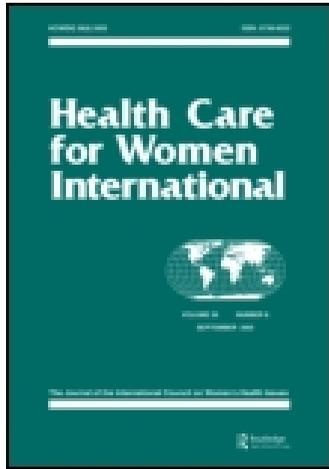


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Sociocultural Attitudes Surrounding Menstruation and Alternative Menstrual Products: The Explanatory Role of Self-Objectification

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We extend objectification theory research to consider the relationship between self-objectification and attitudes toward an alternative menstrual product in a diverse sample of female undergraduates from the United States (N = 151). We use a survey design to investigate attitudes toward one's menstruation as a potential mechanism that may explain this relationship. Reactions to an alternative menstrual product were predominantly negative, supporting prior research on stigma and shame surrounding menstruation. Exploratory structural equation modeling revealed attitudes toward one's menstruation mediated the relationship between self-objectification and participants' reactions to an alternative menstrual product. Implications for women's health are discussed.

Although nearly all women throughout the world will menstruate at some point in their lives, widespread negativity and stigma surrounding menstruating women and menstrual blood has been apparent across many cultures and contexts (Bramwell, 2001; Delaney, Lupton, & Toth, 1988; Johnston-Robledo & Chrisler, 2013). Although the messages women receive may vary by culture and location, and the sources may range from religion to objectifying media (Dunnivant & Roberts, 2013; Erchull, 2013), the resulting menstrual proscriptions, restrictions, and taboos influence women's and girl's experiences with their bodies and bodily functions globally. In the current study we use *objectification theory* (Fredrickson & Roberts, 1997; McKinley & Hyde, 1996) to examine whether negative sociocultural attitudes surrounding

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menstruation influence reactions to an alternative menstrual product among a diverse sample of female undergraduates from the United States.

Recently, there has been growing international interest in the menstrual cup, a healthy nondisposable alternative to tampons (e.g., Averbach, Sahin-Hodoglugil, Musara, Chipato, & van der Straten, 2009; Cheng, Wilansky, Kung, Shime, & Hannah, 1995; North & Oldham, 2011; Oster & Thornton, 2011; Stewart, Greer, & Powell, 2010). Although disposable products like tampons are used widely throughout the world, they are associated with potential health consequences for women. For instance, use of tampons has been linked to toxic shock syndrome (Reingold, 1991; Vostral, 2011), vaginal dryness and ulcers (Friedrich, 1981), and exposure to dioxins (a known carcinogen), pesticides, and neurotoxins (Dudley, Nassar, & Hartman, 2009). Disposable menstrual products also pollute the environment, thereby indirectly affecting women's health (Dudley et al., 2009; Ocean Conservancy, 2009). Moreover, even when desired, access to disposable products is limited in many parts of the world, forcing women and girls to choose unhygienic practices or forgo schooling during menstruation (Bharadwaj & Patkar, 2004; Ten, 2007).

Despite the potential for reusable menstrual products to address these concerns, sociocultural attitudes about women's bodies and menstruation may deter many women from using alternative products that require more contact and acceptance of the body. Given the potential health and economic benefits of using alternative products, it remains unclear why the menstrual cup is not more widely used by women around the world. Although we approach this topic from a Western perspective, because the menstrual cup is a substitute for disposable products and may encourage positivity about the body and bodily functions, the findings may have implications for women's health internationally.

Objectification Theory and Menstruation

Objectification theory is a framework for understanding how women internalize cultural messages surrounding women's bodies and attempt to conform in an effort to gain rewards and avoid negative consequences (Bartky, 1990; Fredrickson & Roberts, 1997; McKinley & Hyde, 1996). In particular, the authors of objectification theory argue that learned cultural practices of sexual objectification lead girls and women to *self-objectify* or, in other words, to adopt a view of themselves as objects that are valued based on appearance. Specifically, scholars have argued that various aspects of natural female development (e.g., weight gain during puberty, menstruation) set girls' and women's bodies apart from the sexualized ideal that is perpetuated through cultural images (Grabe, Hyde, & Lindberg, 2007). As such, women who have internalized society's values about their bodies are more likely to vigilantly

monitor these aspects of their physical appearance (e.g., Moradi, Dirks, & Matteson, 2005). Since the formal proposal of objectification theory, a wealth of empirical support has accumulated that demonstrates self-objectification is linked to many negative consequences for women including eating-disorder symptoms (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; McKinley & Hyde, 1996), depression and anxiety (Choma, Shove, Busseri, Sadava, & Hosker, 2009; Grabe et al., 2007), risky sexual behavior and lower sexual assertiveness (Schooler, Ward, Merriweather, & Caruthers, 2005), impaired cognitive performance (Fredrickson et al., 1998), and body shame (Noll & Fredrickson, 1998; Tiggemann & Boundy, 2008).

Despite a growing body of literature examining self-objectification and related consequences, there has been little attention paid to the link between self-objectification and attitudes or behaviors surrounding menstruation. Yet, historically, women's unique reproductive capacities, especially their menstrual cycle, have been used to stigmatize and devalue them (Berg & Coutts, 1994; Bramwell, 2001; Coutts & Berg, 1993; Delaney et al., 1988; Erchull, 2013; Johnston-Robledo & Chrisler, 2013; Merskin, 1999; Roberts, Goldenberg, Power, & Pyszczynski, 2002; Simes & Berg, 2001; Thornton, 2013). In a contemporary context, menstrual product advertisements are a predominant source of negativity because they perpetuate the message that a menstruating body is the antithesis of the sexualized, feminine ideal body (Berg & Coutts, 1994; Bramwell, 2001; Brumberg, 1993; Coutts & Berg, 1993; Merskin, 1999; Raftos, Jackson, & Mannix, 1998; Simes & Berg, 2001). Feminist scholars suggest that the meanings attributed to women's bodies and their functions are shaped by cultural practices and discourses that impact gendered experiences (Bartky, 1990; Fredrickson & Roberts, 1997). Thus, to the extent that menstruation is viewed as an embarrassing and shameful problem needing active management through a variety of disposable products (Berg & Coutts, 1994; Coutts & Berg, 1993; Merskin, 1999; Simes & Berg, 2001), it is conceivable that societal messages surrounding the natural female body influence women's attitudes about their menstruation and choice of menstrual products.

In the few studies that have examined these ideas, researchers have found that self-objectification is related to negative attitudes toward menstruation such as loathing, annoyance, disgust, and self-consciousness (Johnston-Robledo et al., 2003; Johnston-Robledo, Sheffield, Voigt, & Wilcox-Constantine, 2007; Roberts, 2004). There is also evidence that women's attitudes toward, and shame about, menstruation are related to body self-consciousness and body comfort (Schooler et al., 2005). Thus, it would seem that for women to live up to sexualized ideals, they must adopt a menstrual etiquette that reinforces fear about the female body and its functions (Johnston-Robledo et al., 2007; Merskin, 1999; Roberts, 2004; Simes & Berg, 2001). To date, however, these links have received limited empirical attention.

Self-Objectification and Ethnicity

One problem with the existing research on self-objectification is that most studies have been conducted in samples of predominately White women, with little focus on ethnic similarities or differences. It is possible that women from different ethnic categories may vary in the extent to which they objectify themselves, in part, because socially constructed meanings attributed to bodies depend on cultural and social group context (Chrisler & Zittel, 1998; Grabe & Hyde, 2006). It is also possible that the social construction of menstruation is pervasive enough that nearly all women in the United States will internalize similarly negative messages. Although investigation in this area has been limited, there is evidence that White women report higher levels of self-objectification than Asian American women (Grabe & Jackson, 2009) and that Latinas report higher levels of self-objectification than Black, Asian American, or White women (Hebl, King, & Lin, 2004). Despite these potential mean differences, there is robust evidence from the United States and Canada that self-objectification is related to shame among Black, Asian American, Latina, and White women, suggesting that across racial and ethnic identities women report negative consequences of self-objectifying (e.g., Choma et al., 2009; Fredrickson et al., 1998; Hebl et al., 2004; Roberts & Gettman, 2004).

Even less research exists about attitudes toward menstruation among ethnically diverse groups of women. The links reported earlier among self-objectification, body comfort, and negative attitudes and emotions about menstruation have been investigated among samples of predominantly White women (e.g., Johnston-Robledo et al., 2007). Research including women of color complicates this picture. Although Asian American undergraduate women reported less openness and more shame about menstruation than White women in a study conducted in the Midwestern United States (Schooler et al., 2005), in a study conducted in Hawai'i, Asian American women and women of other/mixed ethnicities chose more positive words to describe menstruation than White women (Morrison, Sievert, Brown, Rahberg, & Reza, 2010). In yet another study, White and Black adolescent girls reported similar attitudes toward menstruation (White, 2013). Given that exposure to societal messages surrounding feminine ideals and menstruation is inevitable in the lifecycle of nearly all women, limited attention to women of color in this literature is problematic.

The Current Study

To our knowledge no scholars have explicitly examined reactions to alternative, reusable menstrual products using the objectification theory paradigm. We were particularly interested in the menstrual cup, an alternative menstrual product that has been patented since 1937 yet has only recently gained a substantive consumer base, with multiple brands sold in the United States,

Canada, and Europe (Finley, 2006). The menstrual cup requires more comfort and direct physical contact with the body and menstrual blood than most mainstream disposable products (e.g., tampons with an applicator), which encourage distancing from the subjective experience of menstruation. Although preliminary studies suggest that women's concerns surrounding messiness and touching the menstruating body may be prohibitive to using the menstrual cup, they lack a sociocultural explanation surrounding women's choices (e.g., Cheng et al., 1995; North & Oldham, 2011; Stewart, Powell, & Greer, 2009).

The aim of the present study was to investigate a diverse sample of college-aged women's attitudes toward the menstrual cup and the psychosocial correlates of these attitudes. In this study we aimed to address the following hypotheses: (a) women's attitudes and reactions toward the menstrual cup will not differ by ethnicity, and (b) self-objectification will be indirectly related to negative reactions toward the menstrual cup through its relationship to women's negative attitudes toward their menstruation.

METHOD

Participants

Female students at a large public university in California were recruited to take part in a study called "Personality, Attitudes, and Product Evaluation" via the Psychology Department's online participant pool system. Participants under age 18 were excluded from eligibility. Participants ranged in age from 18 to 23 ($M = 19.33$, $SD = 0.93$). Forty-two percent of participants identified as White ($n = 64$), 22% as Asian American ($n = 32$), 22% as Latina ($n = 33$), 13% as Other ($n = 19$), and 2% as Black or American Indian ($n = 3$). Slightly over half (57%) had parents who attended college, suggesting participants had a range of socioeconomic statuses. Only 33% of the sample had heard of the menstrual cup prior to the survey, despite the fact that menstrual cups have been around for over 70 years (Finley, 2006). Data were screened for missing scores and errors, resulting in a final sample of 151 women.¹

Procedure and Materials

Participants came to the lab for individual research sessions. A female research assistant informed participants: "The purpose of this study is to explore personality, attitudes, and product evaluations. This is an opportunity to evaluate products that are outside of the mainstream and to express your opinion." Participants gave written informed consent and received course credit.

Materials (approved by the institutional review board) were administered in three stages in order to reinforce the cover story about new product

evaluations and to obscure the focus on menstruation and the menstrual cup. Respondents first filled out measures of self-objectification and demographics. For the second part of the study, participants opened a box containing a glass water bottle that served as a “cover” consumer product, read the product description, and then completed a product evaluation questionnaire. For the third part, participants opened a box containing a menstrual cup and read the product description before filling out a menstrual cup product evaluation and a measure of attitudes toward one’s menstruation. In the menstrual product condition, participants also filled out menstrual history questions (i.e., description of flow). Finally, participants were debriefed about the study purpose.

Demographics. We collected information on participants’ age in years and self-identified ethnicity from among the following categories: White, Asian American, Latina, Black/African American, American Indian/Alaskan Native, and Other (open-ended response option). Dichotomous information on parents’ education was collected as a proxy for socioeconomic status (1 = parents went to college, 0 = parents did not go to college).

Self-objectification. Self-objectification was measured using the Self-Objectification Questionnaire (SOQ), which assesses the relative importance of appearance-related (objectified) and competence-related (nonobjectified) attributes (Noll & Fredrickson, 1998). The SOQ contains 10 body attributes: five that are appearance related (e.g., weight) and five that are competence related (e.g., energy level; Fredrickson et al., 1998). Participants were instructed to rank the attributes in order of importance to their physical self-concept. Scores were calculated by subtracting the sum of the ranked competence items from the sum of the appearance items. Positive values indicated a predominant focus on appearance; negative values indicated a predominant focus on the functionality of one’s body.

Attitudes about menstruation. The Menstrual Self-Evaluation Scale (MSES) was used to assess participants’ attitudes about their menstruation (Roberts, 2004). Respondents indicated how much they agreed with statements like, “I avoid touching my genital region when I am menstruating” on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Item scores were summed so higher scores indicated more negative attitudes about one’s menstruation ($\alpha = .82$).

Attitudes and knowledge about the menstrual cup. A product evaluation of the menstrual cup was created for the current study. Participants were asked if they had heard of the menstrual cup prior to the study. Then, to assess willingness to use the product, participants were asked three questions, each on a 5-point scale: “Would you use the menstrual cup if provided to you?” (from 1 [*definitely would*] to 5 [*definitely would not*]); “Based on the description, would you buy the menstrual cup if priced within your budget?” (from 1 [*very unlikely*] to 5 [*very likely*]); and “Would you recommend the menstrual cup to a friend or acquaintance?” (from 1 [*definitely will*] to

5 [*definitely will not*]). To assess ratings of the menstrual cup, participants were asked, "Overall, how do you rate the quality of the menstrual cup?" and "How favorable is your overall reaction to the menstrual cup?" each on a 5-point scale ranging from 1 (*poor*) to 5 (*excellent*). Some questions were reverse-coded such that higher scores on each individual item reflected more positive reactions to the menstrual cup. Finally, participants were asked if there was anything they would change about the menstrual cup (open-ended).

Data Analyses

Preliminary quantitative data analyses were conducted including descriptive statistics, Chronbach's alpha, multivariate analyses of variance (MANOVA), multivariate analyses of covariance (MANCOVA), and Pearson r correlations. For all group difference tests, data from women identifying as "other," Black, and American Indian were dropped due to small group size. Univariate tests were conducted using Bonferroni corrections for multiple comparisons. Correlations were used to explore relationships among demographics, sociocultural variables, and menstrual cup ratings and to determine the selection of covariates for path analysis.

We conducted a structural equation modeling (SEM) analysis with Mplus 6.11 using maximum likelihood estimation to explore relationships between study variables and the presence of indirect effects (Muthén & Muthén, 2010). SEM allowed us to explore multiple direct and indirect relationships simultaneously. Goodness-of-model-fit was assessed using the nonsignificant χ^2 goodness-of-fit statistic with a χ^2 lower than double the df (Tabachnick & Fidell, 1996), the comparative fit index (CFI) of 0.95 or greater (Hu & Bentler, 1999), and the root mean squared error (RMSEA) of approximation values less than 0.08 with a 90% confidence interval that encompasses 0.05 (MacCullum & Austin, 2000). In order to establish a significant indirect relationship from self-objectification to menstrual cup ratings, the following criteria were necessary: (a) the independent variable (i.e., self-objectification) must be significantly related to the process variable (i.e., attitudes toward one's menstruation); (b) the hypothesized process variable must predict the outcomes (i.e., menstrual cup ratings); and (c) a product of coefficients test is significant, in which a calculated indirect effect is divided by a standard error (MacKinnon, 2000; Sobel, 1990).

RESULTS

Preliminary Findings

Examination of the descriptive statistics suggests that responses to the menstrual cup were predominately negative, with the highest average score just surpassing the scale midpoint (see the top portion of the right-hand columns in Table 1). The three items that would require the most personal

TABLE 1 Correlations Among Study Variables and Their Means, Standard Deviations, and Scale Ranges ($N = 151$)

Variables	Pearson Correlations							Range			
	1	2	3	4	5	6	7	Mean	SD	Scale	Actual
Cup ratings											
1. Would rec.	–	.65***	.71***	.52***	.71***	-.15 [†]	-.16*	2.53	1.00	1–5	1–5
2. Would buy		–	.82***	.49***	.72***	-.11	-.29***	1.99	1.21	1–5	1–5
3. Would use			–	.56***	.78***	-.14 [†]	-.30***	2.09	1.14	1–5	1–5
4. Quality				–	.68***	-.13	-.22**	2.45	0.93	1–5	1–5
5. Reaction					–	-.17*	-.29***	2.00	0.98	1–5	1–5
Sociocultural											
6. SOQ						–	.26***	-0.23	13.08	-25–25	-25–25
7. MSES							–	62.42	12.47	15–105	23–96

Note: Rec. = recommend; SOQ = Self-Objectification Questionnaire; MSES = Menstrual Self-Evaluation Scale.
[†] $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

TABLE 2 Frequency of Responses to Menstrual Cup Ratings ($N = 151$)

Variables	Frequency	%
Would recommend		
Definitely will not	28	18.5
Probably will not	41	27.2
Not sure	58	38.4
Probably will	22	14.6
Definitely will	2	1.3
Total	151	100.0
Would buy		
Very unlikely	77	51.0
Somewhat unlikely	26	17.2
Not sure	28	18.5
Somewhat likely	13	8.6
Very likely	7	4.6
Total	151	100.0
Would use		
Definitely would not	58	38.4
Probably would not	49	32.5
Might or might not	23	15.2
Probably would	15	9.9
Definitely would	6	4.0
Total	151	100.0
Quality		
Poor	24	15.9
Fair	57	37.7
Good	53	35.1
Very good	14	9.3
Excellent	3	2.0
Total	151	100.0
Reaction		
Poor	55	36.4
Fair	54	35.8
Good	33	21.9
Very good	5	3.3
Excellent	4	2.6
Total	151	100.0

commitment (i.e., likelihood of using or buying the menstrual cup, and overall reaction to it) had the lowest average scores. As can be seen in Table 2, only 13.2% of respondents indicated that they would be somewhat or very likely to buy the menstrual cup if priced within their budget, with a similar percentage (13.9%) reporting that they would probably or definitely use the menstrual cup if it was provided to them. Slightly over one-quarter (27.8%) of participants had overall reactions to the menstrual cup ranging from good to excellent. Thus, consistent with prior research, overall ratings of the menstrual cup suggested that women's evaluations of the product may be prohibitive to its use.

We analyzed the open-ended question asking participants what they would change about the menstrual cup to further explore nuances in women's attitudes toward the menstrual cup. Responses fell predominantly

into three categories: *changes to address discomfort*, *changes to address functional difficulty*, and *total dismissal*. Seventy-two participants (48%) wrote responses related to the presumed discomfort of the menstrual cup, reporting the menstrual cup should be smaller, thinner, or a different shape. Other participants were concerned that the menstrual cup seemed difficult to use and might leak (10%, $n = 15$). Interestingly, 21 participants (14%) rejected the entire concept of the menstrual cup. For example, when asked if there was anything she would change, one participant reported, "Everything. Shouldn't exist. Never would use this or suggest it. Feels terrible." Another said, "I honestly just don't like the idea. I would feel weird using it. :(" Yet another suggested that everything should change because, "It is gross and dangerous!" The use of emoticons and exclamations underscores what appeared to be strong visceral reactions on the part of some women.

Group Differences

To begin to better understand the sociocultural reasons for women's rejection of a menstrual cup, we first examined ethnic group differences on the study variables. First, we conducted a MANOVA on background variables of interest (age and prior awareness of the menstrual cup). There was a significant multivariate effect (Wilks' lambda = .813, $F(4, 250) = 6.83$, $p = .000$; multivariate $\eta^2 = .10$), suggesting that White participants were slightly older than Latina and Asian American participants (the mean difference was less than 1 year in each case) and that White participants were more likely than their Latina and Asian American counterparts to have previously heard of the menstrual cup. Age and prior awareness were then entered as covariates in a MANCOVA exploring potential ethnic group differences on the set of study variables (self-objectification, attitudes toward one's menstruation, and the five menstrual cup ratings). A multivariate main effect for ethnicity (Wilks' lambda = .750, $F(14, 236) = 2.61$, $p = .002$) demonstrated a small effect size (multivariate $\eta^2 = .13$). Follow-up univariate tests revealed that the only group difference based on ethnicity was for self-objectification, whereby White participants reported higher levels than Latina and Asian American participants. There were no group differences demonstrated for attitudes toward one's menstruation or ratings of the menstrual cup based on ethnicity. Because there were no differences based on the hypothesized outcome variables, and because Fisher's z tests indicated that the pattern of correlations between study variables did not vary across ethnic groups, we conducted all subsequent tests with the complete sample.

The Relation Between Self-Objectification and Menstrual Cup Ratings: Path Analysis

To test whether self-objectification might explain the negative ratings of the menstrual cup, we constructed a path diagram that details the hypothesized

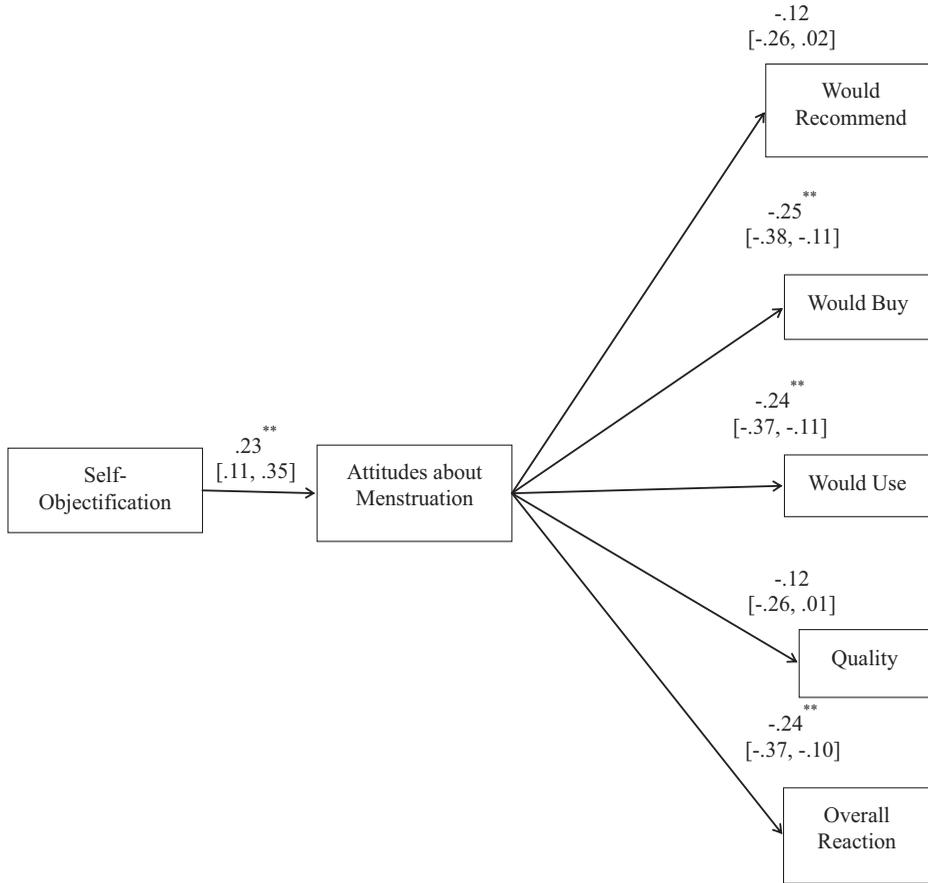


FIGURE 1 Proposed model of indirect effects with standardized path estimates (90% confidence intervals in brackets). Note: $**p \leq .01$.

pathways from self-objectification to menstrual cup ratings (see Figure 1). As Figure 1 shows, self-objectification was hypothesized to directly predict negative attitudes toward one's menstruation, which were, in turn, hypothesized to directly predict the menstrual cup ratings. Based on a pattern of correlations, age was entered as a covariate in the path from self-objectification to attitudes toward one's menstruation, and age and prior knowledge of the menstrual cup were covariates in the paths from attitudes toward one's menstruation to the menstrual cup ratings.

As indicated by the standardized path estimates in Figure 1, all hypothesized paths were significant with the exception of those linking attitudes toward one's menstruation with likelihood of recommending the cup and perceived quality of the cup. As predicted, higher levels of self-objectification were related to more negative attitudes toward one's menstruation, which was, in turn, negatively related to women's own probable purchase or use

of the product, as well as overall negative reactions to it. The fit statistics demonstrated that the hypothesized model fit the data well ($\chi^2(6) = 10.89$, $p = .092$, CFI = .991, RMSEA = .073 [.000, .142]). In order to examine whether self-objectification could indirectly explain women's negative ratings of the menstrual cup, several tests of indirect effects were conducted to examine the role of women's attitudes toward their menstruation in the process. Results demonstrated that an indirect relation between self-objectification and the negative likelihoods of buying or using the menstrual cup, as well as overall negative reactions, could be explained by women's negative attitudes toward their own menstruation ($t = -2.13$, $p = .033$; $t = -2.11$, $p = .035$; and $t = -2.09$, $p = .037$, respectively). In other words, self-objectification was related to women's reactions to the alternative product, in part, because of how self-objectification functions to influence women's attitudes about menstruation.

DISCUSSION

To our knowledge no other researchers have explicitly examined reactions to alternative menstrual products in relation to social psychological theory. Our findings support the hypothesis that self-objectification helps explain why women would reject a product that requires contact and comfort with the body. In particular, attitudes toward one's menstruation predicted a differential pattern of cup ratings such that those linked to one's personal behavior (i.e., purchase or use) were indirectly explained by self-objectification, whereas those not related to personal use (i.e., recommendation or quality ratings) were not explained by this model. Thus, this study adds to the increasing evidence demonstrating that internalization of sexually objectified ideals of the body has a number of consequences for women.

In particular, in the current study we expand objectification research to demonstrate not only that self-objectification predicts attitudes about natural bodily functions like menstruation, but may also predict future choices and behavior. We suggest that an objectified perspective on the body could deter women from adopting the menstrual cup precisely because it requires more comfort and familiarity with their natural menstrual blood, unabsorbed into disposable products. Moreover, the self-objectifying perspectives that inform negative attitudes about one's menstruation would appear to prohibit women from using the cup, even though it is an alternative that is as, or more, physically healthy than tampons (Howard et al., 2011; Karnaky, 1962; Liswood, 1959; Peña, 1962; Tierno & Hanna, 1994).

The current study, unlike the bulk of examinations investigating self-objectification, was conducted on an ethnically diverse sample. Although our data support prior research suggesting that White women tend to self-objectify more than women from other ethnic backgrounds (Grabe &

Jackson, 2009), we found more ethnic similarities than differences for the remaining study variables. Specifically, we found that women from all subgroups report comparably negative attitudes toward their own menstruation and were equally likely to report negative evaluations of the menstrual cup. Given the pervasiveness of negativity surrounding menstruation in U.S. cultural discourse, lack of ethnic group differences is not entirely surprising. Nevertheless, these findings counter prevailing stereotypes suggesting that ethnic minority women are buffered from the deleterious effects of the mainstream thin ideal because of their ethnic identity (Grabe & Hyde, 2006).

Despite the predominately negative overall reactions, the range of responses suggests that some women may be willing and able to adopt the menstrual cup. For instance, in our study, age was related to positivity toward the menstrual cup, suggesting that as women gain experience with menstrual periods and menstrual management products, they may become more open to alternatives. This is consistent with prior research that has found negative attitudes about menstruation decline with age (Morrison et al., 2010; Stoltzman, 1986). Although the age range in our study was limited, this finding suggests a promising area for future study. Similarly, given the finding that women who had heard of the menstrual cup prior to the study reported more positive evaluations of it, we suspect that education about, and awareness of, alternative menstrual products may be a promising strategy for challenging widespread resistance to products such as the menstrual cup.

Limitations

The generalizability of these findings is limited by reliance on an undergraduate population from one geographic region in the United States. Therefore, as with many other investigations, we should exercise some caution when generalizing the relationships among self-objectification, negative attitudes toward one's menstruation, and reactions to the menstrual cup. Because the devaluation of women's bodies manifests differently across cultures, other variables related to menstrual attitudes that we did not measure, such as religion (Dunnivant & Roberts, 2013), relationship status (Dunnivant & Roberts, 2013), urbanity (Marván & Trujillo, 2009), and socioeconomic status (White, 2013) may influence attitudes toward alternative menstrual products like the menstrual cup. Nevertheless, because negative attitudes toward menstruation are evident cross culturally, these processes should be explored in many diverse samples. The findings may also be considered exploratory in nature, in part, because of the measures employed. In particular, only five questions about the menstrual cup were asked. Thus, further research is necessary to replicate our findings and expand the investigation of alternative menstrual products.

CONCLUSION

In the current study we provide some of the first evidence that women's opinions about the menstrual cup are related to sociocultural factors. As argued by Coutts and Berg (1993), many women adopt an androcentric view of menstruation characterized by stigma, negativity, and sexual objectification related to menstruation. We suggest that, as a result, women may be inadvertently putting their physical health at risk by using disposable products because alternatives require more contact and comfort with the body and menstrual blood. It is possible that processes interrupting the experience of self-objectification may free women to make more healthy choices regarding their menstrual products.

Because negativity about menstruation is socially constructed, it can also be challenged and transformed (Johnston-Robledo & Chrisler, 2013). Experiencing positivity about the body and bodily functions effectively challenges socially constructed menstrual negativity and sexualized ideals. Although not explored in the current study, use of alternative menstrual products could be a strategy in line with efforts to actively resist social standards of beauty and femininity and mainstream menstrual etiquette that has implications for women's psychological and physical health (e.g., Bobel, 2006).

NOTE

1. One hundred and sixty-eight women participated, and we subsequently excluded five women who reported having used the menstrual cup and 12 women who were missing scores on the measure of self-objectification from analyses. Mean substitution was used for missing data for participants' age ($n = 3$), likelihood of using the cup ($n = 1$), overall reaction to the cup ($n = 1$), and quality ratings ($n = 6$). Analyses were run with and without mean substitution and the results were the same.

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REFERENCES

American Psychological Association. (2007). *Report of the APA task force on the sexualization of girls*. Washington, DC: Author.

- Averbach, S., Sahin-Hodoglugil, N., Musara, P., Chipato, T., & van der Straten, A. (2009). Duet (R) for menstrual protection: A feasibility study in Zimbabwe. *Contraception*, *79*, 463–468. doi:10.1016/j.contraception.2008.12.002
- Bartky, S. L. (1990). *Femininity and domination: Studies in the phenomenology of oppression*. New York, NY: Routledge.
- Berg, D. H., & Coutts, L. (1994). The extended curse: Being a woman every day. *Health Care for Women International*, *15*, 11–22. doi:10.1080/07399339409516090
- Bharadwaj, S., & Patkar, A. (2004). Menstrual hygiene and management in developing countries: Taking stock. *Junction Social*. Retrieved from <http://www.wsp.org/Hygiene-Sanitation-Water-Toolkit/Resources/Readings/Bharadwai-2004-Menstrual.doc>
- Bobel, C. (2006). “Our revolution has style”: Contemporary menstrual activists “doing feminism” in the Third Wave. *Sex Roles*, *54*, 331–345. doi:10.1007/s11199-006-9001-7
- Bramwell, R. (2001). Blood and milk: Constructions of female bodily fluids in Western society. *Women & Health*, *34*, 85–96. doi:10.1300/J013v34n04_06
- Brumberg, J. J. (1993). Something happens to girls: Menarche and the emergence of the modern American hygienic imperative. *Journal of the History of Sexuality*, *4*, 99–127.
- Cheng, M., Wilansky, D., Kung, R., Shime, J., & Hannah, M. (1995). Menses Cup evaluation study. *Fertility and Sterility*, *64*, 661–663.
- Choma, B. L., Shove, C., Busseri, M. A., Sadava, S. W., & Hosker, A. (2009). Assessing the role of body image coping strategies as mediators or moderators of the links between self-objectification, body shame, and well-being. *Sex Roles*, *61*, 699–713. doi:10.1007/s11199-009-9666-9
- Chrisler, J. C., & Zittel, C. B. (1998). Menarche stories: Reminiscences of college students from Lithuania, Malaysia, Sudan, and the United States. *Health Care for Women International*, *19*, 303–312. doi:10.1080/073993398246287
- Coutts, L., & Berg, D. H. (1993). The portrayal of the menstruating woman in menstrual product advertisements. *Health Care for Women International*, *14*, 179–191. doi:10.1080/07399339309516039
- Delaney, J., Lupton, M. J., & Toth, E. (1988). *The curse: A cultural history of menstruation* (2nd ed.). Urbana, IL: University of Illinois Press.
- Dudley, S., Nassar, S., & Hartman, E. (2009). *Tampon safety*. *National Research Center for Women and Families Web*. Retrieved from <http://www.center4research.org/2010/04/tampon-safety/>
- Dunnavant, N. C., & Roberts, T.-A. (2013). Restriction and renewal, pollution and power, constraint and community: The paradoxes of religious women’s experiences of menstruation. *Sex Roles*, *68*, 121–131. doi:10.1007/s11199-012-0132-8
- Erchull, M. J. (2013). Distancing through objectification? Depictions of women’s bodies in menstrual product advertisements. *Sex Roles*, *68*, 32–40. doi:10.1007/s11199-011-0004-7
- Finley, H. (2006). Menstrual cup introduction. *The Museum of Menstruation & Women’s Health*. Retrieved from <http://mum.org/MenCups.htm>
- Fredrickson, B. L., & Roberts, T.-A. (1997). Objectification theory: Toward understanding women’s lived experiences and mental health risks. *Psychology of Women Quarterly*, *21*, 173–206. doi:10.1111/j.1471-6402.1997.tb00108.x

- Fredrickson, B. L., Roberts, T.-A., Noll, S. M., Quinn, D. M., & Twenge, J. M. (1998). That swimsuit becomes you: Sex differences in self-objectification, restrained eating, and math performance. *Journal of Personality and Social Psychology*, *75*, 269–284. doi:10.1037/0022-3514.75.1.269
- Friedrich, E. G. (1981). Tampon effects on vaginal health. *Clinical Obstetrics and Gynecology*, *24*, 395–406. doi:10.1097/00003081-198106000-00007
- Grabe, S., & Hyde, J. S. (2006). Ethnicity and body dissatisfaction among women in the United States: A meta-analysis. *Psychological Bulletin*, *132*, 622–640. doi:10.1037/0033-2909.134.3.460
- Grabe, S., Hyde, J. S., & Lindberg, S. M. (2007). Body objectification and depression in adolescents: The role of gender, shame, and rumination. *Psychology of Women Quarterly*, *31*, 164–175. doi:10.1111/j.1471-6402.2007.00350.x
- Grabe, S., & Jackson, B. (2009). Self-objectification and depressive symptoms: Does their association vary among Asian American and White American men and women? *Body Image*, *6*, 141–144. doi:10.1016/j.bodyim.2009.02.001
- Hebl, M. R., King, E. B., & Lin, J. (2004). The swimsuit becomes us all: Ethnicity, gender, and vulnerability to self-objectification. *Personality and Social Psychology Bulletin*, *30*, 1322–1331. doi:10.1177/0146167204264052
- Howard, C., Rose, C. L., Trouton, K., Stamm, H., Marentette, D., Kirkpatrick, N., ... Paget, J. (2011). FLOW (finding lasting options for women). Multicentre randomized controlled trial comparing tampons with menstrual cups. *Canadian Family Physician*, *57*, e208–e215.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structures analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55. doi:10.1080/10705519909540118
- Johnston-Robledo, I., Ball, M., Lauta, K., & Zekoll, A. (2003). To bleed or not to bleed: Young women's attitudes toward menstrual suppression. *Women & Health*, *38*, 59–75. doi:10.1300/J013v38n03_05
- Johnston-Robledo, I., & Chrisler, J. C. (2013). The menstrual mark: Menstruation as social stigma. *Sex Roles*, *68*, 9–18. doi:10.1007/s11199-011-0052-z
- Johnston-Robledo, I., Sheffield, K., Voigt, J., & Wilcox-Constantine, J. (2007). Reproductive shame: Self-objectification and young women's attitudes toward their reproductive functioning. *Women & Health*, *46*, 25–39. doi:10.1300/J013v46n01_03
- Karnaky, K. J. (1962). Internal menstrual protection with the rubber menstrual cup. *Obstetrics and Gynecology*, *19*, 688–691.
- Liswood, R. (1959). Internal menstrual protection. Use of a safe and sanitary menstrual cup. *Obstetrics and Gynecology*, *13*, 539–543.
- MacCallum, R. C., & Austin, J. T. (2000). Applications of Structural Equation Modeling in psychological research. *Annual Review of Psychology*, *51*, 201–226. doi:10.1146/annurev.psych.51.1.201
- MacKinnon, D. P. (2000). Contrasts in multiple mediator models. In J. Rose, L. Chassin, C. C. Presson, & S. J. Sherman (Eds.), *Multivariate applications in substance use research* (pp. 141–160). Mahwah, NJ: Erlbaum.
- Marván, M. L., & Trujillo, P. (2009). Menstrual socialization, beliefs, and attitudes concerning menstruation in rural and urban Mexican women. *Health Care for Women International*, *31*, 53–67. doi:10.1080/07399330902833362

- McKinley, N. M., & Hyde, J. S. (1996). The Objectified Body Consciousness Scale development and validation. *Psychology of Women Quarterly*, *20*, 181–215. doi:10.1111/j.1471-6402.1996.tb00467.x
- Merskin, D. (1999). Adolescence, advertising, and the ideology of menstruation. *Sex Roles*, *40*, 941–957. doi:10.1023/A:1018881206965
- Moradi, B., Dirks, D., & Matteson, A. V. (2005). Roles of sexual objectification experiences and internalization of standards of beauty in eating disorder symptomatology: A test and extension of objectification theory. *Journal of Counseling Psychology*, *52*, 420–428. doi:10.1037/0022-0167.52.3.420
- Morrison, L. A., Sievert, L. L., Brown, D. E., Rahberg, N., & Reza, A. (2010). Relationships between menstrual and menopausal attitudes and associated demographic and health characteristics: The Hilo women's health study. *Women & Health*, *50*, 397–413. doi:10.1080/03630242.2010.507721
- Muthén, L. K., & Muthén, B. O. (2010). *Mplus* [software]. Los Angeles, CA: Muthén & Muthén.
- Noll, S. M., & Fredrickson, B. L. (1998). A mediational model linking self-objectification, body shame, and disordered eating. *Psychology of Women Quarterly*, *22*, 623–636. doi:10.1111/j.1471-6402.1998.tb00181.x
- North, B. B., & Oldham, M. J. (2011). Preclinical, clinical, and over-the-counter postmarketing experience with a new vaginal cup: Menstrual collection. *Journal of Women's Health*, *20*, 303–311. doi:10.1089=jwh.2009.1929
- Ocean Conservancy. (2009). *International debris breakdown*. Retrieved from <http://www.oceanconservancy.org/>
- Oster, E., & Thornton, R. (2011). Menstruation, sanitary products, and school attendance: Evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, *3*, 91–100. doi:10.1257/app.3.1.91
- Peña, E. F. (1962). Menstrual protection: Advantages of the menstrual cup. *Obstetrics and Gynecology*, *19*, 684–687.
- Raftos, M., Jackson, D., & Mannix, J. (1998). Idealised versus tainted femininity: Discourses of the menstrual experience in Australian magazines that target young women. *Nursing Inquiry*, *5*, 174–186. doi:10.1046/j.1440-1800.1998.530174.x
- Reingold, A. L. (1991). Toxic shock syndrome: An update. *American Journal of Obstetrics and Gynecology*, *165*, 1236–1239.
- Roberts, T.-A. (2004). Female troubles: The Menstrual Self-Evaluation Scale and women's self-objectification. *Psychology of Women Quarterly*, *28*, 22–26. doi:10.1111/j.1471-6402.2004.00119.x
- Roberts, T.-A., & Gettman, J. Y. (2004). Mere exposure: Gender differences in the negative effects of priming a state of self-objectification. *Sex Roles*, *51*, 17–27. doi:10.1023/B:SERS.0000032306.20462.22
- Roberts, T.-A., Goldenberg, J. L., Power, C., & Pyszczynski, T. (2002). "Feminine protection": The effects of menstruation on attitudes toward women. *Psychology of Women Quarterly*, *26*, 131–139. doi:10.1111/1471-6402.00051
- Schooler, D., Ward, L. M., Merriweather, A., & Caruthers, A. S. (2005). Cycles of shame: Menstrual shame, body shame, and sexual decision-making. *The Journal of Sex Research*, *42*, 324–334. doi:10.1080/00224490509552288
- Simes, M. R., & Berg, D. H. (2001). Surreptitious learning: Menarche and menstrual product advertisements. *Health Care for Women International*, *22*, 455–469. doi:10.1080/073993301317094281

- Sobel, M. E. (1990). Effect analysis and causation in linear structural equation models. *Psychometrika*, *55*, 495–515. doi:10.1007/BF02294763
- Stewart, K., Greer, R., & Powell, M. (2010). Women's experience of using the Mooncup. *Journal of Obstetrics and Gynaecology*, *30*, 285–287. doi:10.3109/01443610903572117
- Stewart, K., Powell, M., & Greer, R. (2009). An alternative to conventional sanitary products: Would women use a menstrual cup? *Journal of Obstetrics and Gynaecology*, *29*, 49–52. doi:10.1080/01443610802628841
- Stoltzman, S. M. (1986). Menstrual attitudes, beliefs, and symptom experiences of adolescent females, their peers, and their mothers. *Health Care for Women International*, *7*, 97–114. doi:10.1080/07399338609515726
- Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics*. New York, NY: Harper Collins.
- Ten, V. T. A. (2007). *Menstrual hygiene: A neglected condition for the achievement of several Millennium Development Goals*. Zoetermeer, The Netherlands: Europe External Policy Advisors. Retrieved from http://scholar.googleusercontent.com/scholar?q=cache:jXMPDmMyDvIJ:scholar.google.com/+Menstrual+Hygiene:++A+Neglected+Condition+for+the+Achievement++of+Several+Millennium+Development+Goals&hl=en&as_sdt=0,5
- Thornton, L.-J. (2013). “Time of the month” on Twitter: Taboo, stereotype and bonding in a no-holds-barred public arena. *Sex Roles*, *68*, 41–54. doi:10.1007/s11199-011-0041-2
- Tierno, P. M., & Hanna, B. A. (1994). Propensity of tampons and barrier contraceptives to amplify *Staphylococcus aureus* Toxic Shock Syndrome Toxin-I. *Infectious Diseases in Obstetrics and Gynecology*, *2*, 140–145. doi:10.1155/S1064744994000542
- Tiggemann, M., & Boundy, M. (2008). Effect of environment and appearance compliment on college women's self-objectification, mood, body shame, and cognitive performance. *Psychology of Women Quarterly*, *32*, 399–405. doi:10.1111/j.1471-6402.2008.00453.x
- Vostral, S. L. (2011). Rely and Toxic Shock Syndrome: A technological health crisis. *Yale Journal of Biology and Medicine*, *84*, 447–459.
- White, L. R. (2013). The function of ethnicity, income level, and menstrual taboos in postmenarcheal adolescents' understanding of menarche and menstruation. *Sex Roles*, *68*, 65–76. doi:10.1007/s11199-012-0166-y