. We examined this in a model which controlled for pre-pregnancy Body Mass Index (BMI) because BMI has been shown to be a significant predictor of depression and health behaviors (e.g., Dragan and Akhtar-Danesh 2007; Neumark-Sztainer et al. 1997), as well as body dissatisfaction (Fitzgibbon et al. 2000). We controlled for BMI before the pregnancy because perinatal BMI would be confounded with trimester, and because we presume that pre-pregnancy BMI would have a more stable relationship to body image

H3: We expect awareness and appreciation of body functionality to each moderate the relationship between body surveillance and depression, above and beyond the association of BMI and depression. Specifically, we expect the form of each interaction to be such that the relationship of self-objectification (body surveillance) to depression will be attenuated (closer to zero) as awareness or appreciation of body functionality increases.

H4: Similarly, we expect awareness and appreciation of body functionality to each moderate the relationship between body surveillance and health behaviors above and beyond any association of BMI and prenatal health behaviors. Specifically, we expect the relationship between self-objectification and unhealthy prenatal behaviors to be attenuated as awareness or appreciation of body functionality increases.

Method

Participants

The study is comprised of a sample of pregnant women ($n=163$) recruited in the United States through the following methods: (a) a promotional event at a large retail store for pregnancy and baby goods in a large southwestern city; (b) a message board on the babycenter.com website; (c) *Yahoo!* groups' listserv for pregnant women; (d) and word of mouth and snowballing techniques. The largest number of participants reported hearing about the study through a website (38% of the sample), followed by email or listservs (28.8%) and retail stores (10.4%). Twenty-one percent of participants reported hearing about the study

from an "Other" source. These were primarily "word of mouth" sources (e.g., "friend", "co-worker", and "message boards"). To participate women had to be (a) 18 years or older, (b) currently pregnant for the first time, and (c) not experiencing any major medical complications associated with their pregnancy. After excluding participants with missing data (see Results section), a sample of 156 women remained.

The majority of participants were between 26–30 years age range (40.4%). Among the others, 7.1% were aged 18–22, 14.1% were aged 23–25, 32.1% were aged 31–35, 6.4% were aged 36–40, with no study participants in the "Over 41" category. Participants were eligible to participate in the study at any stage of their pregnancy. Among those who participated, 16.0% were in their first trimester, 41.7% were in their second trimester, and 42.3% were in their third trimester.

Study participants identified predominantly as White (85.9%), followed by Latina (5.1%), Asian American (4.5%), African American (2.6%), and "Mixed" Ethnicity (1.9%). The majority of participants described themselves as married (84.6%), with the others either "in a long-term committed relationship" (10.3%) or single (5.1%). Participants were highly educated (69.9% with a college or advanced graduate degree), and reported relatively high household incomes, with over one-quarter of the sample (26.9%) reporting their total annual family income to be over $90,000, and only 12.2% with household incomes below $30,000.

Procedure

Participants were directed to the "Pregnancy and Body/Self-Image Study" website, which described the study inclusion criteria (see above). As an incentive, participants were eligible for a raffle to receive one of two $125 gift certificates to either Target or Babies-R-Us if they agreed to provide follow-up contact information. Participants also had the option of responding anonymously, but were informed in the consent that follow-up contact information was necessary for inclusion in the raffle. Upon providing consent, participants were directed to the web-based questionnaire. Data were collected online, through a secure website designed for the study that was active from June through August 2004. Participants completed a variety of measures assessing their feelings and attitudes about their current pregnancy, including the measures described below, and standard demographic information. Additional measures included gestational weeks, height, current and pre-pregnancy weight, pregnancy wantedness, and measures to confirm adherence to inclusion criteria. All study procedures were approved by the Arizona State University Institutional Review Board.

Measures

Pre-Pregnancy BMI

We calculated BMI from the women's self-reported height and weight before pregnancy and used this as a control factor in our regression analyses.

Key Variables

Self-Objectification

Self-objectification, defined as the "habitual monitoring of the body's outward appearance" (Fredickson and Roberts 1997, p. 180), was measured by the body surveillance subscale of the Objectified Body Consciousness Scale (OBCS-BS; McKinley and Hyde 1996). The 24-item OBCS was designed to measure three aspects of women's objectified body consciousness: body surveillance, body shame, and control beliefs. The body surveillance subscale most closely matches the concept of self-objectification proposed by Fredickson and Roberts (1997), has been used in previous studies to measure the concept of self-objectification (e.g., Greenleaf 2005), and has been identified as particularly important to include in objectification theory research due to its unique and consistent links with key criterion variables proposed by the theory (Moradi and Huang 2008). This subscale is composed of 8-items, assessing women's experiences with their physical appearance over the past 2 weeks, and has been found to have high internal consistency (α=.89). Items such as "I think more about how my body feels than how my body looks" (reverse scored) are rated on a 7-point Likert-type scale, ranging from "Disagree Strongly" (1) to "Agree Strongly" (7). This measure was found to have good internal reliability in the current study (Cronbach's α=.86).

Awareness and Appreciation of Body Functionality

To our knowledge at the time of data collection, no standardized measure had been developed to assess awareness of body functionality or appreciation of body functionality that would be appropriate for pregnant women. For this reason, we created a 17-item measure of body functionality with two domains: awareness of body functionality and appreciation of body functionality. Items were informed by qualitative interviews conducted with first time pregnant women (N= 10) exploring body image during pregnancy, and were designed to measure the extent to which women were (a) aware of their body's functionality and (b) appreciative of their body's functionality and capabilities. Responses were rated on a 5-point Likert-type scale, ranging from "Strongly Disagree" (1), to "Neutral"

(3), to "Strongly Agree" (5). Higher scores indicated greater awareness of body functioning or appreciation of body functioning. Confirmatory factor analyses were conducted in Mplus (v.3.01, Muthén and Muthén 2003) (CFI=.840; RMSEA=.094; SRMR=.077). Given the lack of fit for the proposed model, items with loading estimates of .40 or lower were eliminated, and the proposed model was run again and found to have improved fit (CFI=.912; RMSEA=.101; SRMR=.060). The final measure included six items to assess awareness of body functionality (e.g., "I have paid attention to the changing sensations of my body") and five items to assess appreciation of body functionality (e.g., "I have been grateful for what my body has allowed me to do"). The alpha coefficient for the awareness of body functionality measure was .83 and for appreciation of body functionality was .82 (see Rubin 2006 for further information on scale construction).

Behavioral and Mental Health Outcomes

Depression

Current depressive symptoms were measured with the short form of the Center for Epidemiologic Studies Short Depression Scale (CES-D 10) (Andresen et al. 1994). Like the original CES-D, items on the CES-D 10 cover the previous 7 days and are rated on a 4-point scale ranging from "Rarely or none of the time" (0) to "Most or all of the time" (3). A total score is derived by summing the ratings across the 10 items. Andresen et al. (1994) report good test-retest reliability (r=.71) in their study of older adults (65 years of age or older). Lorig et al. (2001) report internal reliability for this measure (Cronbach's α=.84) in a sample of 605 adult patients with chronic disease. To the authors' knowledge, this is the first study to use the CES-D 10 with pregnant women. Internal reliability for the CES-D 10 in the current study was found to be high (Cronbach's α=.77) and scores could range from 0 to 30. Higher scores indicate more depressive symptoms.

Health Behaviors During Pregnancy

Health behaviors during pregnancy were assessed using the 24-item Prenatal Health Behavior Scale—Revised (Lobel 1996). Items on this measure ask women how often they have engaged in specific health behaviors in the last 2 weeks. Respondents rated how much they engaged in these behaviors on a 5-point Likert-type scale ranging from "never" (1) to "very often" (5). Four items assessing alcohol use, illegal drug use, and smoking behavior were excluded from the current study to protect study participants. Laws regarding substance use during pregnancy vary across states, and can include forced civil commitment and mandated reporting (Dailard and Nash 2000). As such, without a Certificate of Confidentiality, we chose not to collect data that, if mandated to be disclosed, could have adverse consequences for our participants. An additional item assessing how often women over-stretch or twist their body was mistakenly excluded, leaving 19 health behavior items from the revised scale. These 19-items assessed: eating, exercising, sleeping, and other body-use behaviors, as well as medication or vitamin uptake. Sample items include "exercise for at least 15 min," "get enough sleep," "drink milk, eat dairy products (such as yogurt or cheese), or take a calcium supplement," "eat fatty or oily foods," and "use store-bought medications such as aspirin or cough syrup." In the current study, similar internal consistency was found for the entire sample (Cronbach's α=.66) as that found by Lobel et al. (2000). In the current study, higher scores indicate more engagement in unhealthy behaviors.

Summary of Analyses

To test our first and second hypotheses we conducted correlational analyses among study variables: body surveillance, awareness of body functionality, appreciation of body functionality, depressive symptoms, and prenatal health behaviors. We carried out multiple linear regression analyses to test our third and fourth hypotheses regarding whether and how awareness or appreciation of body functionality moderate the relationships of (1) body surveillance and depression and (2) body surveillance and prenatal health behaviors. For each health outcome (depression level and engagement in prenatal health behaviors), we entered the main effects of BMI, body surveillance, and awareness and appreciation of body functionality, as well as the interaction effects of body surveillance and awareness of body functionality and body surveillance and appreciation of body functionality. We first entered all main effects and then in a second step entered the interaction effects. In doing this we were able to see whether the interaction effects together were significant above and beyond the main effects. If interactions were significant, they were probed according to procedures outlined by Aiken and West (1991). In these regression models, we also examined the VIF values to determine the degree of multicollinearity among the predictors. All VIF values were well below 10, the common rule of thumb that provides evidence of serious multicollinearity (Cohen et al. 2003). VIF values ranged from 1.1 to 2.4.

Results

Descriptive and Correlational Findings

As noted, two women were missing data on BMI and five were missing on at least one CES-D item and so were not

included in analyses, leaving 156 women. Mean substitution was used to handle the few missing items for the remaining variables. Means, standard deviations, range of scores, and study variable correlations are presented in Table 1. As expected for H1, body surveillance was negatively related to appreciation of body functionality and positively related to depressive symptoms. Also though not significant, as expected for H1, body surveillance tended to be positively related to engagement in less healthy prenatal behaviors and tended to be negatively related to awareness of body functionality. Furthermore, as expected for H2, both awareness and appreciation of body functionality were negatively related to depressive symptoms and to engagement in less healthy prenatal behaviors. That is, as awareness and appreciation of body functionality increased, depressive symptoms and engagement in less healthy prenatal behaviors decreased.

Depressive Symptoms

Table 2 and Fig. 1 present the results of whether and how awareness and appreciation of body functionality moderate the relationship between body surveillance and depressive symptoms. Recall H3 was that the interaction of awareness of body functionality and body surveillance and the interaction of appreciation body functionality and body surveillance were each expected to be significantly related to depression. Because H3 was specifically about the interaction effects and not about the main effects, we first entered all the main effects in one step: BMI, awareness of body functionality, appreciation of body functionality, and body surveillance. We then entered both of the interaction effects (i.e., that between awareness of body functionality and body surveillance and that between appreciation of body functionality and body surveillance). We found that the addition of the interaction effects significantly increased the amount of variance in depression that was explained, R^2 change=.03, p=.05. The only significant interaction effect, however, was between awareness of body functionality and body surveillance. Table 2 presents the linear regression with all main and interaction effects entered. To probe the interaction of awareness of body functionality and body surveillance, we followed procedures outlined by Aiken and West (1991) for continuous variables. We conceived awareness of body functionality to be the moderator of the negative effects of body surveillance on depression and so we graphed the interaction accordingly, examining the relationship of body surveillance to depression at different levels of awareness of body functionality. This is depicted in Fig. 1. In contrast to H3 where we expected the relationship between body surveillance and depression to be attenuated at higher levels of awareness and appreciation of body functionality, this relationship was stronger at higher levels of awareness of body functionality and attenuated at lower levels of awareness of body functionality. For instance, the simple slope of body surveillance to depression at one standard deviation above and below the mean of awareness of body functionality was 1.8 (p=.001) and −.5 (p=.5) respectively.

Prenatal Health Behaviors

Table 3 and Fig. 2 present the results of whether and how awareness and appreciation of body functionality moderate the relationship between body surveillance and engagement in prenatal health behaviors. Recall, similar to H3, for H4, we expected that the relationship between body surveillance and engagement in less healthy behaviors would be attenuated at higher levels of awareness or appreciation of

Table 1 Descriptive statistics (means and correlations) of study variables

Variable	Mean (SD)	Min[a]	Max[a]	1	2	3	4	5
1. BMI	25.00 (5.80)	16.60	50.0	–				
2. BS	4.04 (1.13)	1.50	6.75	−.08	–			
3. BF Awareness	4.27 (.57)	1.00	5.00	−.11	−.13	–		
4. BF Appreciation	3.83 (.77)	1.20	5.00	−.13	−.25**	.67**	–	
5. CES-D 10	9.63 (5.03)	.00	24.00	.14†	.23**	−.24**	−.33**	–
6. PHBS	2.17 (.37)	1.32	3.26	.23**	.15†	−.40**	−.39**	.32**

N=156. Higher scores on all measures are indicative of more extreme responding in the direction of the construct assessed. BMI = Body Mass Index; BS = Body Surveillance (possible range: 1 to 7); BF Awareness = Awareness of Body Functionality (possible range: 1 to 5); BF Appreciation = Appreciation of Body Functionality (possible range: 1 to 5); CES-D 10 = Center for Epidemiologic Studies Short Depression Scale- 10 (possible range: 0 to 30); PHBS = Prenatal Health Behavior Scale (possible range: 1 to 5; higher scores indicate more unhealthy prenatal behaviors)

[a] Observed minimum and maximum

† p<.10, * p<.05, **p<.005

Table 2 Depressive symptoms regression analysis

Variable	Standardized *B* (SE)	*t*-value, df=149	Semi-partial correlation, *sr*
BMI	.10 (.08)	1.28	.10
BS	.15 (.08)	1.85	.14
BF Awareness	−.16 (.11)	−1.45	−.11
BF Appreciation	−.20 (.10)	−1.95*	−.15
BF Awareness * BS	.28 (.12)	2.41*	.18
BF Appreciation * BS	−.15 (.11)	−1.38	−.10

N=156. BMI = Body Mass Index; BS = Body Surveillance; BF Awareness = Awareness of Body Functionality; BF Appreciation = Appreciation of Body Functionality; *N*=156

*$p \leq .05$; Overall $F(6, 149) = 5.36$, $R^2 = .18$, $p < .001$

body functionality. Similar to depressive symptoms, we conducted linear regression models in which we entered all the main effects in one step and then added the two interaction effects. The addition of the interactions did not significantly increase the amount of variance in health behaviors explained, R^2 change=.02, $p<.10$. However, the interaction effect of appreciation of body functionality and body surveillance was significant (see Table 3). Again, we followed procedures outlined by Aiken and West (1991) to graph this interaction. As depicted in Figure 2 and confirming H4, we found that the relationship between body surveillance and engagement in unhealthy prenatal behaviors was attenuated at higher levels of appreciation of body functionality and stronger at lower levels of body appreciation. The simple slope of body surveillance to engagement in less healthy behaviors at one standard deviation above and below the mean of awareness of body functionality was −.04 (p=.4) and .09 ($p<.02$) respectively.

Discussion

Objectification theory contends that women are socialized to view their body as an object to be evaluated by others. In contrast, pregnancy may be a time that women are more attuned to their body's functionality. One aim of this study was to apply objectification theory to pregnant women in order to test whether the negative effects shown in non-pregnant women would extend to pregnant women. In addition, because pregnancy is a time when dimensions other than physical appearance of the body may be salient and relate to body image, mental health, and behaviors, we examined how the dimensions of awareness and appreciation of body functionality relate to body surveillance, depression, and health behaviors. Finally, we explored whether positive dimensions of body image, specifically a focus on body functionality, may protect women from negative mental and behavioral health consequences of body surveillance during pregnancy. Considering the importance of mental and behavioral health for women and their children during pregnancy and postpartum, identifying potential risk and protective factors for depression and health behaviors during pregnancy represents an important priority for women's health research.

Our findings support and further extend objectification theory by demonstrating significant relationships between body surveillance and negative mental and behavioral health variables among women *during* pregnancy. For example, we found that higher body surveillance was associated with depressive symptoms and tended to be associated with less engagement in prenatal health behaviors among women in our study. Our findings also support Franzoi's (1995) notion that we can view the body through multiple lenses, both as an object and in terms of its functionality.

We also found that in support of H2, awareness and appreciation of body functionality were each associated with fewer depressive symptoms and less engagement in unhealthy prenatal behaviors among pregnant women in our sample. In contrast to H3, we found that the relationship between body surveillance and depression was actually stronger at higher levels of awareness of body functionality, and attenuated at lower levels. It may be that our measure of awareness of body functionality taps into a more general awareness of, and perhaps hypervigilance about, body image dimensions, including body appearance.

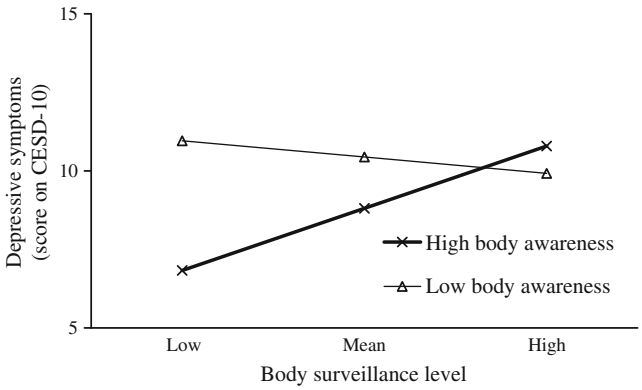

Fig. 1 Predicted depressive symptoms by body surveillance and awareness of body functionality at the mean of appreciation of body functionality. Low = 1 SD below the mean and High = 1 SD above the mean of body surveillance or awareness of body functionality, respectively

Table 3 Engagement in unhealthy prenatal behaviors regression analysis

Variable	Standardized *B* (SE)	*t*-value, df=149	Semi-partial Correlation, *sr*
BMI	.20 (.07)	2.78	.20
BS	.08 (.08)	1.07	.08
BF Awareness	−.28 (.11)	−2.58*	−.18
BF Appreciation	−.15 (.10)	−1.52	−.11
BF Awareness * BS	.10 (.11)	.94	.07
BF Appreciation * BS	−.21 (.10)	−2.06*	−.15

N=156. BMI = Body Mass Index; BS = Body Surveillance; BF Awareness = Awareness of Body Functionality; BF Appreciation = Appreciation of Body Functionality; *N*=156

* $p \leq .05$; Overall $F(6, 149)=8.16$, $R^2=.25$, $p<.001$

Moreover, whereas we conceptualize awareness of body functionality as a positive aspect of body image, women may be aware of their body's functionality, but not necessarily pleased by this awareness.

In support of H4, we found evidence suggesting that higher levels of appreciation of body functionality may protect women from a negative consequence of body surveillance, namely less engagement in prenatal health behaviors. At higher levels of appreciation of body functionality, the relationship between body surveillance and engagement in unhealthy behaviors was attenuated. Although we cannot draw conclusions about causal relationships in this cross-sectional study, these findings suggest potential benefits of viewing the body as a process and appreciating its functionality.

While challenging objectification of the female body is a long-term feminist project, in the short term, girls and women may counter some of the negative consequences of objectification by learning to develop an appreciative view of their body's functionality. Pregnancy may be an opportune moment for such an intervention, both because of the obviousness of the body's functionality during this time, but also in light of the negative body image and mental health consequences frequently associated with the postpartum period. While more research is needed to understand the consequences of self-objectification and potential benefits of body functionality views during pregnancy, our findings suggest that, in relation to prenatal health behaviors in particular, appreciation of body functionality may protect women from the potentially negative consequences of self-objectification. Whereas viewing the body as an object may contribute to devaluing or denying the body's needs, appreciating the body's functionality may counter these tendencies.

Our findings are consistent with prior research on objectification theory indicating that women with greater body awareness do not necessarily experience lower self-objectification or diminished consequences of self-objectification (e.g., body dissatisfaction, disordered eating) (Daubenmier 2005; Muehlenkamp and Saris-Baglama 2002; Tiggemann and Slater 2001). In our study, awareness of body functionality was not significantly associated with body surveillance, nor do these results suggest that higher levels of it buffer the negative consequences of body surveillance.

Despite the important contributions of this study, there are some limitations. By removing items on the Prenatal Health Behavior Scale (Lobel 1996) assessing substance use, we eliminated items that are both related to self-objectification such as smoking (Fiissel and Lafreniere 2006), and that are also among the most established predictors of prenatal and postnatal health. While there is physician consensus regarding most of the items remaining on this measure (Kirkham et al. 2005), there remains some controversy regarding items such as appropriate exercise and weight gain (Abrams et al. 2000). Future research should assess the more "high risk" prenatal health behaviors we excluded as they relate to self-objectification and awareness and appreciation of body functionality,

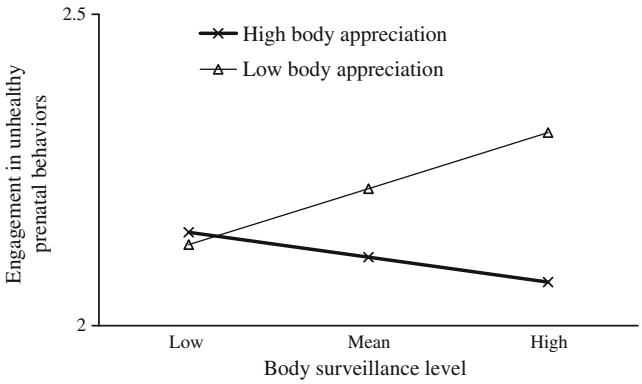

Fig. 2 Predicted unhealthy behaviors by body surveillance and appreciation of body functionality at the mean of awareness of body functionality. Low = 1 SD below the mean and High = 1 SD above the mean of body surveillance or appreciation of body functionality, respectively

even if doing so necessitates obtaining a Certificate of Confidentiality.

In addition, as this study only includes women during pregnancy, we cannot state whether awareness or appreciation of body functionality are different among pregnant and non-pregnant women, particularly because our measures of body functionality awareness and appreciation were developed for this sample of women. While the items comprising each had good face validity and reliability, future research could compare these measures to other measures of body awareness or appreciation that have subsequently been published. Moreover, as our study is cross-sectional, we cannot be certain about the causal direction of relationships between body surveillance, awareness or appreciation of body functionality, and psychological and behavioral health variables. Additionally, our study participants were quite homogenous in terms of their ethnicity and socioeconomic status. While there is limited research examining body image attitudes during pregnancy and postpartum across ethnic groups, Walker et al. (2002) found the highest levels of body dissatisfaction among White women, but the highest levels of depressive symptoms among African American women in their study of ethnically-diverse low-income postpartum women. Thus, it is possible that relationships between body image, body functionality, and depression are different among White and African American women. Future research is needed that examines these relationships over time—ideally prior to pregnancy, during the course of pregnancy, and postpartum—and among ethnically and socioeconomically diverse women.

To date, the vast majority of studies examining objectification and its consequences have focused on college-age women, primarily in developed countries. One strength of this study is its focus on women who are slightly older, and generally at a different developmental life stage. However, like other studies of objectification within the developed world, we cannot assume that findings can generalize to women around the globe. Body image and body ideals are experienced differently across cultural contexts, and even the influence of globalization is varied and complex (e.g., Anderson-Fye 2004; Pike and Borovoy 2004). Moreover, social and psychological experiences of pregnancy, and cultural values and ideals associated with pregnant and postpartum women, vary across cultures and contexts (e.g., Becker 1998). Of note, however, a recent study by Crawford et al. (2009) exploring objectified body consciousness among young adult women and their mothers in the US and Nepal highlights the importance of body functionality among young Nepali women. Thus, body functionality may be an important, and inclusive, aspect of body image to consider in future studies of objectification theory among women in the developed and developing world.

Conclusions

This study adds to an emerging body of literature that aims to include positive aspects of body image, particularly body functioning, into a larger program of study of women's body image. In addition, using self-objectification theory, we examine these constructs' associations with body surveillance and their association with health outcomes within a sample of pregnant women, a demographic group that has received considerably less attention compared to others (e.g., adolescents, college-age women) within body image, and particularly objectification theory, research. Our research findings highlight the role of higher appreciation of body functionality as a potential protective factor against negative consequences associated with self-objectification. As pregnant women generally have more frequent contact with medical professionals, women's views of their body's functionality, in addition to self-objectification, may be important supplemental assessments in order to evaluate pregnant women's relative risk for and protection against depression and poor health behaviors during the perinatal and possibly postpartum periods.

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