

That Swimsuit Becomes You: Sex Differences in Self-Objectification, Restrained Eating, and Math Performance

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Objectification theory (B. L. Fredrickson & T. Roberts, 1997) posits that American culture socializes women to adopt observers' perspectives on their physical selves. This *self-objectification* is hypothesized to (a) produce body shame, which in turn leads to restrained eating, and (b) consume attentional resources, which is manifested in diminished mental performance. Two experiments manipulated self-objectification by having participants try on a swimsuit or a sweater. Experiment 1 tested 72 women and found that self-objectification increased body shame, which in turn predicted restrained eating. Experiment 2 tested 42 women and 40 men and found that these effects on body shame and restrained eating replicated for women only. Additionally, self-objectification diminished math performance for women only. Discussion centers on the causes and consequences of objectifying women's bodies.

Part of the experience of being human is to wonder what others think of us. No doubt critical to communal living, such thinking can also determine self-presentational concerns (Jones & Pittman, 1982; Saenz, 1994), self-conscious emotions (Darwin, 1872/1965; M. Lewis, 1992), and, through the process of internalizing others' appraisals, our very sense of self (Cooley, 1902/1990; Harter, 1987; Mead, 1934).

People are likely to vary in the extent to which other people's views of them become internalized as their own views of self (Crocker & Wolfe, 1997). In addition, one consequence of constructing a view of self from other people's views is that the resulting self-view may reflect prejudice. Early this century, for instance, Du Bois (1903/1990) argued that African Americans tend to see themselves through a veil of racism. In a related vein, Fredrickson and Roberts (1997) argued that, at least in American culture, girls and women tend to see themselves through a veil of sexism, measuring their self-worth by evaluat-

ing their physical appearance against our culture's sexually objectifying and unrealistic standards of beauty. The antecedents, psychological impact, and possible mental health consequences that this sexually objectifying view of self has for girls and women have recently been detailed in Fredrickson and Roberts's *objectification theory*, which is summarized below.

Objectification Theory

Sexual Objectification Targets Females

Sexualized messages permeate American culture. The most subtle way these messages are conveyed—and arguably the most ubiquitous—is through gaze or visual inspection of the body (Kaschak, 1992), or, in lay terms, “checking out” another person's body and “looks.” Always present in contexts of sexualized gazing is the potential for sexual objectification. Sexual objectification occurs whenever people's bodies, body parts, or sexual functions are separated out from their identity, reduced to the status of mere instruments, or regarded as if they were capable of representing them (Bartky, 1990). In other words, when objectified, individuals are treated as bodies and, in particular, as bodies that exist for the use and pleasure of others.

Sexual objectification occurs both in actual interpersonal encounters as well as in the visual mass media. Empirical studies have documented that in both of these arenas, women are targeted for sexually objectifying treatment more often than men (Duncan, 1990; Fromme & Beam, 1974; Gardner, 1980; Goffman, 1979; Soley & Kurzbard, 1986; for reviews see Fredrickson & Roberts, 1997; Henley, 1977; Van Zoonen, 1994). As just one example, print media and artwork tend to portray men with an emphasis on the head and face, with greater facial detail and women with an emphasis on their bodies, often with no

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head or face whatsoever (Archer, Iritani, Kimes, & Barrios, 1983). These data make clear that women, more so than men, are portrayed as though their bodies were capable of representing them.¹

Sexual Objectification Promotes Self-Objectification

Building on the ideas of Simone de Beauvoir (1952) and later feminist theorists (Bartky, 1990; Berger, 1972; Young, 1990), objectification theory posits that the cultural milieu of sexual objectification functions to socialize girls and women to treat themselves as objects to be evaluated on the basis of appearance. Girls and women learn, both directly and vicariously, that their looks matter: Other people's evaluations of their physical appearance can determine how girls and women are treated in day-to-day interactions, which in turn can shape their social and economic life outcomes (Berscheid, Dion, Walster, & Walster, 1971; Cash, Gillen, & Burns, 1977; Holland & Skinner, 1987; Margolin & White, 1987; Snow & Harris, 1985; for reviews, see Fredrickson & Roberts, 1997; Unger, 1979; Wallston & O'Leary, 1981).

With these life consequences on the line, it seems sensible for girls and women to anticipate the social repercussions of their appearance or, as Berger (1972) put it, to be their own first surveyors. Seen in this light, girls' and women's attentiveness to their own physical appearance, which Freud (1933) saw as evidence of narcissism (see also Deutsch, 1944, 1945), might instead be viewed as an adaptive strategy. This strategy need not be conscious, or deliberately chosen. Rather, repeated exposure to the array of external pressures to enhance physical beauty could effectively socialize girls and women to experience their attentiveness to appearance as self-chosen or even natural (cf. Costanzo, 1992).

Objectification theory, then, suggests that our culture socializes girls and women to internalize an objectifying observer's perspective on their own bodies, becoming preoccupied with their own physical appearance, an effect we have termed *self-objectification* (Fredrickson & Roberts, 1997). In brief, self-objectification means that individuals think about and value their own body more from a third-person perspective, focusing on observable body attributes (e.g., "How do I look?"), rather than from a first-person perspective, focusing on privileged, or nonobservable body attributes (e.g., "What am I capable of?" or "How do I feel?").

Trait Self-Objectification

Noting that individuals might internalize observers' perspectives on their bodies to varying degrees, objectification theory predicts relatively stable individual differences in self-objectification: Some people (and in particular, women more than men) are more expected to be chronically preoccupied with their appearance than others. We have developed a simple self-report measure of trait self-objectification that asks respondents to rank order a list of body attributes by how important each is to their physical self-concept (see Appendix). Half of the attributes are based on physical appearance (e.g., weight, attractiveness) and half are based on physical competence (e.g., health, strength).

To date, we have administered this measure to more than 1,200 college students, and have found that, compared with men, women (on average) score higher and (as a group) show more variability on trait self-objectification.² Even so, like most psychological variables, the men's and women's distributions on trait self-objectification overlap considerably, and within-sex variation is great.

State Self-Objectification

The theory also predicts that self-objectification can be triggered and magnified by certain situations. Sociological research, for instance, has found that women's bodies are most subject to evaluative commentary by others in situations that are public, mixed-sex, and unstructured (Gardner, 1980). To identify the full range of situations that might trigger self-objectification, we follow the logic of Deaux and Major (1987): Gender-related phenomena are most likely to occur when gender is a salient feature of the proximal context and people's construals. Specifically, we contended that individuals would be most likely to self-objectify in situations that accentuate their awareness of observers' perspectives on their bodies. It is important to note that these observers may either be actual others, such as when a person receives a "cat call" while jogging, or imagined others, such as when a person tries on and evaluates swimwear while shopping. In short, objectification theory suggests that self-objectification, manifested as a preoccupation with physical appearance, can be considered both a trait and a state.

Consequences of Self-Objectification

Objectification theory proposes that both trait and state self-objectification have an array of intraindividual psychological consequences (see Figure 1). First and foremost, self-objectification leads to a form of self-consciousness characterized by vigilant monitoring of the body's outward appearance. This self-conscious appearance monitoring can disrupt an individual's stream of consciousness, and thereby limit the mental resources

¹ Although the scope of objectification theory is limited to the experiences of girls and women, we do not wish to minimize the negative effects that boys and men may experience from the sexually objectifying treatment they receive. Even so, we contend that the cultural meanings and psychological impact of sexually objectifying treatment differ in both degree and kind across men and women. A separate analysis of the unique ways that boys and men experience sexual objectification is certainly warranted given the distressing trend toward equal treatment in the visual mass media: Instead of eliminating objectifying portrayals of women, content analyses have documented an increase in objectifying portrayals of men (Van Zoonen, 1994; Wernick, 1991).

² Undergraduate students at the University of Michigan enrolled in an introductory psychology class ($N = 1,236$) completed our measure of trait self-objectification. Scores ranged from -25 to 25 for women and men alike, with positive scores indicating a greater emphasis on appearance. Across this sample, mean scores for women were 0.82 ($SD = 15.28$) and mean scores for men were -4.52 ($SD = 13.59$). Sex differences in means, $t(1,180.23) = 6.47$, $p < .001$, and variances, $F(1, 1235) = 16.38$, $p < .001$, were each significant.

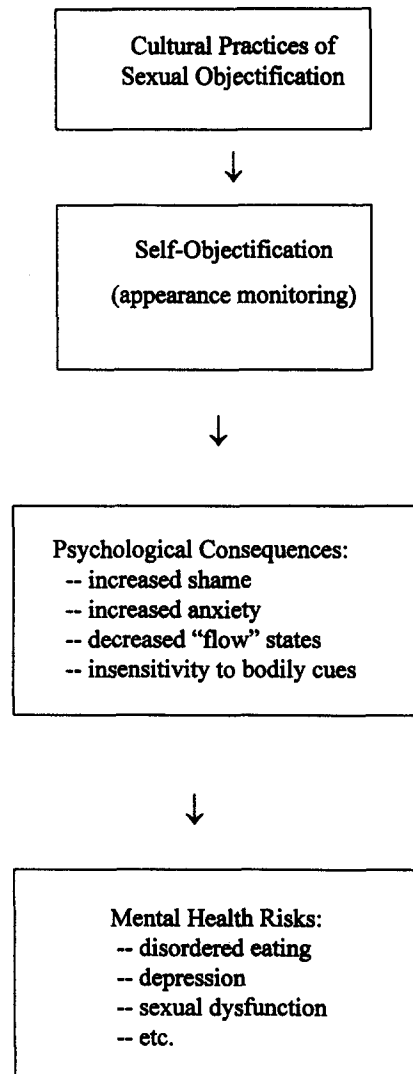


Figure 1. Antecedents and consequences of self-objectification.

available for other activities. This phenomenology is well captured by art historian and social commentator John Berger:

A woman must continually watch herself. She is almost continually accompanied by her own image of herself. Whilst she is walking across a room or whilst she is weeping at the death of her father, she can scarcely avoid envisioning herself walking or weeping . . . Her own sense of being in herself is supplanted by a sense of being appreciated as herself by another (Berger, 1972, p. 46).

Although extreme, Berger's depiction highlights the hypothesized intrapsychic costs of self-objectification. Clearly, this is a peculiar view of self. More important, it is a view of self that we proposed depletes mental resources as the individual attempts to envision an (implicitly objectifying) observer's view of her body.

Objectification theory further posits that the appearance moni-

toring inherent in self-objectification can, in turn, create a predictable set of experiential consequences, including increased opportunities for shame and anxiety, reduced opportunities for rewarding "flow" experiences (to use Csikszentmihalyi's, 1990, term for optimal experience), and diminished awareness of internal bodily states. Recognizing that these experiential consequences can accumulate and compound, objectification theory also points to possible explanations for an array of mental health risks that disproportionately affect women, including eating disorders, unipolar depression, and sexual dysfunction. Importantly, risks for these mental health outcomes change in step with observable life-course changes in the female body: They first emerge in early adolescence and lessen in late middle age (Attie & Brooks-Gunn, 1989; Nolen-Hoeksema & Girgus, 1994; Mitchell & Helson, 1990). Objectification theory notes that women are most targeted for sexual objectification during their years of reproductive potential and uses this fact to explain these life-course patterns.

Objectification theory, then, provides a broad, lifespan model for understanding women's lived experiences and mental health risks. Readers interested in a full description of the theory are directed to Fredrickson and Roberts (1997). The studies reported here begin experimental tests of a subset of the causal connections hypothesized by the theory. In particular, we focused on the subset of emotional and behavioral consequences of self-objectification described below.

Body Shame

Objectification theory predicts that self-objectification leads to increased experiences of shame and, in particular, shame about one's body. Theoretical accounts of shame suggest that this emotion occurs when people evaluate themselves relative to some internalized or cultural ideal and come up short (M. Lewis, 1992; Darwin, 1872/1965). Phenomenologically, shame generates an intense desire to hide, escape the painful gaze of others, or disappear, along with feelings of worthlessness and powerlessness (Darwin, 1872/1965; M. Lewis, 1992; Tangney, Miller, Flicker, & Barlow, 1996). Darwin captured how the internalization of another's gaze is central to the experience of shame: "It is not the simple act of reflecting on our own appearance, but the thinking what others think of us, which excites a blush" (p. 325). Shame, then, results from a fusion of negative self-evaluation with the potential for social exposure.

In American culture, ideals of female beauty prescribe an ultrathin body, attainable by almost no one (for a review, see Wolf, 1991). As such, virtually any comparison that females who self-objectify make between their actual body and this mythic ideal body will produce shame, and body shame in particular. For instance, although only a minority of girls and women in our society are actually overweight, empirical studies report that the majority report feeling fat and ashamed of this "failure" (Silberstein, Striegel-Moore, & Rodin, 1987; see also Fallon & Rozin, 1985; for a review, see Fredrickson & Roberts, 1997).

Several theorists have sought to uncover the function or adaptive value of shame experiences (Keltner & Harker, 1998; M. Lewis, 1992; Scheff, 1988). M. Lewis has suggested that

shame serves to disrupt ongoing activity and identifies this disruption as adaptive, arguing that it functions to inhibit or change that which fails to live up to the person's internally- or externally-derived standards. In a related vein, Scheff has suggested that shame—and perhaps more important, the anticipation of shame—motivates conformity to social norms. Relatedly, shame has been described as a moral emotion, one that is used to socialize important societal standards (H. B. Lewis, 1989; Keltner & Harker, 1998). Integrating these views and applying them to shame about one's body suggests that body ideals are taken as moral ideals (see also Crandall, 1994; Crocker, Cornwell, & Major, 1993; Quinn & Crocker, 1998) and that body shame motivates individuals to change their physical appearance to be more socially acceptable.

Restrained Eating

Objectification theory predicts that body shame can produce troubled attitudes toward food and, in particular, restrained or disordered eating. This prediction draws both from conceptualizations of shame as a motivator to fix that which fails, as well as from cultural assumptions that weight is indeed controllable and that individuals can choose the weight they want to be, in part by controlling their food intake. A range of experimental studies has shown that manipulated self-consciousness or public attention (via mirrors, actual or implied observers, or viewing self on video) can reliably induce restrained eating in women, dieters and nondieters alike (Polivy, Herman, Hackett, & Kuleshnyk, 1986; Heatherton, Polivy, Herman, & Baumeister, 1993). Arguably, these situations trigger state self-objectification to some degree and in so doing provide indirect evidence for the hypothesized link between self-objectification and restrained eating. To test the further prediction that the emotion of body shame mediates the relationship between self-objectification and restrained or disordered eating, we have analyzed survey data collected from more than 200 undergraduate women (Noll & Fredrickson, in press). We found that women who scored high on our measure of trait self-objectification also reported the most body shame, which in turn predicted self-reported restrained and disordered eating (for related findings, see McKinley & Hyde, 1996). Our aim in the two studies presented here was to provide experimental support for the hypothesized causal path leading from self-objectification to body shame and, in turn, to restrained eating.

Disrupted Attention and Mental Performance

Objectification theory also predicts that self-objectification consumes mental resources. Circumstances that give rise to state self-objectification, then, should also lead to diminished performance on any demanding concurrent activity, whether mental or physical. Considering physical activities, philosopher Iris Young (1990) sees self-objectification as one possible explanation for the easy-to-visualize phenomenon of "throwing like a girl." When girls and women maintain an observer's perspective on their bodies, Young argues, they simultaneously experience the body as an object as well as a capacity. This division of attention can make women's movement timid, uncertain, and incomplete.

Similar divisions of attention, we argue, can disrupt and therefore diminish women's mental activities.

We tested this prediction using an advanced math test. We chose math performance for two related reasons. First, in the United States, a gender difference (favoring boys) in solving complex math problems first emerges in junior high (for a review, see Hyde, Fennema, & Lamon, 1990). No doubt this difference is multiply determined, with gender-role stereotypes and gendered expectancy effects playing key roles (Eccles, Jacobs, & Harold, 1990; Steele, 1997). However, perhaps it is no coincidence that girls' declines in math emerge in step with observable changes in their bodies. When girls begin to mature physically—in lay terms, when they "get a figure"—they also experience an upsurge of sexually objectifying treatment (Brownmiller, 1984; Dion, Dion, & Keelan, 1990; Fine, 1988; Koss & Harvey, 1987; Martin, 1996; for a review, see Fredrickson & Roberts, 1997). As just one example, a national survey of more than 1,600 boys and girls in Grades 8 through 11 found that most students first experience sexual harassment in junior high (American Association of University Women [AAUW], 1993). Moreover, the specific forms of harassment varied by sex, with forms reported more by girls arguably carrying more threat (e.g., girls more frequently reported being "touched, grabbed, or pinched in a sexual way," "intentionally brushed up against in a sexual way," and "had their way blocked in a sexual way," whereas boys more frequently reported being "called gay or lesbian" and "shown, given, or left sexual pictures, photographs, illustrations, messages, or notes"; AAUW, 1993). These differences may help explain why girls appear to bear the brunt of the educational impact: Girls were far more likely than boys to indicate that, among the outcomes of the sexual harassment were "not wanting to go to school" (33% vs. 12%), "not wanting to talk as much in class" (32% vs. 13%), and "finding it hard to pay attention in school" (28% vs. 13%; AAUW, 1993).

A second reason we targeted math performance is that Spencer, Steele, and Quinn (in press) have already demonstrated that certain testing situations can disrupt women's math performance more than men's. In particular, Spencer and colleagues have shown that, because stereotypes about women's weaker math ability are widely known, women taking difficult math tests may experience stereotype threat, defined as an apprehension associated with the risk of fulfilling or being judged by a negative stereotype. (African Americans are also affected by stereotype threat; for a review, see Steele, 1997.) The heightened evaluative pressures associated with stereotype threat are thought to impair mental efficiency and produce anxiety, ultimately leading to diminished performance on difficult tests. It is important to note that when stereotype threat is lifted, for example by informing test-takers that the test has no record of gender difference, women performed equal to men (Spencer et al., in press). This finding suggests that sex differences in math performance are not always a function of differential ability but may also be caused by competing demands on attention within the testing situation.

Yet objectification theory predicts that situations that give rise to state self-objectification will disrupt women's math performance simply because doing advanced math competes with

self-objectification for limited mental resources. Interestingly, self-affirmation theory (Steele, 1988) might predict just the opposite, that situations triggering self-objectification could improve people's math performance. That is, to the extent that self-objectification threatens people's self-esteem, it may motivate them to demonstrate their competence in the (presumably) unrelated domain of math.

Hypotheses

Hypothesis 1: Self-objectification produces body shame, which in turn predicts restrained eating.

Hypothesis 2: Self-objectification diminishes math performance.

Hypothesis 3: The emotional and behavioral consequences of self-objectification will be evident for women and not for men.

Overview of Empirical Strategy

Participants in two experiments were pretested on our measure of trait self-objectification and later took part in a presumably unrelated study on "emotions and consumer behavior." Under this cover story, participants sampled and evaluated a number of consumer products. We experimentally manipulated state self-objectification by randomly assigning participants to try on and evaluate a swimsuit or a sweater. Participants did this alone in a dressing room in front of a full-length mirror. While wearing the garment, participants completed questionnaires aimed at measuring body shame. Behavioral measures were obtained by administering a food taste test and a math test. Experiment 1 tested Hypothesis 1 in a sample of women only. Experiment 2 tested Hypotheses 1–3 in a sample that included both women and men. The men in Experiment 2 served as a comparison group to help establish that consequences of self-objectification are not part of human nature more generally, but rather are specific to women.

Experiment 1

Method

Participants

Participants were 75 undergraduate women at Duke University who received partial course credit. Data from 3 participants were excluded because these individuals voiced suspicion about the cover story ($n = 2$) or did not comply with the experimental procedure ($n = 1$). This left 72 participants randomly assigned to one of two experimental conditions (swimsuit or sweater). Seventy percent were Caucasian, 6% African American, 10% Asian, 7% Hispanic, and 7% were of other (unspecified) ethnicities. Mean height was 65 in. (1.65 m; $SD = 3.3$), ranging from 58 to 75 in. (1.47 to 1.91 m). Mean weight was 299.2 kg ($SD = 24.3$), ranging from 198 to 481 kg. To index relative body weight as a reflection of body fat, we calculated body mass index (BMI) using the formula $\text{weight}/\text{height}^2$ (kg/m^2). Mean BMI across participants was 22.57 ($SD = 3.34$), ranging from 16.9 to 35.3. For women of this age group, a BMI less than 20.80 indicates underweight, and a BMI greater than 25.85 indicates overweight (Must, Dallal, & Dietz, 1991). We used these cutoffs to classify 24 participants as underweight, 38 as normal weight, and 10 as overweight.³

Written Materials

Trait self-objectification. The Self-Objectification Questionnaire (see Appendix), developed by Noll and Fredrickson (in press), is based both on objectification theory (Fredrickson & Roberts, 1997) and the Body Esteem Scale (Franzoi & Shields, 1984). It departs from the Body Esteem Scale in that it does not examine respondents' satisfaction with their bodies. It instead assesses concern with appearance without a judgmental or evaluative component. This is an important distinction. Objectification theory predicts that women experience the negative consequences of self-objectification primarily as a result of being concerned with physical appearance, regardless of whether they feel satisfied or dissatisfied with their bodies.

The questionnaire was administered in a group testing session. Respondents rank ordered a set of 12 body attributes by how important each is to their own physical self-concept.⁴ Scores ranged from -36 to 36 , with higher scores indicating greater emphasis on appearance, which we interpreted as greater trait self-objectification. Consistent with objectification theory, trait self-objectification scores were not correlated with level of obesity (as indexed by BMI, $r = -.02$, ns), confirming that women can be preoccupied with their appearance regardless of body size.

Body shame. We devised an indirect measure of body shame because emotion theorists have argued that shame is difficult to assess directly, in part because individuals may feel ashamed of being ashamed (H. B. Lewis, 1971; see also Harder, 1995; Scheff, 1988). To circumvent this difficulty, our self-report measure targets the phenomenological experiences that are part and parcel of experiencing shame. These include the motivational and behavioral components of shame such as the desire to hide, escape, turn away, disappear, or become smaller, as well as the desire to change the failed aspects of the self (Darwin, 1872/1965; H. B. Lewis, 1971; M. Lewis, 1992; Tangney et al., 1996).

We assessed the phenomenology of body shame in two ways. First, participants completed ratings on the phenomenological experiences of various emotions. Nineteen items were based on theoretical descriptions of the phenomenology of shame (e.g., "I wish I were invisible," "I feel like covering my body," "I wish I could disappear"). Fifteen additional items describing the phenomenology of emotions other than shame (e.g., anger, sadness, happiness) served as filler items. One of the original 19 theoretically based items was later dropped from the scale because it was never endorsed. The resulting 18-item shame phenomenology scale demonstrated high internal reliability, with coefficient $\alpha = .94$.

Second, adapting a method first used by Noll and Fredrickson (in press), participants reported their desires to change specific attributes of their own body (e.g., weight, shape of legs, hips). Thirteen physical attributes and body parts were listed, along with a write-in item. To give

³ Throughout this article, we use the continuous BMI variable as a covariate. We conducted parallel analyses using the three weight classifications (underweight, normal weight, overweight) as a between-subjects factor. Main effects for weight classification emerged in analyses where significant covariate effects for BMI are reported. Because no interactions with weight classification reached significance, we report the findings that use BMI as a continuous covariate.

⁴ Due to constraints on the response format of group testing materials later used at the University of Michigan (response options ranged from 0 to 9 on a computer-scored answer sheet), the version of the Self-Objectification Questionnaire that appears in the Appendix (used in Experiment 2) contains only 10 body attributes. The earlier version used in Experiment 1 also included "coloring" as a sixth appearance-based item, and "stamina" (separate from "energy level") as a sixth competence-based item.

credibility to the cover story and to decrease participants' defensiveness, before indicating desired body changes, respondents first indicated changes they wished to make to the garment (e.g., coverage, size, support) in order to feel comfortable wearing it in public. Following this, the body-change items were introduced as follows:

Now think again about how you look in the item of clothing you have on. Sometimes it is not a matter of changing aspects of the garment, but that certain garments look better on certain bodies. Please indicate which of the following things you would want to change about your body in order to feel comfortable wearing this garment in public.

Using a 4-point scale, participants rated how much they wished to change different attributes of their body (0 = *no change*, 1 = *change a little*, 2 = *change a lot*, 3 = *completely change*). Two scores were derived from the body-change items: the total number of body attributes the participant wanted to change (ranging from 0 to 14) and the total intensity of desires for change (ranging from 0 to 42).

A composite body shame score was created by separately standardizing participants' scores on the 18-item shame phenomenology scale and the two scores derived from the body-change items and then summing these three standardized scores together. Higher scores are interpreted as indicating greater body shame. This composite body shame score demonstrated high internal reliability, with coefficient $\alpha = .91$.

Procedure

Participants were tested individually, in 1-hr laboratory sessions. Upon arrival, a female experimenter told participants that the study examined "emotions and consumer behavior." Participants then provided informed consent to engage in three tasks typical of everyday trips to a shopping mall or grocery store.

The first task was to sample and evaluate a unisex scent (Calvin Klein's CK One). The sole purpose of this task was to bolster the cover story.

The second task was to try on and evaluate an item of clothing alone in a dressing room with a full-length mirror.⁵ In order to keep the experimenter blind to experimental condition, participants received the instructions for this second task over headphones. By random assignment, the item of clothing was either a one-piece swimsuit or a crew neck sweater. Swimsuits were available in six sizes, ranging from 4 to 14, and sweaters were available in four sizes, ranging from S to XL. Participants were asked to find the garment that most closely corresponded to their size and (while pausing the audiotape) to try it on.⁶ Next, participants were instructed to look at themselves in the mirror and "evaluate the clothing as though you were on an actual shopping trip, deciding whether or not to purchase it." Still wearing the garment, participants completed the two-part measure of body shame along with filler items to bolster the cover story. After completing the questionnaires and redressing into their street clothes, participants were told to open the door to signal the experimenter.

The third task was a taste test. Participants sampled and evaluated cookies and a drink: Grandma's chocolate chip cookies and YooHoo chocolate-flavored drink. The cookies were unwrapped in front of the participant and placed on a plate. There were two cookies per package (3.5 in. [8.9 cm] in diameter, total weight = 77 g). The drink was poured from an individual serving size bottle into a glass (total volume = 260 ml). The food was presented in this manner to underscore that what participants did not eat would go to waste. The experimenter left the room for 5 min while participants tasted the food and completed questionnaires that bolstered the cover story. If participants asked how much they were required to eat, they were told that they could eat as much as they liked because the leftovers would be thrown out.

Table 1
Hierarchical Regression Analysis of Body Shame in Experiment 1

Step and predictor variable	R ² change	B	SE B	β
1: BMI	.23***	0.38	0.07	.45***
2: Trait S-O	.07**	0.02	0.02	.11
3: State S-O	.14***	1.78	0.51	.32***
4: Trait \times State S-O	.03*	0.05	0.03	.24*

Note. BMI = body mass index; trait S-O = trait self-objectification; state S-O = state self-objectification (experimental condition). Values for B, SE B, and β are from the final equation.

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

After 5 min, the experimenter returned. Participants were queried for suspicions and then gently and thoroughly debriefed. The experimenter revealed all aspects of the deception and explained why this deception was deemed warranted. The experimenter also answered participants' questions and made certain they left the laboratory in good spirits and with a clear understanding of the study. Before departing (but after debriefing), participants were weighed with their backs to the numbers of the scale. After they left, any uneaten food was measured. Because the amount of drink consumed ($M = 66.22$ ml, $SD = 68.33$) yielded no significant results, this eating variable is not discussed further.

Results

Body Shame

We predicted that self-objectification would produce body shame. To test this prediction, we used hierarchical multiple regression. We predicted participants' body shame scores from BMI, trait self-objectification scores ($M = 5.35$, $SD = 18.79$, range = -36 – 36), and experimental condition (dummy coded as 0 = *sweater*, 1 = *swimsuit*). After entering these variables stepwise into the prediction equation, we added a term representing the interaction of trait and state self-objectification (formed by multiplying the experimental condition code with trait self-objectification scores). Table 1 presents the results of this hierarchical regression. Not surprisingly, BMI predicted body shame, with heavier women reporting greater shame. Beyond this, both trait and state self-objectification predicted additional variance in body shame, although the effect for trait self-

⁵ Even though participants were in fact alone and unobserved in the laboratory dressing room, this does not guarantee that they believed there was no means of covert observation, perhaps by camera or one-way mirror. To prevent this misconception, the mirror used was an inexpensive (home quality) mirror that leaned against the wall, and clearly was not a one-way mirror to an adjacent observation room. Also, no video equipment was present, and the only window (a small one on the laboratory door) was covered with black felt on both sides of the door. Pilot testing confirmed that participants indeed knew that they were not being secretly observed.

⁶ A space heater was provided so that participants could control the heat of the room themselves. Additionally, those instructed to try on swimwear were told to keep their undergarments on, but to remove all other clothing. The sanitation of the swimwear was further protected by changing a protective cloth lining inside each suit after it was worn.

objectification became nonsignificant once the interaction between trait and state self-objectification was added to the model (see Table 1). To illustrate this interaction, we calculated predicted body shame values for women in each experimental condition who scored one standard deviation above and below the mean on trait self-objectification (and using the mean value of BMI). As shown in Figure 2, the swimsuit condition elicited high levels of body shame, but only for those women who scored relatively high on trait self-objectification.

Eating Behavior

We also predicted that body shame would in turn predict restrained eating. Initially, we treated the eating variable as continuous, but found no relationships between amount of cookie consumed and measures of body shame, experimental condition, or trait self-objectification.

Inspecting the distribution of the amount of cookies participants consumed revealed three natural clusters. Following these clusters, we classified participants into one of three groups: (a) those who ate less than half of one cookie ($n = 35$), labeled the true restraint group; (b) those who ate more than half but less than one whole cookie ($n = 14$), labeled the symbolic restraint group; and (c) those who ate one or more whole cookies ($n = 23$), labeled the no restraint group. Labeling these eating clusters in terms of degree of restrained eating was based on the assumption that participants in fact liked the cookies, yet some were refraining from eating them. Participants' ratings of how much they liked the cookies supported this assumption: First, the cookies were generally well-liked, with mean liking ratings of 7 on a 10-point scale. More important, though, the three eating groups did not differ in how much they liked the cookie, $F(2, 69) = 2.5$, ns , indicating that amount consumed was not associated with degree of liking.

After forming these eating groups, we speculated that the symbolic restraint group was perhaps the most peculiar because eating almost all of a tasty cookie, yet leaving a small amount behind on the plate seems to represent a hesitancy to cross the psychological boundary of eating the whole thing. With this in mind, and having observed no linear relationship between the continuous cookie consumption variable and other variables of

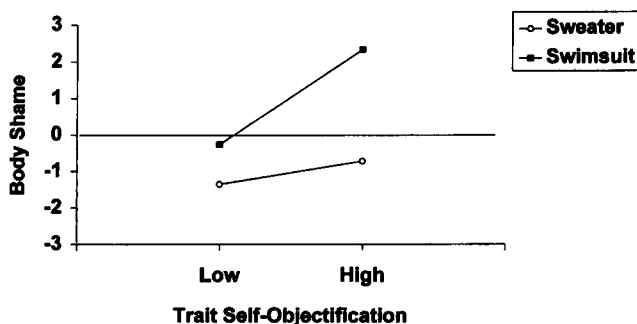


Figure 2. Schematic representation of the interaction between trait self-objectification and the experimental manipulation of state self-objectification producing body shame in Experiment 1.

Table 2
Probability of Eating Group Membership for Lowest and Highest Body Shame in Experiment 1

Eating group	Body shame	
	Lowest	Highest
True restraint	44%	34%
Symbolic restraint	5%	57%
No restraint	50%	8%

interest, we chose to treat these three eating groups as non-ordered categorical variables. We then used logistic regression with nonordered response categories (SAS Institute, 1990) to predict eating group membership from trait self-objectification, experimental condition, BMI, and body shame. Only body shame by itself yielded a significant model, $\chi^2(2, N = 72) = 6.83$, $p < .05$. The model-predicted odds ratio suggests that as body shame increases, participants were 1.15 times more likely to be in the true restraint group than the no restraint group and 1.45 times more likely to be in the symbolic restraint group than in the no restraint group. Table 2 presents the probabilities of eating group membership for the lowest and highest amounts of body shame, respectively. Inspection of Table 2 suggests that very high levels of body shame predict the pattern of symbolic restrained eating, with participants experiencing the most body shame eating almost all of a chocolate chip cookie, yet stopping short of eating the whole thing. By contrast, participants with very low levels of body shame almost never engaged in such symbolic restraint.

Summary and Discussion

The prediction that self-objectification would produce body shame was supported. Trait and state self-objectification interacted such that the greatest amount of body shame was reported by women in the swimsuit condition who scored high on trait self-objectification (see Figure 2). The prediction that body shame would in turn predict restrained eating was also supported. It is worth noting, however, that a true mediational effect was not evident. The first step in establishing mediation would be for the self-objectification variables to predict restrained eating, and the second step would be for this relationship to become weaker after body shame is added to the model (see Baron & Kenny, 1986). Yet trait and state self-objectification did not directly predict restrained eating, and so the first requirement was not met. Although this might reflect measurement error, it also seems likely that factors other than state and trait self-objectification might contribute to experiences of body shame, making body shame a superior predictor of eating patterns. Even so, integrating the finding that trait and state self-objectification interacted to produce body shame, together with the finding that degree of body shame in turn predicted eating patterns is consistent with the causal path derived from objectification theory. These findings, alongside the survey data reported by Noll and Fredrickson (in press), provide an empirical

base for the claim that self-objectification may serve as a risk factor for disordered eating.

Despite the support observed for Hypothesis 1, a number of limitations constrain our ability to make generalizations from this first experiment. First, Experiment 1 lacked a manipulation check. As such, we cannot be certain that trying on swimwear truly induced a state of consciousness marked by self-objectification. Second, Experiment 1 tested only women, leaving open the question of whether these same findings would be obtained for men and therefore might reflect human nature rather than something specific to women's experiences. Objectification theory emphasizes that the social meanings associated with men's and women's bodies are qualitatively different, and as such, predicts that the emotional and behavioral consequences of self-objectification would be evident for women and not men. Certainly the sheer bareness associated with trying on swimwear might produce self-conscious emotions in most individuals. Even so, we would expect differences in the type of self-consciousness that men and women experience in this situation, as well as in the consequences of this emotional state. Third, the finding that body shame predicted symbolic restraint (as opposed to restrained eating more generally) was not predicted and therefore should be subjected to further testing. Experiment 2 was undertaken to (a) replicate the results of Experiment 1 (Hypothesis 1), (b) extend the tests of objectification theory into the domain of attentional disruption and mental performance (Hypothesis 2), and (c) test whether these emotional and behavioral effects are indeed unique to women as predicted by objectification theory (Hypothesis 3).

Experiment 2

Method

Participants

Participants were 82 undergraduate students at the University of Michigan (40 men and 42 women) who received partial course credit. All had completed the Self-Objectification Questionnaire in a group testing session and were selected on the basis of their scores. Quartiles on self-objectification scores were determined separately for male and female respondents (total $N = 738$; for males: $n = 317$, $M = -3.48$, $SD = 12.22$; for females: $n = 421$, $M = 1.09$, $SD = 14.42$), $t(736) = 4.54$, $p < .001$. Those scoring in the lowest and highest quartiles for their sex were among those eligible to participate. Students with scores in these ranges were contacted by phone and scheduled for a presumably unrelated laboratory study. This prescreening strategy served to classify participants as low versus high on trait self-objectification.

Eighty-three percent of the sample recruited for the laboratory study was Caucasian, 6% African American, 5% Asian, 2% Hispanic, and 4% other (unspecified) ethnicities. For women, mean height was 65 in. (1.65 m; $SD = 2.7$, range: 55–71), mean weight was 300.9 kg ($SD = 24.3$, range: 98–236), and mean BMI was 23.43 ($SD = 3.83$, range: 18.4–35.4). Twelve of these women could be classified as underweight, 21 as normal weight, and 9 as overweight. For men, mean height was 70 inches ($SD = 2.9$, range: 63–77), mean weight was 375.6 kg ($SD = 35.1$, range: 122–306), and mean BMI was 24.84 ($SD = 4.08$, range: 17.4–37.2). Seven of these men could be classified as underweight, 23 as normal weight, and 10 as overweight.

Written Materials

Trait self-objectification. The 10-item version of the Self-Objectification Questionnaire (Noll & Fredrickson, in press) was used (see Appendix), and scores ranged from -25 to 25 . Again, consistent with objectification theory, trait self-objectification scores were uncorrelated with BMI for women ($r = .01$, ns). For men, however, trait self-objectification scores were marginally correlated with BMI ($r = .29$, $p = .09$), suggesting that relatively heavier men were more concerned with their appearance.

State self-objectification. To assess whether trying on a swimsuit produced a state of consciousness marked by self-objectification, we modified the Twenty Statements Test (TST; Bugental & Zelen, 1950; M. H. Kuhn & McPartland, 1954; see also Bond & Tak-Sing, 1983; Cousins, 1989) to serve as a manipulation check.⁷ Specifically, we modified the instructions that preceded the TST to better assess transient self-perceptions conceptually relevant to state self-objectification. These instructions read as follows:

Clothing and style of dress can often have an impact on people's views of themselves. Please take a moment to think about how wearing this particular item of clothing makes you feel about your self and your identity. In the twenty blanks below please make twenty different statements about your self and your identity that complete the sentence "I am ____." Complete the statements as if you were describing yourself to yourself, not to somebody else.

Two independent coders classified responses to the modified TST into one of six groupings: (a) body shape and size (e.g., "I am overweight," "I am out of shape," "I am pudgy around the stomach," "I am tall," "I am flat-chested."); (b) other physical appearance (e.g., "I am blond," "I am ugly," "I am too pale," "I am average-looking."); (c) physical competence (e.g., "I am strong," "I am not strong," "I am energetic."); (d) traits or abilities (e.g., "I am friendly," "I am intelligent," "I am a procrastinator."); (e) states or emotions (e.g., "I am tired," "I am self-conscious," "I am content."), and (f) uncodable or illegible. Interrater agreement was 84.5% for the body shape and size group and 83.8% overall. Analyses were performed on the first rater's codes. (Analyses performed on the second rater's codes yielded an identical pattern of results.)

Body shame. The same strategy used in Experiment 1 to assess the phenomenological aspects of body shame was used again in Experiment 2: We collected ratings of phenomenological items associated with shame and also measured participants' desires to change specific body attributes. This time, however, we used 24 phenomenological items drawn from recent work by Tangney and colleagues aimed at distinguishing shame, guilt, and embarrassment (Tangney et al., 1996). Eight of these new phenomenological items coincided with items used in Experiment 1. The remaining 16 items were among those that distinguished between shame and embarrassment in Tangney et al.'s (1996) report (see Table 2 in particular). Example items include "I can laugh about my feelings right now" versus "my feelings still hurt"; "the feeling is mild" versus "the feeling is extremely intense"; and "I see this situation as funny" versus "I see this situation as serious." Items were rated on 5-point scales anchored by each of the two opposing statements. Internal reliability analysis on this new 24-item shame phenomenology scale revealed that 6 of the 24 items showed negative item-to-scale correlations. With these 6 items excluded, the resulting 18-item scale achieved an alpha coefficient of .82. As in Experiment 1, we created a composite body shame score by combining standardized scores on this new 18-item

⁷ We thank Jennifer Crocker for this suggestion.

scale with the two standardized scores derived from the body-changes items (unmodified from Experiment 1).

Discrete emotions. In addition to the measures of body shame, to further explore the emotional impact of the swimsuit-sweater manipulation and to explore sex differences in the feeling profiles associated with trying on swimwear, we administered Izard's (1977) Differential Emotions Scale (DES) as modified by Mosher and White (1981) to include embarrassment and shy clusters (see also Tangney et al., 1996). We also added one additional item cluster to capture more light-hearted self-conscious emotions (e.g., "I feel silly, awkward, foolish"). Participants were instructed to indicate how much they were experiencing each feeling "right now, as you are wearing this item of clothing and looking at yourself in the mirror." Participants rated 13 clusters of three emotion words (e.g., "ashamed, humiliated, disgraced"; "angry, irritated, annoyed") on a 5-point scale, ranging from 1 (*not at all*) to 5 (*extremely*). The DES allowed us to explore whether the broad affective profiles associated with the swimsuit and sweater conditions were similar or dissimilar for men and women.

Test of math performance. We used a challenging math test composed of 20 multiple-choice word problems drawn from a practice booklet for the Graduate Management Admissions Test (GMAT). We allotted 15 min to work on the test. Use of this test in a previous study (Quinn & Spencer, 1994) showed that men perform significantly better than women given no prior information about the test. Additionally, a meta-analysis by Hyde et al. (1990) found an effect size of .43 favoring men on the 1987 results of the GMAT. The instructions that preceded the math test were similar to the "diagnostic" instructions used in studies of stereotype threat (Spencer et al., in press); participants were asked to "concentrate and take the test seriously" and were told that a fifth of a point would be deducted for each incorrect answer to control for random guessing and "help us in our analysis of your mathematical ability."

Procedure

Participants were tested individually, in 1-hr laboratory sessions. As in Experiment 1, a female experimenter told participants that the study concerned "emotions and consumer behavior," and participants provided informed consent. The same three tasks were used: evaluating a scent, clothing, and food.

The first task of trying on and evaluating the unisex scent was identical to Experiment 1. The second task of trying on and evaluating an item of clothing was slightly modified, although still introduced over headphones to keep experimenters unaware of experimental condition. Female participants were randomly assigned to try on either a one-piece swimsuit (available in six sizes, 4–14) or a V-neck sweater (available in sizes S, M, and L). Male participants were randomly assigned to try on either swim trunks (available in 4 sizes, S–XL) or a crew neck sweater (available in sizes M, L, and XL).

As in Experiment 1, participants completed this portion of the study alone in a dressing room with a full-length mirror. Audiotaped instructions asked participants to look at themselves in the mirror and then complete a packet of questionnaires that contained the measure of body shame, the modified TST, and the modified DES. Next, they received the following instructions:

Often it takes time for people to feel comfortable in a new item of clothing. We are testing whether varying amounts of time to habituate to a new garment might alter people's judgments about the garment or the likelihood of purchasing it. You have been assigned to the "moderate habituation" condition, and this means that we'd like you to continue wearing the garment for at least 15 minutes. We will have more questionnaires for you to complete after the 15 minutes have passed. In the meantime, in order to use the experi-

mental hour efficiently, we ask that you complete the packet marked "2" for an experimenter in the Department of Education.

This packet contained the math test. Participants were told to leave the audiotape on; the tape gave a 2-min warning for the end of the math test and then instructed students to stop working after a total of 15 min. Next, participants completed a brief questionnaire on their math background, including past scores on standardized math tests (SAT [Scholastic Aptitude Test] or ACT [Achievement Test]). Participants then completed a second garment evaluation questionnaire to bolster the cover story. Afterwards, participants redressed and opened the door to signal the experimenter.

Again as in Experiment 1, the third task was a taste test. This time, however, we used Twix candy bars in place of Grandma's chocolate chip cookies. We did this to see if the symbolic restraint evident in Experiment 1 would generalize to another type of food that also came in units of two and therefore presented a symbolic boundary point midway. Again, the food was unwrapped and both candy bars were placed in front of the participant on a plate. A glass of water and a napkin were also provided. Participants were told to "eat as much as you want" and then fill out the accompanying questionnaire; the experimenter then left the room for 3 min.

Following this, participants were queried for suspicions and gently debriefed as in Experiment 1. Before departing, the experimenter asked the participant to stand on a medical scale so that we could measure their weight and height. After participants left, the experimenter measured any uneaten food.

Results

Manipulation Check

Phenomenologically, we expected the swimsuit condition to reduce participants to feeling "I am my body" with special emphasis on body shape and size. Thus, we expected that those in the swimsuit condition would give more responses to the modified TST classified in the body shape and size group. We analyzed the number of body size and shape statements with a $2 \times 2 \times 2$ analysis of covariance (ANCOVA; Experimental Condition \times Trait Self-Objectification \times Sex, with BMI as a covariate). This analysis revealed only a main effect for experimental condition, $F(1, 73) = 8.15, p < .01$, with no main effects for, or interactions with, trait self-objectification, sex, or BMI. Participants in the swimsuit condition, on average, wrote four statements referring to their body's shape and size ($SD = 3.2$, range: 0–14), whereas those in the sweater condition, on average, wrote two statements ($SD = 2.0$, range: 0–10). These findings confirm that—for both women and men—the situation of trying on swimwear produces a sense of self that is defined by one's body, which we interpreted as state self-objectification.

Body Shame

Replicating Experiment 1, we expected self-objectification to produce body shame, but to do so only for women. This time, because trait self-objectification scores were categorical, we adopted an ANCOVA strategy, analyzing body shame scores with a $2 \times 2 \times 2$ ANCOVA (Experimental Condition \times Trait Self-Objectification \times Sex, with BMI as a covariate). As in Experiment 1, BMI predicted body shame ($r = .46, p < .001$), yielding a significant covariate effect, $F(1, 73) = 25.74, p <$

.001. The ANCOVA also revealed main effects for both trait self-objectification, $F(1, 73) = 4.50, p < .05$, and experimental condition, $F(1, 73) = 6.58, p < .05$, which were qualified by a significant three-way Experimental Condition \times Trait Self-Objectification \times Sex interaction, $F(1, 73) = 3.88, p = .05$. Table 3 provides the unadjusted body shame scores for each group. To explore the three-way interaction, we conducted 2×2 ANCOVAs separately by sex. We found that for women, beyond the covariation with BMI, the only significant result was a main effect for experimental condition, $F(1, 37) = 5.83, p < .05$ (see upper half of Table 3). By contrast, for men, beyond the covariation with BMI, the only significant result was a main effect for trait self-objectification, $F(1, 35) = 7.19, p < .05$ (see lower half of Table 3). This pattern suggests that our experimental manipulation of state self-objectification—trying on a swimsuit—produced body shame for women only. Unlike Experiment 1, trait self-objectification did not moderate the degree of body shame reported by women. By contrast, men's reports of body shame were not influenced by whether they wore a swimsuit or a sweater but instead were best predicted by trait self-objectification grouping.

Affect Profiles

The findings reported thus far suggest that trying on swimwear produced state self-objectification in women and men alike but that only for women did state self-objectification produce body shame. We next wished to further explore whether trait and state self-objectification or sex of participant were associated with other affective states in addition to body shame. To do this, we conducted a multivariate analysis of covariance (MANCOVA) on the ratings of the 13 affect clusters of the modified DES using experimental condition, trait self-objectification, and sex as between-subjects variables, and BMI as a

covariate. This test yielded omnibus effects for experimental condition, $F(13, 60) = 2.22, p < .05$, and sex, $F(13, 60) = 2.27, p < .05$, but not for trait self-objectification, BMI, or any interaction effects. Follow-up univariate tests revealed that women and men in the swimsuit condition reported higher levels of feeling "ashamed, humiliated, disgraced" (swimsuit: $M = 1.75, SD = 1.08$; sweater: $M = 1.07, SD = 0.35$), $F(1, 79) = 14.57, p < .001$; "repentant, guilty, blameworthy" (swimsuit: $M = 1.65, SD = 1.65$; sweater: $M = 1.15, SD = 0.57$), $F(1, 79) = 6.13, p < .05$; and "silly, awkward, foolish" (swimsuit: $M = 2.50, SD = 1.26$; sweater: $M = 1.90, SD = 1.14$), $F(1, 79) = 5.03, p < .05$. These findings further support the claim that trying on the swimwear produced self-conscious emotions. In particular, wearing a swimsuit sparked shame, guilt, and feeling silly. Even so, consistent with the speculation that people are reluctant to report feeling shame, mean ratings for these self-conscious emotions were quite low, rarely exceeding "2" on a scale ranging from 1 to 5. We conducted further follow-up univariate tests to explore the omnibus effect for sex. These yielded just one significant effect: Across both experimental conditions, men reported feeling more "sheepish, bashful, shy" than did women (men: $M = 2.23, SD = 1.14$; women: $M = 1.57, SD = 0.91$), $F(1, 79) = 8.35, p < .01$.

Next, to further explore sex differences in the feeling profiles associated with trying on swimwear, we conducted a multivariate analysis of variance (MANOVA) on the DES ratings only for those in the swimsuit condition. This analysis revealed an omnibus effect for sex, $F(13, 26) = 2.13, p < .05$. Follow-up univariate tests revealed that, compared with women, men reported feeling more "sheepish, bashful, shy" (men: $M = 2.32, SD = 1.16$; women: $M = 1.62, SD = 1.02$), $F(1, 38) = 4.08, p = .05$, and marginally more "silly, awkward, foolish" (men: $M = 2.90, SD = 1.29$; women: $M = 2.14, SD = 1.15$), $F(1, 38) = 3.80, p = .06$. By contrast, compared with men, women reported feeling more "disgust, distaste, revulsion" (men: $M = 1.37, SD = 0.68$; women: $M = 2.05, SD = 1.24$), $F(1, 38) = 4.44, p < .05$, and marginally more "angry, irritated, and annoyed" (men: $M = 1.56, SD = 0.85$; women: $M = 2.00, SD = 1.17$), $F(1, 38) = 3.24, p = .08$. Only the sex difference in shyness was also evident in the sweater condition. These findings suggest that, for men, trying on the swimsuit produced a more lighthearted self-conscious state, leaving them feeling shy and silly. Women, by contrast, felt more disgusted and angry in addition to ashamed of their bodies in this same situation. It appears, then, that the self-conscious emotions women experienced were far from lighthearted.

Eating Behavior

We sought to replicate the finding of Experiment 1, showing again that body shame produced in the laboratory predicts restrained eating, this time using Twix candy bars. Inspecting the distribution of the amount of the two candy bars participants ate revealed only two meaningful clusters. One group of participants ($n = 16, 94\%$ women), labeled the restraint group, ate less than one bar, with most ($n = 10$) eating less than half a bar. The remaining participants ($n = 66; 41\%$ women), labeled the no restraint group, ate either exactly one bar ($n = 22$),

Table 3
Unadjusted Means for Body Shame by Trait
Self-Objectification, Experimental Condition,
and Sex in Experiment 2

Trait self-objectification	Experimental condition	
	Swimsuit	Sweater
Women		
Low		
<i>M</i>	1.01	-1.45
<i>SD</i>	2.64	2.35
High		
<i>M</i>	1.47	-0.68
<i>SD</i>	2.80	2.80
Men		
Low		
<i>M</i>	-1.33	-1.09
<i>SD</i>	1.68	1.22
High		
<i>M</i>	1.59	0.10
<i>SD</i>	2.51	2.50

exactly two bars ($n = 41$), or one bar plus part of the second bar ($n = 3$). We did not see evidence of a third group, as in Experiment 1, in which participants left a small amount of the first bar uneaten (i.e., symbolic restraint). Post hoc, we think this is because it takes many fewer bites to finish one Twix bar than it does to finish one cookie the size of those used in Experiment 1. This left less physical space between so-called true and symbolic restrained eating in Experiment 2.

Next, we used logistic regression to predict eating group membership (restraint vs. no restraint) from sex, BMI, body shame, experimental condition, and trait self-objectification. Together, the three predictor variables, sex, body shame, and trait self-objectification, yielded a significant model, $\chi^2(3, N = 82) = 26.46, p < .0001$. The model-predicted odds ratios suggested that (a) compared with men, women were 31.86 times more likely to be in the restraint group than the no restraint group; (b) as body shame increased, participants were 1.30 times more likely to be in the restraint group than the no restraint group; and (c) compared with those scoring low on trait self-objectification, those scoring high on trait self-objectification were 4.23 times more likely to be in the restraint group than the no restraint group. The large odds-ratio for participant sex is not surprising, given that only one male participant exhibited restrained eating. Interestingly, this lone male participant was in the sweater condition and made a point to tell the experimenter that he did not like sweets. Replicating the findings of Experiment 1, experimental condition did not directly predict restrained eating for women, although body shame (produced by experimental condition) did. Unlike Experiment 1, trait self-objectification also emerged as a significant predictor of restrained eating, alongside body shame.

Math Performance

Participants attempted from 5 to all 20 of the math problems in the 15 min allotted ($M = 12.21, SD = 5.10$) and showed no differences by sex or experimental condition on problems attempted. Problems answered correctly ranged from 0 to 18 ($M = 5.39, SD = 3.18$), and corrected for guessing, math performance scores ranged from -2.80 to 17.60 ($M = 4.03, SD = 3.47$).

In testing the effects of self-objectification on math performance, we wished to take into account participants' previous math performance and ability. We did so by using participants' self-reports of past standardized math test performance (either SAT or ACT score, available for all but 9 participants). Not surprisingly, the correlation between math performance in the laboratory (scores corrected for guessing) and past standardized math test performance was significant ($r = .54, p < .001$). As such, we used past math performance scores (standardized) as an additional covariate in the following analysis.

To test the hypothesis that self-objectification would lead to performance decrements for women, we analyzed math scores (corrected for guessing) using a $2 \times 2 \times 2$ ANCOVA (Experimental Condition \times Trait Self-Objectification \times Sex), with both BMI and past math performance scores as covariates. The only significant covariate was past math performance, $F(1, 63) = 29.81, p < .001$. Beyond this, a main effect for sex emerged, $F(1, 63) = 5.26, p < .05$, with men scoring higher than women,

qualified by a Sex \times Experimental Condition interaction, $F(1, 63) = 3.92, p = .05$. Figure 3 illustrates this interaction using means adjusted for past performance on standardized math tests. Analyzing these adjusted means for the simple effects of experimental condition confirmed that, as hypothesized, women in the swimsuit condition performed significantly worse on the math test than did women in the sweater condition, $F(1, 32) = 3.94, p = .056$, whereas men's performance was unaffected by the experimental condition, $F(1, 33) < 1, ns$.

Summary and Discussion

Experiment 2 was undertaken for three reasons. First, we wished to replicate the support that Experiment 1 provided for Hypothesis 1, showing again that self-objectification produces body shame, which in turn predicts restrained eating. Second, we sought to extend our tests of objectification theory into the domain of disrupted attention and mental performance, as predicted by Hypothesis 2. Finally, we wished to examine the sex differences predicted by objectification theory, testing Hypothesis 3, which predicted that the emotional and behavioral effects of self-objectification would be evident only for women but not for men.

The first half of Hypothesis 1 states that self-objectification produces body shame. Data from Experiment 2 support this prediction, albeit in a slightly different form than Experiment 1. Specifically, we found that—for women only—our experimental manipulation of state self-objectification (trying on a swimsuit) produced significantly more body shame than the control condition (trying on a sweater). For whatever reason, trait self-objectification did not moderate the degree of body shame reported by women in Experiment 2: Women who scored low on trait self-objectification reported levels of body shame that were not significantly different from those who scored high on trait self-objectification (although inspection of means in Table 3 reveals that the trend was in the expected direction). This null finding is notable given that we selected participants on the basis of extreme trait self-objectification scores. Post hoc, we wonder whether selecting extreme scores might have drawn some women scoring low on trait self-objectification who had responded defensively. Or perhaps, with some degree of

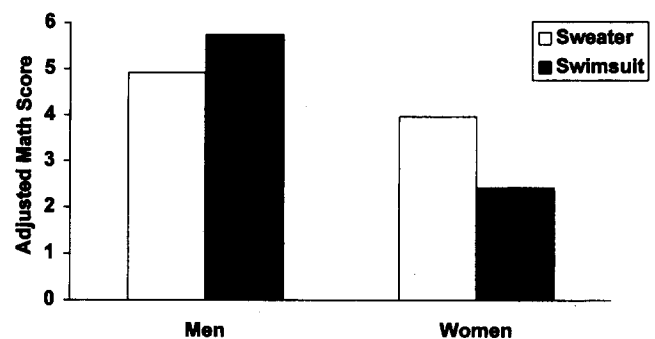


Figure 3. Math performance by experimental condition and sex in Experiment 2. (Means represent math scores corrected for guessing and adjusted for past performance on standardized math tests.)

feminist consciousness raising, these women truly wished to divest themselves from preoccupation with appearance, and yet when in the strong situation of trying on swimwear were not fully able to do so. Future studies will need to disentangle how defensive responding or wishful thinking might affect women's responses to the Self-Objectification Questionnaire. Finally, regional differences between the two samples (Duke University and University of Michigan) cannot be ruled out.

The second half of Hypothesis 1 states that body shame predicts restrained eating. Data from Experiment 2 support this prediction as well, although again the exact pattern of results varies slightly from that of Experiment 1. Specifically, although the category of symbolic restraint did not emerge in Experiment 2 (due, we think, to artifactual differences between Twix and Grandma's cookies), we did find that restrained eating could be predicted by a combination of body shame, trait self-objectification, and participant sex. Like Experiment 1, the overall pattern of results is consistent with the prediction, drawn from objectification theory, that self-objectification produces experiences of body shame in women, which in turn may put them at risk for disordered eating.

In support of Hypothesis 2, we found that women in the swimsuit condition performed worse on the math test than did women in the sweater condition. Although this finding warrants replication, we cautiously interpret it as evidence that state self-objectification does indeed draw on women's attentional resources and disrupt their mental performance.

Hypothesis 3 predicted that the emotional and behavioral consequences of self-objectification predicted for women would not be evident for men. As we have already discussed, trying on a swimsuit produced body shame in women but not in men. Moreover, men seemed to experience the situation as rather light-hearted: Relative to women in swimsuits, men in swimsuits reported feeling more silly, awkward, and foolish and less disgust, distaste, and revulsion. Some were even heard to laugh through the closed dressing room door. Beyond having distinct emotional responses to the laboratory situation, women and men also evidenced distinct behavioral responses. In fact, providing strong support for Hypothesis 3, the behavioral consequences of self-objectification were clearly evident for women and completely absent for men. Only one man, for instance, engaged in restrained eating, and he was in the sweater condition. Likewise, wearing a swimsuit did not disrupt men's performance on the math test. In fact, there was a (nonsignificant) trend for men to perform better on the math test when dressed in less (see Figure 3), calling to mind a self-affirmation interpretation. The consequences of self-objectification, then, do not appear to be part of a general human response to situations that trigger self-consciousness. Rather, the results are consistent with the claim of objectification theory that these consequences appear to be unique to young women socialized in a culture that sexually objectifies the female body.

General Discussion

These first experimental tests of Fredrickson and Roberts's objectification theory (1997) provide support for several of its predictions. First, individuals appear to differ in the extent to

which they self-objectify, defined as appreciating their bodies more from a third-person perspective than from a first-person perspective. Second, women self-objectify more than men, supporting the idea that our culture socializes women to internalize an objectifying observer's perspective on their own bodies. Third, certain situations are more likely to trigger self-objectification than others. Our experiments confirm that trying on a swimsuit is one of these situations. Remarkably, this situation seems to prime a sense of being on display despite the fact that no actual observers are present. Data from the manipulation check suggest that wearing the swimsuit reduced participants to feeling "I am my body"—in effect, that swimsuit becomes you.

Trying on swimwear also led women to feel shame and disgust, whereas this same situation led men to feel shy and silly. Recall that shame has been conceptualized as a failure to meet moral ideals. We interpret the greater shame felt by women as reflecting the greater cultural demands placed on women to meet physical attractiveness ideals.

Inducing state self-objectification also decreased math performance only for women, consistent with the prediction that self-objectification consumes mental resources. Significantly, the performance decrement demonstrated here was in a domain in which there is a gender stereotype favoring men. This raises the possibility that the experimental manipulation differentially called to women's minds the gender stereotype about women's lesser math ability (perhaps wearing a swimsuit reminded them that they are women). This, in turn, might have induced the effects of stereotype threat for women in the swimsuit condition. We see this as an unlikely alternative explanation for our findings. First, we think it improbable that women in the sweater condition were unaware of the gender stereotype regarding math: Spencer et al. (in press) have found that women underperform on advanced math tests relative to equally qualified men even when no explicit mention is made of gender differences in performance on the test. This suggests that women do not need to be reminded that they are women or about gender stereotypes in math to show the effects of stereotype threat. As such, we believe that all of our female participants—those wearing sweaters and those wearing swimsuits—were performing under stereotype threat conditions. Those wearing the swimsuit, we would argue, face the added burdens associated with self-objectification, and it is these added burdens that account for their more extreme deficits in performance. Certainly, additional experiments that examine performance in other cognitive domains can resolve this issue. Objectification theory predicts that the performance decrements caused by state self-objectification will prove to be domain-general and not specific to gender-stereotyped domains.

If future studies confirm that state self-objectification does indeed disrupt advanced math performance for girls and women, then one practical application of our work would be to minimize opportunities for state self-objectification while adolescent girls are learning advanced math. This could be done by offering single-sex math classes, thereby limiting the chances for sexualized interactions in the learning context. Schools that have made this change report that girls in the single-sex math classes (relative to girls in the mixed-sex classes) feel less self-conscious

and improve their math performance substantially (Rutti, 1997). Although this intervention only addresses one problem stemming from self-objectification, it does have the potential to benefit the current generation of adolescent girls.

Finally, both experiments supported the prediction that restrained eating can be linked to the body shame caused by self-objectification. Moreover, these connections were evident only for women and not for men. Although refraining from eating a whole cookie or candy bar in a laboratory setting may seem like a small behavioral outcome, objectification theory proposes that experiences like body shame and actions like restrained eating can accumulate and compound and thereby contribute to women's lifetime risks for certain psychological and physical disorders. We have argued, for instance, that because the shame women feel about their bodies is experienced as chronic and largely uncontrollable, it may contribute to sex differences in rates of depression (Fredrickson & Roberts, 1997). Likewise, restrained eating often becomes a way of life for girls and women, reflecting the normative discontent felt about their bodies (Rodin, Silberstein, & Striegel-Moore, 1984). Habits of restrained eating, in turn, put some girls and women at risk for developing formally recognized eating disorders of anorexia nervosa or bulimia nervosa (Killen et al., 1994; Polivy & Herman, 1995). Our data, then, add to the evidence that self-objectification may be a psychological risk factor for disordered eating (McKinley & Hyde, 1996; Noll & Fredrickson, in press).

Connections and Future Directions

The consequences of the cultural practices of sexually objectifying women's bodies are not limited to problems for girls and women. Men are also negatively affected, in ways they may not even realize. For instance, across a series of experiments, Kenrick and colleagues have shown that men exposed to pictures of highly attractive women view the women with whom they are romantically involved as less attractive (Kenrick, Gutierrez, & Goldberg, 1989) and their romantic relationships as less satisfying and less committed (Kenrick, Neuberg, Zierk, & Krones, 1994). Relatedly, Rudman and Borgida (1995) primed men to view women as sex objects by exposing them to sexually objectifying ads for products such as beer, cologne, and cars. Compared with men primed with nonobjectifying ads, these men responded faster to sexist words, selected more sexist questions to ask a female job candidate, and were rated as behaving in a more sexualized and inappropriate way. Together with the ideas put forth in objectification theory, these experiments demonstrate that sexually objectifying images of women can have adverse effects for both women and men, albeit in different domains and through different pathways.

It is important to note that our own experiments began from the assumption that self-objectification exists, both as a meaningful individual-difference variable and as a state that can be triggered by particular situations. Although our data do support the existence of self-objectification, they do not speak to its origins. Future studies will be needed to test the hypothesized link between girls' and women's exposure to sexually objectifying messages and the onset of self-objectification. It will also be useful to step back even further to examine the origins of

cultural practices of sexually objectifying women's bodies. Although the visual mass media clearly fans the flames, severely aggravating the damage done, we see advertising as a reflection of cultural practices, not as their root cause. Rather, the sexual objectification of women is one of many cultural practices indicative of patriarchy (Connell, 1987; A. Kuhn, 1985; Stoltenberg, 1989). Smuts (1994), a feminist evolutionary biologist, traces the origins of patriarchy to the different and often competing reproductive interests of males and females. Looking more closely at the meanings assigned to women's bodies, other evolutionary theorists have argued that women's physical attractiveness and body shape (e.g., waist-to-hip ratio) indirectly signal their reproductive potential (Buss, 1989; Singh, 1993), suggesting a plausible evolutionary cause for men's and women's preoccupation with women's bodies.

Final Words

According to objectification theory, the first psychological consequence of sexually objectifying treatment is self-objectification. The concept of self-objectification recasts women's greater concern with their physical appearance as a survival tactic rather than a mere preference or "natural" trait such as vanity. Like any survival tactic, self-objectification has its benefits, as evidenced by the superior life outcomes experienced by women deemed attractive. Yet it also has its costs. We have demonstrated that experimentally induced self-objectification causes women (but not men) to (a) experience shame about their bodies, which in turn predicts restrained eating; and (b) perform more poorly on an advanced math test. These emotional and behavioral repercussions of self-objectification begin to document the psychological costs of raising girls in a culture that persistently objectifies the female body. If empirical studies continue to uphold the predictions of objectification theory, then sociocultural intervention may be warranted. If we could change, or at least diversify, the meanings our culture assigns to women's bodies, then perhaps more girls and women could experience their bodies not as objects to be appreciated by others, but rather more directly, with a sense of efficacy and empowered subjectivity.

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(Appendix follows)

Appendix

The Self-Objectification Questionnaire

We are interested in how people think about their bodies. The questions below identify 10 different body attributes. We would like you to *rank order* these body attributes from that which has the *greatest impact* on your physical self-concept (rank this a "9"), to that which has the *least impact* on your physical self-concept (rank this a "0").

Note: It does not matter *how* you describe yourself in terms of each attribute. For example, fitness level can have a great impact on your physical self-concept regardless of whether you consider yourself to be physically fit, not physically fit, or any level in between.

Please first consider all attributes simultaneously, and record your rank ordering by writing the ranks in the rightmost column.

IMPORTANT: *Do Not Assign The Same Rank To More Than One Attribute!*

9 = greatest impact
 8 = next greatest impact
 :
 1 = next to least impact
 0 = least impact

When considering your *physical self-concept* . . .

1. . . .what rank do you assign to *physical coordination*? _____
 2. . . .what rank do you assign to *health*? _____
 3. . . .what rank do you assign to *weight*? _____
 4. . . .what rank do you assign to *strength*? _____
 5. . . .what rank do you assign to *sex appeal*? _____
 6. . . .what rank do you assign to *physical attractiveness*? _____
 7. . . .what rank do you assign to *energy level (e.g., stamina)*? _____
 8. . . .what rank do you assign to *firm/sculpted muscles*? _____
 9. . . .what rank do you assign to *physical fitness level*? _____
 10. . . .what rank do you assign to *measurements (e.g., chest, waist, hips)*? _____
-

In administering the measure, the title is not included. Scores are obtained by separately summing the ranks for appearance-based items (3, 5, 6, 8 and 10) and competence-based items (1, 2, 4, 7 and 9), and then subtracting the sum of competence ranks from the sum of appearance ranks. Scores may range from -25 to 25, with higher scores indicating a greater emphasis on appearance, interpreted as higher trait self-objectification. Copyright 1998 by Barbara L. Fredrickson. Individuals who wish to reprint all or part of the Self-Objectification Questionnaire should contact Barbara L. Fredrickson.

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