Appearance-Related Social Comparisons: The Role of Contingent Self-Esteem and Self-Perceptions of Attractiveness

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Two studies examined contingent self-esteem (CSE) and responses to appearance-related social comparisons. Study 1 was an experimental study in which women rated a series of advertisements from popular women's magazines. Study 2 employed an event-contingent diary recording procedure. In Study 1, women who were higher in CSE and lower in self-perceptions of attractiveness (SPA) experienced greater decreases in positive affect and greater increases in negative affect following the ad-rating task. Study 2 results supported a mediation model in which women who were higher in CSE felt worse after social comparisons because they made primarily upward comparisons. Overall, results suggest that appearance-related comparisons are more distressing for those who base their self-worth on contingencies and have lower self-perceived attractiveness.

Keywords: *contingent self-esteem; social comparison*

Both empirical evidence and conventional wisdom suggest that social comparisons play an important role in the formation, maintenance, and decline of body esteem (Groesz, Levine, & Murnen, 2002; E. Henderson-King & Henderson-King, 1997; McKinley, 1998, 1999; Monteath & McCabe, 1997; Wilcox & Laird, 2000). Research on the role of social comparisons in body image has focused on how media images create unrealistic standards for physical appearance and the ways in which comparisons with media images affect body esteem (Shaw & Waller, 1995; Stice & Shaw, 1994). Although previous research has demonstrated these phenomena more generally, not all women are equally affected by cultural standards of beauty and comparisons with attractive others. Indeed, some research has already begun to examine the ways in which individual differences moderate the link between media images and body dissatisfaction. For example, E. Henderson-King and Henderson-King (1997) found that women who had lower self-perceptions of attractiveness (SPA) experienced greater declines in body satisfaction after viewing "ideal" images of women in the media. More recently, D. Henderson-King, Henderson-King, and Hoffman (2001) demonstrated that the importance that women place on physical attractiveness influences the effects of comparisons with media images.

We believe contingent self-esteem (CSE) is also an important moderator in the link between appearance-related comparisons and body dissatisfaction. Recent research on CSE has suggested that some people are more likely to base their feelings of self-worth on meeting standards and expectations (Crocker & Wolfe, 2001; Deci & Ryan, 1995; Kernis, 2003). The general tendency to base one's self-worth on contingencies (e.g., appearance) has important, and often negative, consequences

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for affect and esteem (Kernis, 2003). We suggest that women who base their self-worth on contingencies such as matching cultural standards of physical beauty may be more adversely affected by social comparisons, particularly when they have lower SPA. Thus, the purpose of the current research was to examine the role of CSE in the associations between social comparison, body esteem, and affect.

Social Comparison

Social comparisons represent a general tendency for people to use others as a source for self-evaluation (e.g., Festinger, 1954). Research on social comparisons has focused primarily on the effects of upward (comparing oneself to someone "better off") and downward (comparing oneself to someone "worse off") comparisons. This body of research has suggested a general tendency to feel worse following upward comparisons and better following downward comparisons (Major, Testa, & Bylsma, 1991; Wills, 1981; Wood, 1989). Research has consistently demonstrated the negative consequences of upward comparisons, particularly with regard to body image. For example, Thompson, Heinberg, and Tantleff (1991) found that individuals who compare their own physical characteristics to the physical characteristics of others were more likely to experience body dissatisfaction, eating disturbance, and low self-esteem. Still other research has shown that women who are shown super-slender models (an upward comparison for most women) tend to experience increases in negative mood (Pinhas, Toner, Ali, Garfinkel, & Stuckless, 1999; Stice & Shaw, 1994) and increases in dissatisfaction with their own bodies (Posavac, Posavac, & Posavac, 1998). However, relatively little research has focused on individual differences in the automaticity of such comparisons and responses to naturally occurring appearance-related comparisons. We believe that for women who are relatively higher in CSE, such comparisons may occur automatically. For those who are relatively lower in CSE, such comparisons may be somewhat less automatic, occurring only under circumstances in which those lower in CSE intend to make such comparisons. It also may be that unintentional comparisons do not affect those lower in CSE in the same way that those higher in CSE are affected.

Additional research suggests that there may be individual differences in women's responses to social comparisons. For example, when comparing to an attractive other, some women may feel inspired to work toward a physical fitness or weight-related goal, whereas others may feel demoralized (Taylor, Buunk, & Aspinwall, 1990; Wood, 1989). We believe that these individual differences in responses to appearance-related social comparisons are largely a function of two individual differences: the extent to which one's self-esteem is contingency based and one's self-rated attractiveness.

For those whose self-esteem is relatively more contingent, such comparisons may serve as a reminder of the standards they do not meet. In addition, whether a given comparison is perceived as upward or downward depends on one's own perceived standing as well as the perceived standing of the comparison target. All other things being equal, appearance comparisons by women who view themselves as less attractive are more likely to be upward comparisons. However, the emotional impact of the discrepancy between one's own versus another's perceived attractiveness is likely to depend on the extent to which one's self-worth is generally contingent.

Contingent Self-Esteem

Theories on the self have long held that the sense of self is largely constructed through interaction with and feedback from significant others (e.g., James, 1890; Shotter & Gergen, 1989). Indeed, empirical research has demonstrated that feelings of self-esteem proceed from a sense of acceptance by others (Baumeister, Tice, & Hutton, 1989; Hogan, Jones, & Cheek, 1985; Leary, Tambor, Terdal, & Downs, 1995). However, individuals differ in the extent to which they view acceptance as conditional or unconditional (Rogers, 1959). For those who view acceptance as contingent on success, whether that is in the form of getting good grades, winning a game, or living up to standards of physical attractiveness, the sense of self becomes largely dependent on meeting these expectations.

Much research has focused on the extent to which self-esteem is based on such contingencies. Deci and Ryan (1995) described self-esteem along a continuum ranging from true self-esteem to contingent self-esteem. True self-esteem reflects feelings of self-worth that are secure and not dependent on attaining certain outcomes. True self-esteem does not require validation and results from behaving consistently with one's "core" self rather than with externally imposed or internally based demands. CSE is a type of self-worth that is based on matching some standard or meeting some objective. Individuals who are higher in CSE may base their self-worth on good grades, social standing, physical appearance, or other evaluative standards. Using similar distinctions, other researchers have differentiated fragile and secure self-esteem (Horney, 1950; Kernis, 2003; Rogers, 1959), defensive and genuine self-esteem (Horney, 1950; Schneider & Turkat, 1975), and stable and unstable self-esteem (e.g., Kernis, Cornell, Sun, Berry, & Harlow, 1993). CSE has been associated with a variety of outcomes, including the use of self-protective and self-enhancing strategies (Baumeister, Heatherton, & Tice, 1993; Crocker, Thompson, McGraw, & Inger-

mane, 1987), efforts to undermine self-threatening information (Schneider & Turkat, 1975), a greater tendency to experience anger (Paradise & Kernis, 1999), and greater fluctuations in self-esteem as a function of success and failure (Crocker, Sommers, & Luhtanen, 2002). To date, though, very little research has examined the role of CSE in body image (for an exception, see Crocker, 2002).

CSE results in preoccupation with achievements and social acceptance (Baldwin & Sinclair, 1996; Deci & Ryan, 1995). Thus, CSE is heavily fueled by social comparison. We think that engaging in social comparisons may be relatively more automatic for those higher in CSE. In seeking evaluation of contingent self-worth, one must look to others to determine if one is thin enough, opulent enough, intelligent enough, attractive enough, or adequate on any other relative dimension of contingent self-worth. For those who are lower in CSE, such comparisons are not necessary for validating or determining one's worth. We also think that those higher in CSE may be more likely to engage in upward comparisons because standards and ideals are inherently upward. Paradoxically, this may set up a cycle of perpetuating negative affect. Consider the example of a young woman who is relatively high in CSE. Because CSE requires constant self-evaluation, it is likely that this woman will look to others to determine whether she is meeting certain criteria such as cultural standards of beauty and thinness. When this woman is made aware of these cultural standards—perhaps by looking through a fashion magazine or watching a television program with thin, attractive women—her feelings of self-worth are likely to plummet. This would be especially likely if she also has relatively negative impressions of her own attractiveness. The combination of having more CSE and lower SPA would thus exacerbate her response to not meeting these standards of beauty.

Indeed, empirical evidence has suggested that many women face such problems. Harter (1997) noted that adolescent girls who report that physical appearance determines their self-worth tend to feel worse about their appearance, have lower self-esteem, and feel more depressed than those who do not feel their worth is based on appearance. Additional research in the body esteem literature indicates that the media-portrayed thin ideal creates a type of contingency in which women come to believe that their attractiveness is equated with thinness (Stice & Shaw, 1994). Physical appearance may come to provide these women with feelings of self-worth and personal value, particularly when the attainment of an ideal body shape results in praise and positive attention (Hsu, 1989; Littrell, Damhorst, & Littrell, 1990). However, individuals who base their worth on meeting standards must continuously seek evaluation to maintain their self-esteem. They may seek these evaluations from others, or they may conduct their own self-evaluations through social comparison. Thus, we suggest that CSE lies at the root of concerns about appearance and body esteem, particularly those that result from social comparisons.

We conducted two studies to examine the role of CSE and SPA in appearance-related comparisons. Study 1 examined these constructs as moderators of the impact of viewing attractive models in media advertisements. Media advertisements have been shown to have an adverse impact on affect and body esteem (Groesz et al., 2002; Heinberg & Thompson, 1995; Stice & Shaw, 1994). Women were randomly assigned to rate either the quality of the advertisements or the attractiveness of models in the advertisements. This manipulation was included to test the effects of forced comparisons. Those who are higher in CSE should make such comparisons automatically, and thus, whether comparisons are forced through instructions should have relatively little effect on whether those higher in CSE compare themselves with media images. However, those who are lower in CSE may be less likely to make such comparisons unless they are explicitly instructed to do so. Study 2 was designed to examine the relationship between CSE, comparison direction, and affect change in naturally occurring appearance comparisons. This series of studies goes beyond previous research by examining the role of both CSE and SPA in responses to appearance-related social comparisons and by examining these processes in both laboratory and naturalistic settings.

STUDY 1

The purpose of Study 1 was to examine the conditions under which women compare themselves to media images and to test the relative automaticity with which women with more CSE make such comparisons. We were interested in determining the impact of explicitly instructing women to compare themselves with attractive models. Women were randomly assigned to one of two ad-rating conditions: one in which they were asked explicitly to focus on characteristics of the models in the advertisements and one in which they were asked to focus on other characteristics of the ad. We were particularly interested in testing whether women who are higher in CSE are more likely to make appearance-related comparisons and experience subsequent declines in affect and body esteem more automatically than those who are lower in CSE. We expected that women who were higher in CSE would be more likely to report comparing themselves with the models in the advertisements across conditions (Hypothesis 1 [H1]). We also expected that women who were higher in CSE would feel worse (i.e., increased depression, decreased

positivity) following the ad-rating task (Hypothesis 2 [H2]) and that they would experience greater decreases in body esteem (i.e., increased surveillance, increased body shame, decreased appearance control beliefs) following the ad-rating task (Hypothesis 3 [H3]). We also expected that the general associations in H1 to H3 would be moderated by SPA such that women who are both higher in CSE and lower in SPA would be especially likely to (a) report comparing themselves with models in the advertisements, (b) feel worse following the ad-rating task, and (c) experience greater decreases in body esteem (Hypothesis 4 [H4]). Finally, we expected that the effect of ad-rating instructions would be significant for those who were lower in CSE but not for those who were higher in CSE (Hypothesis 5 [H5]).

Method

PARTICIPANTS

Participants were 88 undergraduate women. Participants ranged in age from 18 to 44 years ($M = 21.52$, $SD = 4.04$). Thirty percent of participants were freshmen, 20% sophomores, 25% juniors, and 24% seniors. The sample was ethnically diverse with 26% Caucasian, 26% Hispanic, 24% African American, 20% Asian, and 4% who chose "other." None of the participants reported having been diagnosed with or treated for an eating disorder.

DESIGN AND PROCEDURE

Participants were recruited for a study on college students' opinions of advertising. They completed a battery of questionnaires designed to measure CSE, body esteem, SPA, and demographic variables. Questionnaires were completed before coming to a laboratory session. The laboratory sessions were completed in small groups of two to five women. After arriving at the lab, participants turned in their completed questionnaire packets and were then given additional pre-rating measures including current emotion. Once they had completed the pre-rating measures, participants were given a set of 10 advertisements containing pictures of women taken from popular women's magazines such as *Glamour* and *Cosmopolitan*. The women in the advertisements were either African American (three ads) or Caucasian (seven ads).[1] Participants were randomly assigned to one of two ad-rating conditions. In the first condition (rating models), women rated the models in the advertisements in terms of general attractiveness and body build using a 1 to 7 scale where 1 was a low anchor (e.g., *extremely unattractive*) and 7 was a high anchor (e.g., *extremely attractive*). In addition, participants indicated how much they thought the person in the advertisement looked like them using a 1 to 7 scale ranging from *not at all like me* (1) to *very much like me* (7). This item was included to induce social comparison. Such a comparison was presumed to be an upward comparison for most participants because most models in magazines and other media are significantly thinner than the average woman (Groesz et al., 2002; Stice & Shaw, 1994).

Women in the second condition (rating ads) rated the same advertisements but rated the quality of the advertisements rather than the models. Specifically, women in the rating ads condition rated each of the following qualities of the advertisements using a 7-point scale ranging from *not at all* to *extremely*: the persuasiveness of the ad, the appeal of the ad, and the extent to which the advertisement was eye catching. After they completed the advertisement ratings, participants in both conditions completed post-rating measures of body esteem and current emotion along with a follow-up questionnaire.

MEASURES

Contingent self-esteem. The Contingent Self-Esteem Scale (Kernis, 2003; Paradise & Kernis, 1999) was used to measure CSE. The measure consists of 15 items designed to tap if-then self-esteem contingencies with regard to issues such as successful performance, living up to expectations, and gaining others' approval. Sample items include the following: "An important measure of my worth is how competently I perform" and "My overall feelings about myself are heavily influenced by how good I look." Participants rated each item on a Likert-type scale from 1 (*not at all like me*) to 5 (*very much like me*). An overall score is created by averaging the items, with higher scores indicating more CSE. Internal reliability (Cronbach's α) in this sample was .85.

Body esteem. Participants also completed the Objectified Body Consciousness Scale (OBCS) (McKinley & Hyde, 1996) as a measure of body esteem. This scale was completed both before and after the ad-rating task. The OBCS consists of three subscales: surveillance (e.g., "I often worry about whether the clothes I am wearing make me look good"), body shame (e.g., "I would be ashamed for people to know what I really weigh"), and appearance control beliefs (e.g., "I think a person can look pretty much how they want to if they are willing to work at it"). Items for each subscale are averaged such that higher scores indicate more of that aspect of body consciousness. The subscales have been demonstrated to be distinct dimensions with acceptable reliabilities (McKinley & Hyde, 1996). In this sample, pre-ad-rating internal reliabilities (Cronbach's α) for surveillance, body shame, and control beliefs were .75, .78, and .64, respectively. Post-rating internal reliabilities were .81, .82, and .71 for surveillance, body shame, and control beliefs, respectively.

Self-perceptions of attractiveness. Participants rated their own physical appearance on six items generated for this study. Items included questions such as "Overall, how would you rate your level of physical appearance?" and "Overall, how pleased are you with your body shape/figure?" Participants rated these items on a 7-point Likert-type scale where 1 was a low anchor (e.g., *extremely unattractive*) and 7 was a high anchor (e.g., *extremely attractive*). Items were averaged to create an overall SPA score, with higher scores indicating higher SPA. Internal reliability (Cronbach's α) was .87.

Affect. Emotion was measured both before and after the advertisement ratings using a brief version of the Multiple Affect Adjective Checklist (MAACL) (Zuckerman & Lubin, 1965) with instructions explicitly asking participants how they "feel right now." The shortened MAACL consisted of 32 adjectives with 8 adjectives tapping each of four emotions: anxiety (e.g., fearful), depression (e.g., lost), hostility (e.g., angry), and positivity (e.g., happy). Items for each subscale are averaged and scored such that higher scores reflect more of that emotion. Internal reliabilities (Cronbach's α) for anxiety, depression, hostility, and positivity were .86, .89, .90, and .94, respectively, at pre-rating and .91, .89, .90, and .96, respectively, at post-rating. For the purposes of this study, we focused exclusively on depression and positivity because these two emotions seemed to be the most subject to the effects of the experimental task.

Follow-up questionnaire. After completing the post-rating measures, participants also completed a follow-up questionnaire designed as a manipulation check and measure of comparison tendencies. Items included "To what extent did you compare yourself with the models in the advertisements?" and "To what extent would you like to be like the models in the advertisements?" which were rated on a scale ranging from 1 (*not at all*) to 4 (*somewhat*) to 7 (*extremely*), and "While you were rating the advertisements were you focused primarily on the product or the model?" Anchors for this item were 1 (*completely on the product*) to 4 (*equally on the product and the model*) to 7 (*completely on the model*).

Results and Discussion

MANIPULATION CHECK

To analyze these data, we conducted a series of hierarchical multiple regressions where condition, CSE, and SPA were entered at Step 1; the relevant two-way products between condition, CSE, and SPA were entered at Step 2; and the three-way product was entered at Step 3. Responses to the follow-up questionnaires served as separate criteria. Compared to those in the rating-ads condition, women in the rating-models condition were more likely to report that they compared themselves with the models in the advertisements, $F(1, 84) = 12.96$, $p < .001$, $B = 1.15$. Relative to those in the rating-models condition, women in the rating-ads condition were more likely to report that they were focused primarily on the product rather than the model, $F(1, 84) = 15.84$, $p < .0001$, $B = 0.91$. Of importance, there were no significant interactions between CSE and condition, Fs < 1. Thus, it is not likely that those who were higher in CSE paid attention to the instructions in one condition more than the other.

TESTS OF HYPOTHESES

H1 was that women who were higher in CSE would be more likely to report comparing themselves with models in the advertisements, regardless of ad-rating instructions. To test this hypothesis, response to the item, "To what extent did you compare yourself with the models in the advertisements?" was regressed on CSE, SPA, and condition. In support of H1, CSE was significantly associated with reported comparison, such that women who were higher in CSE were more likely to report comparing themselves with the models in the advertisements, regardless of condition, $F(1, 84) = 9.78$, $p < .01$, $B = 0.82$. In addition, women who had lower SPA were somewhat more likely to report comparing themselves with the models, $F(1, 84) = 3.69$, $p < .06$, $B = –0.36$. Thus, H1 was supported.

H2 was that women who were higher in CSE would feel worse following the ad-rating task. To test residual change in affect, we conducted a series of hierarchical regression analyses in which post-rating affect measures were regressed on CSE, SPA, and condition, controlling for baseline affect. By controlling for baseline affect, the variance in post-rating affect that is accounted for by pre-rating affect is removed. This controls for whether those higher in CSE were less positive or more depressed than other participants before the ad-rating task. Thus, this equation tests whether those higher in CSE experience greater changes in affect relative to others in the study (Cohen, Cohen, West, & Aiken, 2003). A similar analytic strategy was employed for testing changes in body esteem. We examined the depression and positivity subscales separately to determine whether specific types of affect were more subject to change. As predicted, CSE significantly predicted changes in positivity such that women who were higher in CSE experienced greater decreases in positivity across conditions, $F(1, 83) = 6.40$, $p < .05$, $B = –0.26$. CSE did not significantly predict changes in depression. Thus, H2 was partly supported.

We also expected that women who were higher in CSE would experience greater declines in body esteem following the ad-rating task (H3). Consistent with predictions, CSE significantly predicted changes in surveillance such that women who were higher in CSE experienced greater increases in surveillance, $F(1, 83) =$

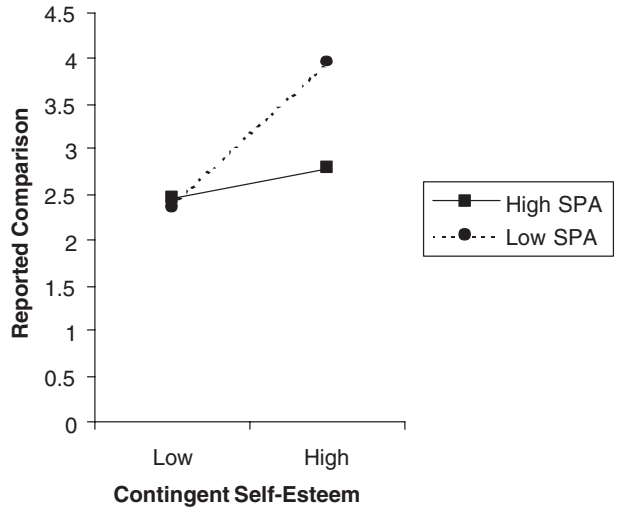

Figure 1 Reported comparison as a function of contingent self-esteem at high and low levels of self-perceptions of attractiveness.

NOTE: SPA = self-perceptions of attractiveness.

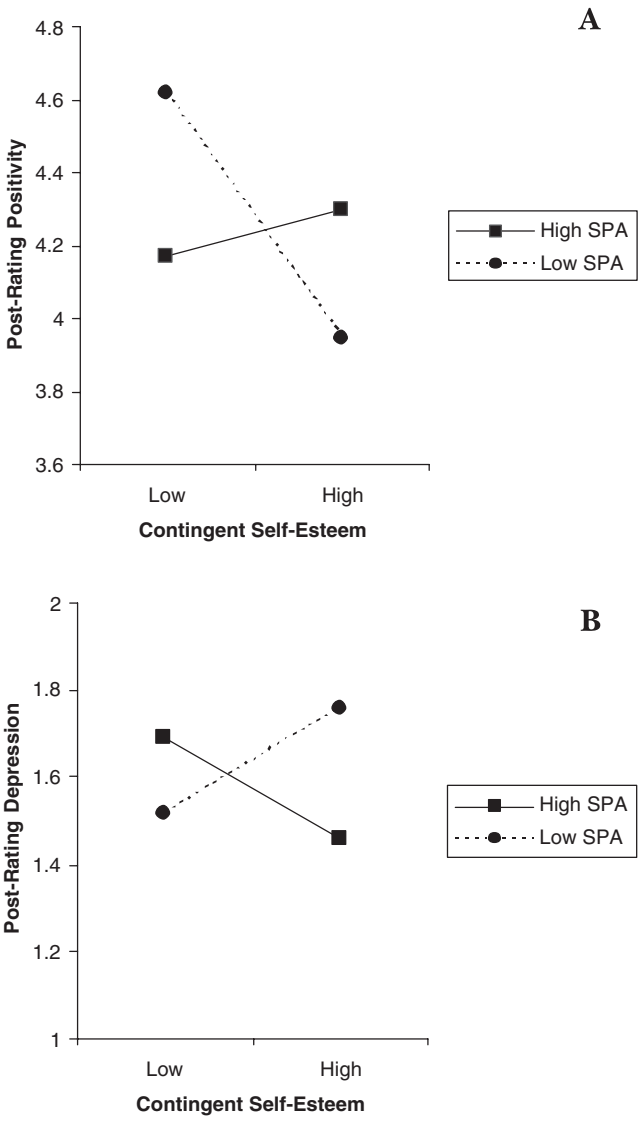

Figure 2 Postrating affect as a function of contingent self-esteem at high and low levels of self-perceptions of attractiveness.

NOTE: SPA = self-perceptions of attractiveness.

4.47, $p < .05$, $B = 0.27$. CSE also predicted changes in body shame such that women who were higher in CSE experienced greater increases in body shame, $F(1, 83) = 4.70$, $p < .05$, $B = 0.27$. CSE did not significantly predict changes in appearance control beliefs. Thus, H3 was largely supported.

For H4, we predicted that SPA would moderate the associations between CSE and the outcomes in H1 to H3. These data were analyzed in a manner similar to the data for H1 to H3. However, to test H4, the relevant two-way products were entered controlling for their main effects. First, in support of H4, there was a marginal CSE × SPA interaction predicting reported comparison such that the association between CSE and reported comparison was somewhat stronger for women who also had lower SPA, $F(1, 81) = 2.90$, $p < .10$, $B = –0.49$. We selected data points for estimating regression lines at ± 1 *SD* for predictors of the regression equation (Aiken & West, 1991). Figure 1 provides simple regression lines of reported comparison as a function of CSE at high and low levels of SPA. As shown, tests of simple slopes showed that CSE significantly predicted reported comparison for women who had lower SPA, $F(1, 83) = 13.64$, $p < .001$, $B = 1.21$, but not for women who had higher SPA, $F < 1$. Providing additional support for H4, CSE and SPA interacted to predict significant changes in positivity and depression. Figure 2 provides the simple regression lines of postrating affect as a function of CSE at high and low levels of SPA, controlling for baseline affect. As shown in Figure 2A, the association between CSE and relative decreases in positivity was especially strong for those who were also lower in SPA, $F(1, 80) = 9.70$, $p < .01$, $B = 0.34$. Furthermore, tests of simple slopes showed that CSE significantly predicted decreases in positivity for women who had lower SPA, $F(1, 82) = 15.50$, $p < .001$, $B = –0.47$, but not for women who had higher SPA, $F < 1$. In addition, as shown in Figure 2B, women who were higher in CSE and lower in SPA also experienced relatively greater increases in depression, $F(1, 80) = 12.78$, $p < .001$, $B = –0.20$. Simple slopes tests revealed that CSE significantly predicted relative increases in depression for those who had lower SPA, $F(1, 82) = 7.98$, $p < .01$, $B = 0.19$, but relative decreases in depression for those who had higher SPA, $F(1, 82) = 4.79$, $p < .05$, $B = –0.18$. There were no significant CSE × SPA interactions in predicting changes in

TABLE 1: Correlations Among Baseline Measures

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. CSE	—							
2. SPA	–.37***	—						
3. Global self-esteem	–.51***	.48***	—					
4. Body surveillance	.56***	–.35***	–.12	—				
5. Body shame	.46***	–.40***	–.30**	.54***	—			
6. Body control	–.18	.37***	.45***	–.04	–.17	—		
7. Depression	.24*	–.05	–.46***	–.04	.16	–.21	—	
8. Positivity	–.23*	.16	.47***	–.03	–.22*	.30**	–.62***	—

NOTE: CSE = contingent self-esteem; SPA = self-perceptions of attractiveness.
*$p < .05$. **$p < .01$. ***$p < .001$.

body esteem. Overall, our expectations that women who were higher in CSE and lower in SPA would be more adversely affected by exposure to attractive models were largely confirmed. CSE and SPA were shown to interact in predicting reported comparison, relative decreases in positivity, and relative increases in depression.

Finally, H5 was that the effect of ad-rating instructions would be significant for those who were lower in CSE but not for those higher in CSE. First, there was a main effect of condition on reported comparison such that, compared to those in the rating-ads condition, women who were instructed to rate the models reported comparing themselves with the models more, $F(1, 84) = 12.96$, $p < .001$, $B = 1.15$. More important, the effect of condition was stronger for those lower in CSE, $F(1, 83) = 10.57$, $p < .01$, $B = 1.47$, relative to those higher in CSE, $F(1, 83) = 3.04$, $p < .09$, $B = 0.81$. Thus, in support of H5, the ad-rating instructions had a stronger impact on those lower in CSE relative to those higher in CSE. There was also a main effect of condition on changes in surveillance such that women who were instructed to rate the models experienced relatively greater increases in surveillance, $F(1, 83) = 4.72$, $p < .05$, $B = 0.29$. However, there was no evidence that the effect of condition was stronger for those who had lower CSE than for those who had higher CSE, and there were no significant Condition × CSE interactions. Thus, H5 was only partly supported.

The findings of Study 1 demonstrate that although women are more likely to report making social comparisons when instructed to do so, explicit instructions to compare have little impact on affective consequences of exposure to attractive models for those who are higher in CSE. This suggests that for those higher in CSE, these types of comparisons are relatively involuntary and their effects are equally strong whether the comparisons are made with or without instructions to compare. Women who were higher in CSE generally felt worse following the ad-rating task, and overall, this was especially true for women with lower SPA. The findings regarding changes in body esteem were somewhat mixed. Women who were higher in CSE experienced greater increases in surveillance and body shame. However, CSE and SPA did not interact in predicting changes in body esteem. Overall, these results lend support to our notion that women who base their self-esteem on contingencies are likely to be more affected by appearance-related comparisons, particularly those with media images depicting contemporary standards of beauty. In addition, these results suggest that such comparisons are relatively more automatic for those higher in CSE.

This study was not without limitations. First, because the study was run in small groups, it was possible that participants made comparisons with each other rather than with the models in the advertisements. However, we do not believe this was likely. First, the groups were formed somewhat randomly based on participants' availability. We have no reason to believe that women higher in CSE were consistently in groups with especially more or less attractive others. We cannot rule out the possibility that such comparisons were made, but it is not clear what the direction or nature of these comparisons would have been. Second, and more important, because there was a main effect of condition in predicting reported comparison tendency, it seems unlikely that this type of bias was significant.

It is also possible that the results for contingent self-esteem were simply a function of low global self-esteem. Table 1 presents the correlations between CSE, global self-esteem, and other relevant pre-rating measures. As shown, CSE is significantly negatively correlated with global self-esteem, $r = –.51$. Thus, we reran analyses controlling for global self-esteem. Overall, results were largely unchanged for both main effects and interactions, although some of the main effects became marginal (all ps $< .09$, except for change in body shame, $p = .11$). Thus, although CSE shares some overlap with global self-esteem, there is some evidence that CSE represents a unique aspect of self-esteem that is not accounted for by traditional measures of global, trait-based self-esteem. These findings also provide additional evidence for the importance of studying quality —rather than just quantity—of self-esteem.

Another limitation presented by the current study is that most people are aware of the link between media images and body esteem, and participants may have reported changes in affect and body esteem simply because they believed that was the expected outcome. People who are higher in CSE may have been especially sensitive to this type of expectation. In addition, the study was limited by the artificial nature of the experimental setting and by the forced nature of the comparison. In reality, social comparisons are made with a variety of targets (e.g., friends, acquaintances, family members, etc.) and with both superior and inferior others. In addition, comparison targets are often determined by the individuals themselves.

Thus, in Study 2, we were interested in examining the relationships among CSE, SPA, comparison direction, and affect change with naturally occurring comparisons. A naturalistic study provides several benefits. First, naturally occurring comparisons may be less subject to demand characteristics because they occur automatically and with various targets, including friends and family. We are not suggesting that a study of naturally occurring comparisons would be completely free of demand characteristics. It is possible that the process of assessing whether the comparison is with a superior or inferior other and then rating how one feels about such comparisons may result in some demand characteristics. However, although most people are aware of the link between media standards of beauty and body image (as in Study 1), most are unaware of the effects of similar comparisons made in daily life with less extreme targets (as in Study 2). Second, naturally occurring comparisons allow one to compare with a variety of targets in both relatively upward and downward directions. We were particularly interested in examining whether women who were higher in CSE were more likely to make upward, rather than downward, comparisons in daily life. Finally, to date, there has been relatively little research examining appearance-related comparisons outside the laboratory. A study of naturally occurring comparisons has the potential to shed new light on the role of appearance-related comparisons in everyday life and to clarify the somewhat mixed results from experimental studies (see Groesz et al., 2002, for review). A weakness of experimental studies is that they are unable to provide information about the frequency, type, or impact of comparisons, particularly appearance comparisons, as they naturally occur. Hence, an additional aim of Study 2 was to provide descriptive information about naturally occurring appearance comparisons.

STUDY 2

The purpose of Study 2 was to examine the consequences of appearance-related comparisons in daily life as a function of CSE and SPA. The primary strength of this study was that it examined naturally occurring comparisons, which allowed participants to choose both the comparison target (e.g., a friend, someone in the media) and the comparison direction (i.e., relatively upward or downward). We were also interested in examining whether CSE predicted comparison direction. Evidence from Study 1 suggested that individuals higher in CSE were more likely to compare even when they had not been overtly instructed to do so. In Study 1, these comparisons were inherently upward because they were forced comparisons with media images. However, we expected that even in naturally occurring comparisons, women who were relatively higher in CSE would be more likely to make upward comparisons primarily because they are concerned with living up to standards of attractiveness. By their nature, standards and ideals are upward. Thus, to be sure that they are meeting those standards, women who are higher in CSE may be more inclined to compare themselves with superior others. As demonstrated in Study 1, the consequences of these upward comparisons are particularly pronounced for women who are higher in CSE. In daily events, women who are higher in CSE may feel worse following comparisons because they tend to make primarily upward comparisons. Thus, in Study 2, we examined whether comparison direction mediated the link between CSE and responses to comparisons.

Specifically, we expected that women would generally feel better (i.e., less negative) following downward comparisons and worse (i.e., more negative) following upward comparisons (H1). The effect of comparison direction would be particularly strong for those who were higher in CSE and lower in SPA (H2). We also expected that women who were higher in CSE would be more likely to make upward comparisons because their self-worth is largely based on matching ideal standards (H3). In addition, comparison direction was expected to mediate the link between CSE and affect change. Thus, women who were higher in CSE would feel worse after making comparisons primarily because they were more likely to compare themselves to superior others (H4).

Method

PARTICIPANTS

Participants were 88 women enrolled in introductory psychology courses ranging in age from 18 to 34 years (M = 22.27, SD = 3.51).[2] Six percent of participants were freshmen, 28% sophomores, 31% juniors, and 35% seniors. The sample was ethnically diverse with 31% Caucasian, 29% Asian, 22% Hispanic, 12% African American, and 6% who chose "other." Most participants (n = 84) had never been diagnosed with or treated for an eating disorder. Because we were primarily interested in

studying these phenomena in a nonclinical population, analyses were run with and without the four participants who had a history of eating disorders. Results were unchanged when these four were excludead from analyses so results are reported for the full sample.

DESIGN AND PROCEDURE

In Phase 1, participants completed a battery of questionnaires in a Latin Square design to measure CSE, SPA, demographics, and a variety of other constructs included for other purposes. In Phase 2, participants were given diary records to complete after each social comparison over a period of 10 days. A social comparison was defined as comparing oneself to some other person (real or imaginary) on any dimension. Although the focus of this study was on responses to appearance-related comparisons, participants were allowed and encouraged to record non-appearance-related comparisons. Participants were further instructed that merely noticing a difference between themselves and someone else would not count as a comparison unless it was accompanied by a psychological reaction. Participants were encouraged to complete records as soon after the comparison as possible and were further told that there may be some days when they make many comparisons and other days when they make very few or no comparisons. For days on which they made no comparisons, participants were instructed to fill out a record indicating "no comparisons today." Participants returned completed records to the experimenters every class day to discourage participants from simply filling out several records at the end of the 10-day period. In Phase 3, participants completed a follow-up questionnaire assessing accuracy of responses immediately after the 10-day recording period.

MEASURES

Both CSE and SPA were assessed with the same measures used in Study 1. Internal reliabilities (Cronbach's α) in Study 2 were .87 for both CSE and SPA.

Affect. Each diary record contained a brief measure of emotion. Four items were included to measure a range of emotions including happy/depressed, encouraged/discouraged, confident/unsure, and pleased/displeased. Using a 7-point scale, participants indicated what best reflected their emotions before the comparison as well as after the comparison. These abbreviated measures of affect were averaged (on each record) such that higher scores reflected more negative emotions. Internal reliabilities (Cronbach's α) were .95 and .96 before and after comparisons, respectively.

Diary records. We used a modified version of Wheeler and Miyake's (1992) diary method. Participants recorded several aspects of each comparison. These aspects included the time the comparison was made, the time the record was completed, the type of contact involved (e.g., "social interaction," "media contact"), comparison dimension (e.g., "general physical appearance," "body build or tone," "other"), comparison target (e.g., "close friend," "famous person"), comparison direction, emotion before and after the comparison, and reasons for making the comparison. Because people may make comparisons on a variety of dimensions at the same time, participants were allowed to indicate as many dimensions as applicable for each comparison. To measure comparison direction, participants were asked to complete the following statement using a 7-point scale: "How similar were you to the person on the dimension you compared? I am . . . " Responses ranged from 1 (*inferior/poor/undesirable [upward comparison]*) to 7 (*superior/better/desirable [downward comparison]*). This item was reverse-scored such that higher scores indicated comparisons in a more upward direction.

Follow-up questionnaire. At the end of the 10-day period, participants completed a follow-up questionnaire designed to examine factors such as participants' perceived accuracy, difficulty of the recording procedure, and how the diary recording procedure may have affected their comparison tendencies. Items were answered on a 7-point scale where 1 was a low anchor (e.g., *not at all*) and 7 was a high anchor (e.g., *very much*).

Results and Discussion

PRELIMINARY ANALYSES

Participants recorded 1,185 comparisons over the 10-day period with an average of 9.77 per person. The time elapsed between the time comparisons were made and then recorded was positively skewed. The median time elapsed was 26 min, and 66%, 78%, and 96% of records were completed within 30 min, 1 hour, and 3 hours, respectively. Women compared themselves primarily with other women (87%), and there was a good distribution of upward comparisons (41.4%), downward comparisons (30.7%), and comparisons with similar others (28%). In addition, women said that the majority of comparisons were unintentional (51.8%). Table 2 provides additional information on the reasons for engaging in comparisons.

Comparison dimensions and targets. Most comparisons (70%) were described as fitting only one dimension per comparison (M = 1.58, SD = 1.12). General physical appearance (32.2%) was the dimension on which the largest percentage of comparisons were based, although body shape or proportions (23.8%) and weight (20.1%) were also common comparison dimensions. Participants were also allowed to make nonappearance comparisons, and approximately 20.6% of comparisons were made on

TABLE 2: Frequency of Reasons for Making Comparisons

Comparison Reason	*Overall Proportion of Records Where Item Was Endorsed (%)*	*Number of Respondents Who Recorded This Reason at Least Once (N = 88)*
I didn't intend to compare; it just happened.	51.8	77
To evaluate or measure myself on some dimension.	24.6	68
To learn something from this person.	12.5	49
To feel better about myself or my situation.	11.1	50

TABLE 3: Frequency of Comparison Dimensions

Comparison Dimension	*Overall Proportion of Records Where Item Was Endorsed (%)*	*Number of Respondents Who Recorded This Dimension at Least Once (N = 88)*
General physical appearance	32.2	73
Body shape or proportions	23.8	68
Clothing or style of dress	22.0	69
Weight	20.1	55
Hairstyle	17.7	61
Body build or tone	14.3	57
Height	6.9	32
Other	20.6	64

TABLE 4: Frequency of Comparison Target

Comparison Target	*Overall Proportion of Records Where Item Was Endorsed (%)*	*Number of Respondents Who Recorded This Target at Least Once (N = 88)*
Stranger	34.5	77
Acquaintance	15.2	62
Close friend	14.7	55
Famous person	10.4	51
Ordinary friend	6.5	43
Oneself	4.1	20
Family member	3.9	25
Imaginary person	0.9	9
Other	9.9	41

TABLE 5: Frequency of Comparison Contact

Comparison Contact	*Overall Proportion of Records Where Item Was Endorsed (%)*	*Number of Respondents Who Recorded This Contact at Least Once (N = 88)*
Social interaction	30.2	73
Visual contact	30.2	66
Media contact (TV/magazines)	16.2	62
Brief contact	13.4	56
Daythought	10.0	48

"other" dimensions (see Table 3). Participants were asked to specify what these "other" comparisons involved, and they included comparisons based on issues such as academic performance and personal possessions, to name a few. Participants also reported comparing with a variety of targets, and the largest percentage of comparisons were made with strangers (34.5%). Other typical targets (see Table 4) included acquaintances (15.2%) and close friends (14.7%). Finally, comparisons involved varying levels of contact. More than half (60.4%) of comparisons involved either social interaction (30.2%) or visual contacts (30.2%). Table 5 provides additional information on levels of contact for comparison.

Of importance, CSE did not predict number of comparisons made; therefore, it was not likely that people defined comparisons differently as a function of this variable. Participants thought it was not too difficult to record comparisons ($M = 3.00$, $SD = 1.52$), believed that they were fairly accurate in keeping the records ($M = 5.46$, $SD = 0.93$), and estimated that most comparisons were recorded throughout the 10-day period ($M =$

76.24%, *SD* = 18.13%). Participants also felt that keeping records did not markedly increase (*M* = 3.30, *SD* = 1.89) or decrease (*M* = 3.72, *SD* = 1.83) their tendency to make comparisons.

ANALYTIC STRATEGY

The structure of the data was such that comparisons were nested within persons. Level 1 variables were event variables (e.g., comparison direction) and were nested within Level 2 person variables (e.g., CSE). Analyses involving only Level 2 variables were conducted with ordinary least squares regression. Multilevel random coefficients modeling (MRCM) was employed for all analyses involving event-level data using the PROC MIXED routine in SAS (Littell, Milliken, Stroup, & Wolfinger, 1996; Singer, 1998). Coefficients were derived from a random coefficients model using restricted maximum likelihood estimation. This technique is conceptually similar to a "slopes as outcomes" approach where intercepts and slopes are estimated for each individual in a Level 1 model. Coefficients from the Level 1 model are then incorporated into the Level 2 model. Although some software packages (e.g., HLM) (Bryk & Raudenbush, 1992) specify the model for each level separately, PROC MIXED employs a single equation that simultaneously models variation at multiple levels (Singer, 1998). For a detailed description and examples of this approach using event-contingent diary data, see Nezlek (2001).

In conducting analyses involving only variables measured at each event (Level 1), as in examining change in affect as a function of comparison direction, equations were derived as follows:

Level 1 equation:

$$Y_{ij}\ (\text{postcomparison affect}) = \beta_{0j}\ (\text{intercept}) + \beta_{1j}\ (\text{precomparison affect}) + \beta_{2j}\ (\text{comparison direction}) + r_{ij}(\text{residual; random effect for the } i^{th} \text{ comparison by the } j^{th} \text{ participant})$$

Level 2 equations:

$$\beta_{0j}\ (\text{intercept}) = \gamma_{00}\ (\text{grand mean}) + \mu_{0j}\ (\text{random effect associated with individual deviations from the grand mean})$$

$$\beta_{1j}\ (\text{precomparison affect}) = \gamma_{10}\ (\text{slope of precomparison affect}) + \mu_{1j}\ (\text{random effect associated with individual deviations in slopes of precomparison affect})$$

$$\beta_{2j}\ (\text{comparison direction}) = \gamma_{20}\ (\text{slope of comparison direction}) + \mu_{2j}\ (\text{random effect associated with individual deviations in slopes of comparison direction})$$

The combined equation, substituting Level 2 equations into the level 1 equation is as follows:

$$Y_{ij} = \gamma_{00} + \gamma_{10} + \gamma_{20} + \mu_{00} + \mu_{10} + \mu_{20} + r_{ij}$$

and includes three fixed effects (γs) and four random effects (μs and r). The inclusion of Level 2 predictors results in the addition of fixed but not random effects. The variance-covariance matrix of random effects was estimated from the data. Random effects were included for all continuous Level 1 predictors where either the variance or covariance(s) with one or more other random effects were significantly different from zero. This research focused on appearance-related comparisons. However, to avoid demand characteristics, participants were asked to indicate comparisons made on other dimensions also. Results were unaffected by inclusion of comparisons made on non-appearance-related dimensions; thus, results presented are for all comparisons.

TESTS OF HYPOTHESES

Changes in affect. H1 was that, generally, women would feel worse following upward comparisons and better following downward comparisons. H2 was that the association between comparison direction and change in affect would be particularly strong for those who were higher in CSE and lower in SPA. To examine both main effects and moderators, three separate equations were conducted: one to examine the effects of CSE, SPA, and comparison direction; another to include these terms along with the two-way products of these variables; and a third to include the three-way product of CSE, SPA, and comparison direction. Examination of postcomparison affect, controlling for precomparison affect, revealed that across all comparisons, comparison direction was positively associated with affect change, $t(1064) = 11.87$, $p < .0001$, $\beta = .37$. Thus, each unit (*SD*) change toward upward comparison was associated with a .37 increase in negative affect, in support of H1. However, there were no significant higher order interactions between CSE, SPA, or comparison direction. Thus, H2 was not supported.

Testing mediation. We thought women who were higher in CSE would experience more distress following social comparisons because they would select more attractive women as comparison targets. However, because direction of comparison is a function of perceptions of the target and perceptions of the self, it could alternatively be argued that distress following comparisons is due to high CSE women having lower self-perceptions of attractiveness. Indeed, CSE and SPA are significantly negatively associated, $r = -.26$, $p < .05$. Thus, we simultaneously tested both comparison direction and SPA as potential mediators for the relationship between contingent self-esteem and comparison-related changes in affect, as shown in Figure 3. We used Baron and Kenny's (1986) criteria to test for mediation. In support of H3, CSE was

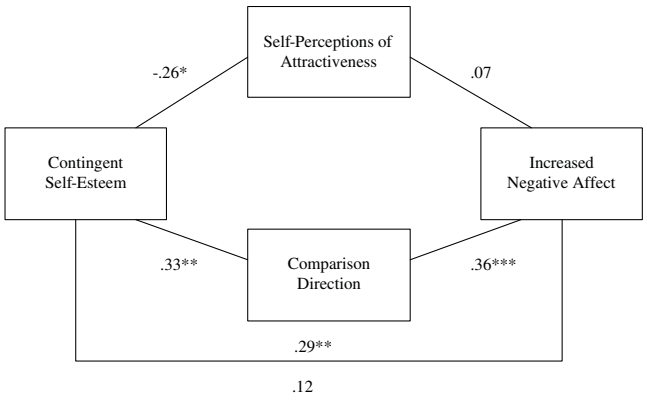

Figure 3 Mediation model in which comparison direction mediates the link between contingent self-esteem and changes in affect following social comparisons, controlling for SPA.

NOTE: SPA = self-perceptions of attractiveness. The number above the line for the association between contingent self-esteem and increases in negative affect are without controlling for comparison direction and self-perceptions of attractiveness. The number below the line is controlling for the mediators. Comparison direction was scored such that higher scores reflect comparisons in a more upward direction; negative affect was scored such that higher scores reflect more negative affect.

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

associated with making comparisons in a more upward direction, $t(76) = 3.06$, $p < .01$, $\beta = .37$. CSE was also associated with lower SPA, $t(86) = -2.54$, $p < .05$, $\beta = -.26$, and with experiencing greater increases in negative affect following comparison, $t(77) = 2.75$, $p < .01$, $\beta = .37$. When controlling for comparison direction, the relationship between CSE and affect change was no longer significant, $t(76) = -1.58$, $p = .12$, $\beta = -.19$, and neither was the relationship between SPA and affect change, $t < 1$. However, the association between upward comparison and negative affect change remained, $t(1081) = 12.16$, $p < .0001$, $\beta = .37$. These results support H4 and provide evidence that women who are higher in CSE experience greater increases in negative affect as a function of social comparisons primarily because they are more likely to make upward comparisons. More important, the association between CSE and negative affect as a function of comparison is not accounted for by the tendency to have lower SPA.

GENERAL DISCUSSION

We found support in two studies that CSE and SPA play an important role in the link between appearance-related comparisons and subsequent responses to those comparisons. Previous research (D. Henderson-King et al., 2001) demonstrated the role of SPA in response to viewing attractive others. The present research suggests that these responses are not just a function of one's self-views but also the extent to which one's self-worth is contingency based. Study 1 employed an experimental design in which women were randomly assigned to rate models in advertisements or the quality of advertisements. Results showed that women who were higher in CSE (a) were more likely to compare themselves with the models, (b) experienced greater decreases in positive affect, and (c) experienced greater increases in surveillance and body shame across conditions. Furthermore, women who were both higher in CSE and lower in SPA were more likely to compare themselves with the models in the advertisements and experienced greater increases in depression and greater decreases in positivity.

These findings are consistent with Harter's (1997) conclusions that basing one's worth on appearance can affect emotion and self-perceptions of attractiveness. Study 1 provided evidence of the importance of CSE in predicting changes in affect and body esteem as a function of viewing media images of attractive women. Moreover, results from Study 1 suggested that such comparisons were relatively more automatic for women higher in CSE. Even when they were not instructed to do so, women who were higher in CSE were more likely to compare themselves with the women in the ads and subsequently feel worse. This study also illustrated the moderating role of SPA such that the negative role of CSE is particularly pronounced when women have lower SPA and, presumably, feel that they have failed to live up to society's (or their own) standards of beauty. It is important to note that SPA was associated with the outcomes of interest in this study to the extent that lower SPA was coupled with high CSE. Thus, having lower SPA was troublesome primarily for those whose self-worth was contingency based.

Study 2 employed an event-contingent diary recording procedure and examined the mediating role of comparison direction in the link between CSE and responses to naturally occurring comparisons. The benefit of this methodology was that it allowed participants to choose comparison direction as well as comparison target and thus examined how such comparisons affect women in daily life. In this sample, women made appearance comparisons about once per day. Using Baron and Kenny's (1986) criteria for mediation, we found that women who were higher in CSE felt worse following social comparisons because they engaged in primarily upward comparisons and not simply because they had lower SPA. This mediation model provides further evidence of the potentially destructive and maladaptive nature of CSE. Because individuals who are higher in CSE tend to be concerned with meeting standards or expectations, they must engage in continual self-evaluation. Because they are interested in meeting such expectations, they are particularly likely to use superior others as a gauge for where they stand. This may be particularly problematic

when comparison targets are media images because media images generally portray ideals that are unrealistic for most women. Thus, these women are faced with standards that they want to live up to yet cannot achieve, resulting in a cycle of negative emotion and an increased awareness of the ways in which their bodies do not "succeed."

Surprisingly, no interactions between CSE and SPA emerged in Study 2. It is difficult to say why this might be. It may be that forced comparisons magnify differences between participants' self-perceptions and perceptions of the target, especially when targets are extreme (e.g., models). Alternatively, the psychological consequences of upward comparisons may vary depending on motivations for choosing comparison targets. In some cases, these women may choose upward comparison targets as a means of setting the standards they wish to obtain rather than evaluating how they match up to existing standards. Nonetheless, it is important to keep in mind that both studies examined both CSE and SPA in responses to comparisons and both demonstrated that simply having lower SPA is not enough to elicit negative responses to social comparisons. In Study 1, there was evidence that the associations between CSE and responses to comparisons were moderated by SPA. In Study 2, there was evidence that CSE was uniquely associated with responses to comparisons when controlling for SPA. More important, the association between CSE and responses to comparisons was mediated by comparison direction and not SPA.

One limitation of this research is that we measured contingent self-esteem globally. Recent research (Crocker & Wolfe, 2001) has suggested that individuals higher in contingent self-esteem differ in the specific criteria they use to attempt to satisfy and maintain their positive self-feelings. Thus, for some individuals higher in CSE, physical attractiveness is most critical. For others it may be social acceptance, power, or academic success. To examine whether this was the case, we reran analyses with only the appearance-relevant CSE items and with all items except those that were appearance relevant. Results were largely the same across both subsets of items. Thus, the extent to which self-esteem is contingent more generally is important in its own right. The fact that our results were relatively consistent with both the appearance-relevant CSE items and the non-appearance-relevant CSE items suggests that perhaps, at least among women in this sample, CSE typically involves contingencies about attractiveness.

Both studies involved only college student women, a population in which body image concerns appear to be particularly prevalent (e.g., Drewnowski, Yee, Kurth, & Krahn, 1994). It is unclear whether the present findings would generalize to men and to populations other than college students. The samples used in these studies were largely nonclinical so it is not yet clear what role CSE may play in the development of more serious problems such as eating disorders and body dysmorphic disorder. However, recent research seems to suggest that CSE is indeed associated with disordered eating behaviors (Crocker, 2002).

Together, the findings of these two studies suggest that contingent self-esteem plays an important role in appearance-related social comparisons. The negative effects of pervasive exposure to the media's "ideal image" appear to be largely due to the criterion on which women base their self-worth. Paradoxically, women who tend to base their self-worth on contingencies also appear to naturally compare themselves with more attractive women, thus setting up a cycle of perpetuating negative affect.

NOTES

1. Given the ethnic composition of our sample, we attempted to find advertisements that used models from various ethnic backgrounds. However, even when looking at magazines targeted to specific ethnic groups (e.g., *Ebony*, *Latina*), the advertisements contained primarily Caucasian models. In other situations, such magazines included photos of women from these ethnic groups but not necessarily advertisements.

2. Although the sample size is the same in both studies, the findings represent results from two different samples.

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