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## **THE ROLE OF SOCIAL COMPARISON IN THE EFFECT OF MAGAZINE ADVERTISEMENTS ON WOMEN'S MOOD AND BODY DISSATISFACTION**

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This study aimed to investigate the role of social comparison processes in women's responses to images of thin-idealized female beauty. A sample of 126 women viewed magazine advertisements containing full-body, body part, or product images. Instructional set was also manipulated with three levels: control, appearance focus, and social comparison. Mood and body dissatisfaction were measured immediately before and after advertisement viewing, while state weight anxiety and the amount of appearance comparison engaged in were measured only after the advertisements. It was found that exposure to either body part or full body images led to increased negative mood and body dissatisfaction, while the amount of comparison processing was affected by both image type and instructional set. Importantly, regression analyses showed that the effects of image type on mood and body dissatisfaction were mediated by the amount of social comparison reported. It was concluded that the processing in which women engage in response to media images is an important contributor to negative effects.

Sociocultural theory provides the most strongly supported theoretical account of the high levels of body image disturbance, body dissatisfaction, and disordered eating experienced by many women in Western societies (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). This model maintains that current societal standards for beauty inordinately emphasize the desirability of thinness, and thinness at a level impossible for many women to achieve by healthy means. In fact, the gap between the average woman's body size and the ideal is now larger than ever be-

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fore (Spitzer, Henderson, & Zivian, 1999). Nevertheless, this ideal is accepted and internalized by many women. The resulting futile pursuit of thinness, it is argued, has important consequences in lowered self-esteem and increased depression (Tiggemann, 1997), excessive dieting practices (Stice, Mazotti, Krebs, & Martin, 1998) and the emergence of clinical eating disorders (Thompson, Coovert, Richards, Johnson, & Cattarin, 1995).

Although there is overwhelming evidence for the existence of the thin ideal for women (e.g., Wiseman, Gray, Mosimann, & Ahrens, 1992), the processes by which this ideal is acquired have been less clearly articulated. Evidence supports a role for both the family, especially mothers to daughters (Pike & Rodin, 1991), and the peer group (Paxton, Schutz, Wertheim, & Muir, 1999). However, the mass media, due to their pervasiveness and reach, are probably the single most powerful transmitters of sociocultural ideals. Certainly formal content analyses of the visual media (fashion magazines, television advertising, and programming) document a preponderance of young, tall, and extremely thin women who epitomize the current beauty ideal (Malkin, Wornian, & Chisler, 1999; Fouts & Burggraf, 1999, 2000).

The link between media and body dissatisfaction or disturbed eating is supported by women's and girls' own reports (e.g., Milkie, 1999; Tiggemann, Gardiner, & Slater, 2000; Wertheim, Paxton, Schutz, & Muir, 1997), and by prospective studies that have demonstrated that media involvement (trying to look like the models on television or in magazines) predicts the development of weight concerns (Field et al., 2001) and purging behavior (Field, Camargo, Taylor, Berkey, & Colditz, 1999). In addition, several studies (but not all) that have assessed media exposure and weight concern independently, report positive correlations between fashion magazine or television consumption and body dissatisfaction (Anderson, Huston, Schmitt, Linebarger, & Wright, 2001; Stice, Schupak-Neuberg, Shaw, & Stein, 1994), perceptions of overweight (McCreary & Sadava, 1999), and eating disorder symptomatology (Harrison, 1997, 2000; Stice et al., 1994).

Although the above results are consistent with the proposition that exposure to a large dose of thin idealized images leads to negative body image, the converse causal assumption is equally plausible. It might be those women and girls most invested in or dissatisfied with their appearance who seek out particular media content, and so might buy and read more fashion magazines. Thus, in an attempt to determine the direction of causation, a number of investigators have experimentally manipulated exposure to thin idealized images and assessed their immediate impact. The recent meta-analysis of such studies by Groesz, Levine, and Murnen (2002) concluded that there was a small but relatively con-

sistent negative effect. Specifically, brief exposure to print media images of thin female models has been shown to induce greater weight concern (Posavac, Posavac, & Weigel, 2001), body dissatisfaction (Shaw, 1995), self-consciousness (Wegner, Hartmann, & Geist, 2000), negative mood (Stice & Shaw, 1994; Pinhas, Toner, Ali, Garfinkel, & Stuckless, 1999) and decreased perception of one's own attractiveness (Odgen & Munday, 1996; Thornton & Maurice, 1999).

In some experimental studies, however, negative effects have been limited to particular groups of women, specifically women who are heavier (Henderson-King & Henderson-King, 1997), more responsive to personal cues (Wilcox & Laird, 2000) and who have higher levels of trait body dissatisfaction (Posavac, Posavac, & Posavac, 1998). Clearly, not all women are equally vulnerable to adverse effects of media images. This identifies a major limitation of the sociocultural model as a whole and accords with the commonsense observation that, although the pervasiveness of the media ensures that virtually all women and girls are exposed to a substantial dose of idealized thin beauty images, not all develop extreme preoccupation with weight, and only a minority develop clinically diagnosable eating disorders. Thus these experimental studies have been valuable in identifying a number of individual characteristics that moderate the impact of sociocultural ideals.

Experimental studies also have the potential to identify the psychological processes that translate media content into body dissatisfaction. But as yet relatively little research attention has been directed specifically at these underlying processes. At the general level, Tiggemann (2002) has identified three potential mechanisms in increasing scope of influence: social comparison, internalization of the thin ideal, and investment in appearance for self-evaluation, each of which has been identified as an important correlate of body dissatisfaction (e.g., Thompson & Stice, 2001; Cash & Labarge, 1996). However, internalization and the use of appearance for self-evaluation are processes that must necessarily develop over time in response to repeated and ongoing exposure to idealized images. Hence they cannot provide an answer as to what women and girls do or experience in response to any one single media image, as presented in the experimental studies. On the other hand, it is likely that women high on internalization or appearance investment will be more responsive and vulnerable to the presentation of any particular image. Thus the postulated mediators of naturally-occurring and ongoing media exposure likely serve as *moderating* variables in experimental studies that manipulate *acute* media exposure.

This still leaves unanswered the question as to what women actually do in response to any single particular image. Along with a number of authors (Cattarin, Thompson, Thomas, & Williams, 2000; Faith, Leone,

& Allison, 1997; Heinberg & Thompson, 1992, 1995; Posavac et al., 2001), we suggest that social comparison provides the mechanism by which acute exposure to media images induces negative effects. Thus the current study focuses on the role of social comparison, which Groesz et al. (2002, p.12) characterize as a "critically important construct" that has not received sufficient research attention. We reason that controlled exposure to a thin ideal image elicits appearance concerns and evokes comparison processing in vulnerable women. Certainly both qualitative and quantitative studies show that women and girls report that they compare themselves with the models in fashion magazines (e.g., Milkie, 1999). When women compare themselves to an image presented in the media, this almost invariably represents an upward social comparison by which they find themselves lacking, thus leading to negative mood and body dissatisfaction. This comparison *process* needs to be clearly distinguished from the trait variable of tendency to make social comparisons, which has been found to be correlated with body dissatisfaction in a number of studies not directly concerned with media influence (Heinberg & Thompson, 1992; Striegel-Moore, McAvay & Rodin, 1986; Stormer & Thompson, 1996). Unlike stable individual differences in tendency to make comparisons, the activation of social comparison is a reactive process that can be triggered by the presentation of targets with salient features, and by the particular motivation the woman has for viewing the images. In an experimental setting, both stimuli and instructions can be manipulated to this effect.

In fact, many of the previous experimental studies may have inadvertently invoked social comparison processing through their instructions. Such instructions include directions to rate the model's attractiveness and thinness (Ogden & Munday, 1996; Champion & Furnham, 1999) or to consider whether the style of clothing would be flattering to the participant's own figure (Posavac et al., 1998). Despite their potential importance, however, the role of instructions has as yet been little investigated. Only in the study of Cattarin et al. (2000) were instructions deliberately manipulated as an experimental variable. It was found that participants instructed to compare themselves with people in a 12-minute videotape of television commercials were more negatively affected than those under neutral or distractor instruction conditions. In the present experiment we sought to replicate this result with a more subtle manipulation of instructional set.

The present study also sought to extend the range of experimental stimuli employed. Thus far all studies presenting magazine images of women who epitomize the thin ideal have used essentially full views of the model's body and face. However, many magazine advertisements portray a body part only, for instance, a pair of women's legs to advertise

shoes, or a flat stomach to advertise breakfast cereal. Hall and Crum (1994) refer to images solely of a part of the body as "body-isms" (p. 329). The widespread use of female body-isms in the media offers a representation of women as fragmented parts and devoid of personality. As body part images provide such clear, specific representations of the idealized female form, they may also offer very clear comparison targets. In contrast, full body images that include the model's face offer many potential attributes on which to make comparisons (e.g., facial expression, facial attractiveness, hair color), as well as information about age, ethnicity, and implied personality. These also allow the possibility of distinguishing between oneself and the target so as to dismiss the model as dissimilar and irrelevant to self-appraisal. With a body part image, however, there is really only one aspect upon which to make comparisons, with little other countering information. To date, no study has examined the impact of image type in this way. Here it was tentatively predicted that body-isms would lead to greater appearance comparison, negative mood, and body dissatisfaction.

In summary, the overall aim of the study was to examine more closely the role of social comparison in the effect that media-portrayed, idealized images have on women's mood and body satisfaction. Social comparison was conceptualized and analyzed at three different levels: (1) as a dependent variable, in terms of the extent of comparison processing elicited by the presentation of thin ideal images, and which is predicted to mediate effects on mood and body satisfaction; (2) as a task (instructions) designed to elicit comparison (independent variable); and (3) as a stable tendency or trait of individuals that is predicted to moderate the effects of the thin ideal images. Thus it was predicted that both thin idealized images and social comparison instructions would elicit more comparison processing, negative mood, and body dissatisfaction, but that these effects would be stronger for women with high levels of dispositional (trait) social comparison tendency.

## METHOD

### DESIGN

The study employed a between-subjects 3 x 3 factorial design, investigating the effect of image type (body part, full body, product) and instructional set (control, appearance focus, social comparison) on the dependent variables of appearance comparison and state mood, body dissatisfaction, and weight anxiety. Trait measures of internalization, appearance-schematicity, and tendency for social comparison were also tested as moderating variables.

## PARTICIPANTS

The participants were 126 female undergraduate students at Flinders University in South Australia aged between 18 and 28 years.

## MATERIALS: SESSION 1

Two separate questionnaires were constructed for the present study. The first questionnaire was completed in a background information session (Session 1) and contained measures of the individual difference trait variables, as well as measures of magazine and television preferences and consumption. The latter were included to enhance the credibility of the study, which was presented as a study of the "effectiveness of advertising." They will not be detailed here. The individual difference measures are described in their order of presentation in the actual questionnaire.

*Tendency for Appearance Comparison: Global.* The tendency to make global social comparisons was measured by the Physical Appearance Comparison Scale (PACS) developed by Thompson, Heinberg, and Tantleff (1991). This five-item scale provides a measure of the tendency to compare one's overall appearance with that of others. Participants indicate the frequency with which they engage in five behaviors involving comparison with others in social settings (e.g., "At parties or other social events, I compare my physical appearance to the physical appearance of others") on five-point Likert scales from 1 (never) to 5 (always). In the present sample, the scale displayed just acceptable internal consistency (Cronbach's coefficient alpha = .69).

*Tendency for Appearance Comparison: Specific Attributes.* To provide a measure of the tendency to compare *specific* body parts, the Specific Attributes Comparison Scale (SACS) was created for this study. Two items were adopted with minor modification from the Body Comparison Scale of Fisher and Thompson (1998) (reproduced in Thompson et al., 1999). These two items were "Being around women with firm, thin upper arms makes me self-conscious" and "When I'm with others, I compare the width of my thighs to those of my peers." The three other items were: "In bathers, I am conscious of how my stomach looks compared to other women"; "I compare the size of my hips with those of other women"; and "When I see thin women wearing jeans, I compare the way my bottom would look in that outfit." The response format was the same as for the PACS and the two measures were presented as a single scale of ten items. Internal consistency for the newly constructed SACS was somewhat higher than for the PACS ( $\alpha = .81$ ).

*Appearance Schemas Inventory.* The dispositional level of investment in appearance was measured by the Appearance Schemas Inventory

(ASI) devised by Cash and Labarge (1996) to measure core beliefs and assumptions concerning the importance, meaning, and effects of appearance in the individual's life. Participants indicate their levels of agreement with 14 self-report statements on five-point Likert scales from 1 (strongly disagree) to 5 (strongly agree). In the present study the word "homely" in Item 14 was replaced by the word "plain," in accord with Australian language use. Reliability for the present sample was high ( $\alpha = .87$ ).

*Internalization of the Thin Ideal.* The extent of internalization of the thin ideal was measured by the Internalization subscale of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ) of Heinberg, Thompson, and Stormer (1995). Participants rate on five-point Likert scales (1 = completely disagree, 5 = completely agree) their level of agreement with statements regarding both awareness of sociocultural attitudes toward appearance (six items) and internalization of these attitudes (eight items). Here reliability for the Internalization subscale was high ( $\alpha = .88$ ).

## MATERIALS: SESSION 2

Session 2 took place approximately one week after Session 1. Participants completed pre-measures of state mood and body dissatisfaction before being exposed to the experimental manipulation. After viewing the magazine images, participants completed post-measures of state mood, body dissatisfaction, and weight anxiety, as well as amount of comparison in which they engaged. We were mindful of the need to utilize state as opposed to trait measures.

*State Mood and Body Dissatisfaction.* Seven visual analogue scales (VAS) were used to obtain measures of state mood and body dissatisfaction both before and immediately after viewing the magazine advertisements. Each scale consisted of a 150mm horizontal line with endpoints labeled "none" and "very much." Following Heinberg and Thompson (1995), participants were asked to indicate how they feel "right now" on the mood dimensions of anxiety, depression, happiness, anger, and confidence, as well as weight dissatisfaction and appearance dissatisfaction. These scales were measured using a ruler from the "none" anchor to the nearest millimeter. Heinberg and Thompson (1995) demonstrated that VAS are reliable measures of fluctuations in mood and body dissatisfaction. Such visual analogue scales carry the advantage that they can be completed quickly and previous responses are difficult to recall, creating improved sensitivity to small changes. Here an overall score for negative mood was obtained by averaging the five mood items (positive mood items were reverse-coded). Similarly a composite measure of

body dissatisfaction was obtained by averaging the scores for weight and appearance dissatisfaction.

*State Weight Anxiety.* Anxiety concerning weight was measured by the Weight Subscale of the Physical Appearance State and Trait Anxiety Scale (State version; PASTAS) of Reed, Thompson, Brannick, and Sacco (1991). The PASTAS is a 16-item scale measuring current degree of body anxiety. The eight-item Weight Subscale requires participants to rate on a five-point Likert scale (1 = not at all, 5 = exceptionally so) how anxious, tense, or nervous they feel "right now" regarding eight weight-related body sites, such as thighs and stomach. Internal consistency was high ( $\alpha = .91$ ).

*State Appearance Comparison.* Three items were constructed to assess the amount of actual appearance processing and comparison in which participants engaged. Using 7-point Likert scales, participants first rated the extent to which they thought about their appearance when viewing the magazine advertisements (1 = no thought about my appearance, 7 = a lot of thought). The second and third items asked participants the extent to which they compared their overall appearance and specific body parts with those of the women they either saw in the advertisements or imagined using the products shown (1 = no comparison, 7 = a lot of comparison). Although the activation of appearance processing and social comparison are conceptually distinct (e.g., Cash, 1998), here the ratings were highly correlated together ( $r$ s range from .71 - .82). Hence they were summed and averaged to produce a single composite measure, resulting in high internal reliability ( $\alpha = .91$ ).

*Recall.* The final task of Session 2 was a recall task, to provide a measure of depth of processing and to support the cover story of the study concerning the effectiveness of advertising. Participants were asked to recall both the product type (e.g., "shoes") and brand name (e.g., "Midas") from the 15 advertisements they had seen in the study. The recall task was scored out of 30 by awarding one point for each product type and brand name recalled.

*Experimental Manipulation: Image Type.* Three sets of stimulus materials (product, full body, body part) were generated. Each set consisted of 15 magazine advertisements presented on standard size laminated cards. The product image set consisted of 15 advertisements showing products only, with no people. The full body image set contained 11 advertisements showing most (at least 3/4) of a thin female model's body and face. The body part image set consisted of 11 images of a specific weight-related body part of a thin model (such as thighs or stomach). The full body and body part sets also included four neutral product images to partially counter demand effects. The major categories of product advertised across all three stimulus sets were shoes, toiletries, accessories, alcohol, clothing, underwear, and perfume.

The stimuli were selected from full-page colour advertisements appearing in 36 Australian women's magazines such as *She*, *Cosmopolitan* and *Cleo* published over a 14-month period. From an initial pool of over 200 advertisements, the experimenters chose a smaller subset of 52 images, which were then rated by eight volunteers for glossiness, colorfulness, attractiveness, general appeal, and level of humor on a series of five-point scales. On the basis of these ratings, three equivalent sets of 15 images were selected. One-way repeated measures ANOVAS confirmed that the three sets did not differ on glossiness, color, attractiveness, general appeal, or level of humour, all  $F(2, 21) s < 1, p > .05$ .

*Experimental Manipulation: Instructional Set.* Instructions for rating the images were also manipulated, with a control condition and two experimental conditions (appearance focus and social comparison). The social comparison instruction set was designed to encourage participants to compare themselves with the images. The appearance focus instructional set drew participants' attention to the model's appearance without specifically encouraging self-to-model comparison. The control set was designed to focus participants' attention on non-appearance-related aspects of the images.

Instructional set was not manipulated by general instructions, but rather through a so-called Consumer Response Questionnaire (Mills, Polivy, Herman, & Tiggemann, 2002). As participants viewed each advertisement, they were asked to rate their level of agreement with a series of five questions (1 = strongly disagree, 5 = strongly agree). In the control condition, the statements were deliberately chosen to focus on qualities of the advertisement:

- (1) If I saw this ad in a magazine, it would catch my eye;
- (2) I like the layout of this ad;
- (3) This ad makes me interested in the product;
- (4) This ad is creative;
- (5) This ad is effective at promoting its product.

Items (2) and (5) about layout and effectiveness were retained for the two experimental conditions to maintain credibility.

However, in the Consumer Response Questionnaire for the Appearance Focus condition, the other items were: (1) I like the look of this woman's body; (3) This woman is thin; (4) In a busy clothes shop, this woman would not mind trying on bathers in the same change-room as other women. For the Social Comparison condition, these items became: (1) I would like my body to look like this woman's body; (3) This woman is thinner than me; (4) In a busy clothes shop, I would not like to try on bathers in the same room if this woman was also trying on bathers in the

same change-room." Thus care was taken to standardize the format and content of the three sets of questions.

It was important that each of the instructional sets be applicable to the three image types. Thus to make comparison statements applicable to all images, regardless of whether or not they featured women, participants received written instructions that: "If a person is shown in the ad, answer any relevant questions with reference to her. If there is no person shown in the ad, think about the type of person who would use the product advertised, and answer any relevant questions with reference to her."

## PROCEDURE

Participants were recruited for a study examining the "effectiveness of advertising". All participants attended two sessions approximately one week apart. In Session 1 participants completed the questionnaire measures of media consumption, comparison tendency (overall and body part), appearance schematicity, and internalization of the thin ideal.

In Session 2 participants were randomly allocated to one of nine experimental cells, subject to equal *Ns* in each cell. After completion of the seven pre-exposure VAS for mood and body dissatisfaction, participants were provided with the relevant image set and accompanying Consumer Response Questionnaire. Following completion of the ratings for the 15 advertisements, participants completed the post-exposure VAS measures, state weight anxiety, and after some filler tasks, the recall task. Finally, height and weight were measured.

## RESULTS

### CHARACTERISTICS OF THE SAMPLE

The women ranged in age from 18 to 28 years, with a mean age of 20.6 years ( $SD = 2.2$ ). Their mean Body Mass Index (BMI) was 22.6 ( $SD = 3.8$ ), which falls within the normal weight range (BMI = 25-30) as defined by Garrow and Webster (1985). On average participants read 3.6 ( $SD = 2.3$ ) women's fashion and beauty magazines in the preceding month. Only six women (4.8%) reported that they had not read or looked at any women's magazines. The mean reported time spent reading or looking at women's magazines ranged from zero to nearly seven hours, with a mean of one hour and 17 minutes. The time spent watching television ranged from zero (only two women) to 50 hours per week, with a mean of 10.1 hours.

## EXPERIMENTAL EFFECTS ON NEGATIVE MOOD, BODY DISSATISFACTION AND WEIGHT ANXIETY

In order to test the effect of image type and instruction on the VAS measures of negative mood and body dissatisfaction, two two-way ANCOVAs were conducted, with the relevant pre-exposure VAS measure as the covariate.

For negative mood, there was no significant effect of image type,  $F(2,115) < 1, p > .05$ , nor of instruction,  $F(2,115) < 1, p > .05$ . There was, however, a significant image type  $\times$  instruction interaction,  $F(4,115) = 3.87, p < .01$ . It can be seen from Table 1, which presents the adjusted mean scores across the nine cells, that this interaction comes about largely because of the much higher negative mood score for product under social comparison than other instructions, in fact the highest mean (53.3) of any of the nine experimental cells. This interpretation is confirmed by separating out instructional set conditions. For the control and appearance focus conditions, we do obtain the predicted significant effect for image type,  $F(2,77) = 4.92, p < .01$ , whereby the full body (adj  $M = 47.1$ ) and body part (adj  $M = 46.6$ ) images produce more negative mood than do the product images (adj  $M = 38.4$ ). For the social comparison condition, on the other hand, the effect for image type tends in the opposite direction,  $F(2,37) = 2.85, p = .071$ .

For body dissatisfaction there is a significant effect of image type,  $F(2,115) = 3.16, p < .05$ . Post hoc testing shows that body part images (adj  $M = 76.2$ ) lead to significantly more body dissatisfaction than do product images (adj  $M = 63.5$ ), with full body images (adj  $M = 70.9$ ) in the middle, not differing significantly from either of the other two groups. Neither instructional set,  $F(2,115) < 1, p > .05$ , nor the interaction,  $F(4,115) = 1.56, p > .05$ , approached significance.

State weight anxiety was assessed only once, after exposure to the magazine advertisements, so there was no pre-measure available for use in the covariate analysis. In these circumstances, to reduce the variability between subjects and so improve statistical precision, the pre-exposure body dissatisfaction VAS measure was selected as the most appropriate covariate. Image type approached significance,  $F(2,116) = 3.03, p = .052$ . The adjusted means in Table 1 show a trend for state weight anxiety to be highest in the body part condition (adj  $M = 14.5$ ), than for full body (adj  $M = 12.0$ ) and product (adj  $M = 11.5$ ). Neither instructional set,  $F(2,116) < 1, p > .05$ , nor the interaction,  $F(2,116) = 1.08, p > .05$ , approached statistical significance.

Table 1. Adjusted Mean Scores (Standard Error in Parentheses) on Negative Mood, Body Dissatisfaction and Weight Anxiety after Viewing Magazine Advertisements

	Image			Total
	Body Part	Full Body	Product	
<b>Negative Mood</b>				
Control	45.0 (3.3)	48.6 (3.3)	39.8 (3.3)	<b>44.5</b> (1.9)
Appearance focus	50.9 (3.3)	48.2 (3.3)	39.6 (3.3)	<b>46.2</b> (1.9)
Social comparison	46.4 (3.3)	41.0 (3.3)	53.3 (3.3)	<b>46.9</b> (1.9)
Total	<b>47.4</b> (1.9)	<b>45.9</b> (1.9)	<b>44.2</b> (1.9)	
<b>Body Dissatisfaction</b>				
Control	73.2 (6.1)	71.6 (6.2)	61.2 (6.2)	<b>68.7</b> (3.6)
Appearance focus	83.3 (6.2)	64.7 (6.2)	56.3 (6.2)	<b>68.1</b> (3.5)
Social comparison	72.0 (6.2)	76.3 (6.4)	73.0 (6.2)	<b>73.8</b> (3.6)
Total	<b>76.2</b> (3.6)	<b>70.9</b> (3.6)	<b>63.5</b> (3.6)	
<b>State weight anxiety</b>				
Control	12.9 (1.6)	11.4 (1.6)	12.6 (1.6)	<b>12.3</b> (0.9)
Appearance focus	14.8 (1.6)	13.1 (1.6)	9.4 (1.6)	<b>12.4</b> (0.9)
Social comparison	15.9 (1.6)	11.5 (1.6)	12.6 (1.6)	<b>13.3</b> (0.9)
Total	<b>14.5</b> (0.9)	<b>12.0</b> (0.9)	<b>11.5</b> (0.9)	

### EXPERIMENTAL EFFECT ON ACTUAL COMPARISON

A two-way ANOVA was conducted to assess the effect of image type and instructional set on the amount of comparison in which participants engaged. Both type of image,  $F(2,117) = 6.99, p < .001$ , and instructional set,  $F(2,117) = 10.20, p < .001$ , produced significant effects, with no significant interaction between them,  $F(4,117) < 1, p > .05$ .

As can be clearly seen from the means in Table 2, post hoc comparisons confirmed that the body part and full body images ( $M_s = 4.1$ ) evoked more comparison than product images ( $M = 3.0$ ). The pattern for instruc-

TABLE 2. Means (Standard Deviations in Parentheses) for Actual Comparison

	Image			Total
	Body Part	Full Body	Product	
Control	3.3 (1.8)	3.2 (1.9)	2.4 (1.1)	3.0 (1.6)
Appearance Focus	3.8 (1.8)	4.5 (1.6)	2.7 (1.5)	3.7 (1.8)
Social comparison	5.0 (1.5)	4.6 (1.3)	3.9 (1.3)	4.5 (1.4)
Total	4.1 (1.8)	4.1 (1.7)	3.0 (1.5)	

tional set is equally clear. Social comparison instructions ( $M = 4.5$ ) elicited more actual comparison than did appearance focus instructions ( $M = 3.7$ ), which in turn elicited more than control instructions ( $M = 3.0$ ).

#### EXPERIMENTAL EFFECT ON RECALL

A two-way ANOVA of the recall measure taken at the end of the experiment revealed a significant effect of image type,  $F(2,116) = 3.87$ ,  $p < .05$ , but not of instruction,  $F(2,116) = 1.06$ ,  $p > .05$ , nor their interaction,  $F(4,116) < 1$ ,  $p > .05$ . Post hoc analysis shows that advertisements featuring full bodies ( $M = 18.7$ ) were significantly better recalled than advertisements featuring body parts ( $M = 15.1$ ), with product advertisements ( $M = 16.7$ ) significantly different from neither.

#### MEDIATING EFFECTS OF ACTUAL APPEARANCE COMPARISON

It was predicted that the process of engaging in social comparison would mediate any negative effect of thin-ideal images (body part and full body) on body dissatisfaction. Mediation occurs when a variable at least partly accounts for the relation between two other variables. Baron and Kenny (1986) outline three preconditions for testing a mediating effect. First, the independent variable (image type) must affect the mediator (actual comparison), which has been shown above. Second, the mediator variable (actual comparison) must affect the dependent variables. Here the amount of comparison in which the women engaged was related to all outcome variables except recall. Specifically, the more comparison in which women engaged, the greater their negative mood ( $r =$

.28,  $p < .01$ ), body dissatisfaction ( $r = .38, p < .001$ ), and weight anxiety ( $r = .37, p < .001$ ). The final precondition is that the independent variable (image type) affects the outcome variable, which occurs here for body dissatisfaction for the whole sample, and for negative mood if the social comparison condition is excluded.

In order for mediation to be established, the effect of the independent variable on the outcome variable must be less when the mediator is entered into the regression equation than when the independent variable is entered on its own. Here separate hierarchical regressions were conducted for negative mood (for the two instructional set conditions) and body dissatisfaction. In each case the pre-exposure measure of mood or body dissatisfaction was entered in Step 1, followed by image type in Step 2, and actual comparison in Step 3. Under these procedures, the relationship between image type and negative mood,  $\beta = -.15, p < .01$ , reduced to nonsignificance,  $\beta = -.11, p = .061$ , when actual comparison was added into the regression equation. This was also the case for body dissatisfaction, where the originally stronger relationship with image type,  $\beta = -.14, p < .05$ , reduced to nonsignificance,  $\beta = -.09, p > .05$ , when actual comparison was included. This indicates that actual comparison in which the women engaged does at least partially mediate the effect of image type on negative mood and body dissatisfaction.

#### MODERATOR EFFECTS OF TRAIT VARIABLES

A number of individual difference variables were conceptualized as potential moderators of the effect of media images. Specifically, it was proposed that the effect of exposure to thin ideals (image type) would change depending on a woman's status on the trait variables of appearance comparison tendency, appearance schematicity, and internalization of societal ideals. It can be seen in Table 3, which displays the correlations between these potential moderators and outcome variables, that Tendency for Social Comparison (both global and specific attribute), Appearance Schemas, and Internalization all relate to all outcome variables except recall.

To establish whether any of these trait variables moderated the effect of image type, a series of hierarchical multiple regressions was conducted to test for a significant interaction between the trait and image type. Where relevant, pre-exposure measures were entered on the first step, then image type and the trait variable were entered, followed by the two-way product term on the last step. A significant interaction occurs when the product term offers additional prediction beyond that provided by the prior variables. This form of analysis was carried out on

TABLE 3. Correlations between Trait Variables and Outcome Variables

	Actual Comparison	Negative Mood	Body Dissatisfaction	Weight Anxiety	Recall
PACS	.42**	.34**	.44**	.45**	.11
SACS	.45**	.32**	.55**	.67**	.01
ASI	.42**	.23*	.38**	.44**	.16
Internalization	.44**	.26*	.46**	.52**	.19*

\* $p < .05$ ; \*\* $p < .001$ .

all potential moderators for all outcome variables. In no case was any change  $R^2$  for the interaction significant. This indicated that none of the individual difference variables acted as moderators of the effect of image type.

#### PREDICTORS OF ACTUAL COMPARISON AND OTHER OUTCOME VARIABLES

The results have confirmed that when women are presented with advertisements, the amount they actually focus on appearance and compare their overall appearance and body parts with the image predicts negative mood and body dissatisfaction. The amount of actual comparison was in turn predicted by the trait variables of tendency for global and specific comparison (Table 3), and the experimental variables of image type and instructional set (Table 2). In order to assess which of these variables best predicted amount of comparison, a standard regression was conducted with amount of actual comparison as the criterion variable. Image type was categorized as thin ideal images (body part and full body) versus product images, and instructional set was entered as a single ordinal variable (control, appearance focus, social comparison). The demographic characteristics of age and BMI were also included, as a number of studies have demonstrated that both of these are related to body dissatisfaction (e.g., Tiggemann & Lynch, 2001). Together these variables offered significant prediction of amount of comparison, multiple  $R^2 = .53$ ,  $F(6,119) = 22.09$ ,  $p < .001$ . Table 4 shows that tendency for specific body comparison, image type, and instructional set were independent predictors of the amount of actual comparison in which the women engaged.

Table 4 also shows the results of regression analyses for the other outcome variables. The regression equations were statistically significant for all variables except recall: negative mood,  $R^2 = .16$ ,  $F(7,117) = 3.07$ ,  $p <$

TABLE 4. Standardized Regression Coefficients (Betas)

Predictor Variables	Actual Comparison	Negative Mood	Body Dissatisfaction	Weight Anxiety
Age	-.01	.01	.06	-.10
BMI	-.19*	-.07	.26*	.37**
PACS	-.10	.18	.21*	-.08
SACS	.49**	.20	.26*	.44**
Image type	-.36**	-.04	-.02	.03
Instructional set	-.39**	.08	.09	.01
Actual comparison	—	-.08	.25*	.16
Multiple R	.73**	.39*	.63**	.76**

\* $p < .05$ ; \*\* $p < .001$ .

.01; body dissatisfaction  $R^2 = .40$ ,  $F(7,117) = 11.22$ ,  $p < .001$ ; weight anxiety  $R^2 = .58$ ,  $F(7,118) = 23.50$ ,  $p < .001$ ; recall  $R^2 = .03$ ,  $F(7,117) < 1$ ,  $p > .05$ . From Table 4 it can be seen that negative mood is not independently predicted by any single variable. For body dissatisfaction, BMI, tendency for global and specific comparison, and actual comparison make independent contributions. Finally, weight anxiety increases with increasing BMI and tendency for specific comparison.

## DISCUSSION

The present study examined the effects of acute exposure to magazine images (advertisements) of thin models on women's mood, body dissatisfaction, and weight anxiety from a social comparison perspective. The first finding was that viewing thin-ideal female images did lead to increased negative mood and body dissatisfaction. This is a disturbing finding in that we have demonstrated negative effects after only very brief exposure (11 images of thin idealized female bodies in about ten minutes), which is far less than what would be contained in a single issue of a fashion magazine. Thus our result adds to the growing body of evidence for "small but consistent" negative effects of media exposure (Groetz et al., 2002). In contrast to some previous studies, however, none of the trait variables moderated these effects. Here women were equally vulnerable to negative effects.

Advancing beyond previous research, the present study also manipulated the type of thin-ideal image. Body-isms, or photographic shots that focus on just part of the body (and not the face), were specifically investigated. It was found that body-part images elicited just as much social

comparison and produced as much negative affect and body dissatisfaction as full-body advertisements. Interestingly, the mean score on body dissatisfaction was actually the highest for body-part images. It is likely that such body-isms have additional larger social effects than those measured here; for example, they contribute to the objectification of women by others and themselves (Fredrickson & Roberts, 1997). Of interest to advertisers, however, the product and brand names associated with body-part images were actually less well recalled than full-body images. Hence advertisers should be dissuaded from using such images, for both women's health and commercial reasons.

The study's major contribution, however, is in detailing the role of appearance processing, in particular social comparison, in producing these effects. In the main, experimental effects were stronger on the actual amount of comparison in which women reported engaging than on mood or body dissatisfaction. Both image type and instructional set were found to influence amount of actual comparison, with thin ideal images (body part and full body) eliciting more social comparison than product images, and the social comparison instructional set eliciting more comparison than appearance focus or control conditions. These findings attest to the adequate strength of the experimental manipulations.

Here instructional set was manipulated in a more subtle way intrinsic to the task (via a series of ratings) than the explicit overall comparison instructions provided by Cattarin et al. (2000). Perhaps because of this, although instructional set influenced the amount of actual comparison as predicted, it did not significantly influence body dissatisfaction or weight anxiety. On mood there was a significant interaction, whereby social comparison instructions moderated the effect of image type. In particular, in contrast to the appearance focus and control conditions where full-body and body-part images led to greater negative mood than product images, under the social comparison instructional set women who viewed the product images scored relatively more highly on negative mood. Although unexpected, this finding has important theoretical and methodological implications. Conceptually, it provides a strong illustration of the importance of what women do in response to images, in so far as even neutral stimuli can cause distress if processed in particular ways. Methodologically, it carries the implication that experimental instructions are important.

Thus experimental investigations that elicit social comparison processes either explicitly or implicitly are liable to find effects, irrespective of the stimulus materials. In particular, where the experimental group is given different instructions than the control group, instructions may have effects of their own. Ideally instructions should be kept constant

across all conditions, or explicitly manipulated as in the present study and that of Cattarin et al. (2000). In general, we would argue that media researchers have not paid sufficient attention to their specific instructions, considering them as more-or-less incidental to the task. Even a cursory glance through the literature shows that the generation of appearance stimulus materials is usually reported in great detail, whereas the instructions for viewing the stimuli are not. This is accurately reflected in Groesz et al.'s (2002) meta-analytic review, which does not include instructions as a coding category. It is also consistent with the general lack of research attention paid to mediating processes. If we explicitly focus on what women actually do in response to the presentation of thin ideals, that is on the underlying processing that links media exposure to body dissatisfaction, then it becomes obvious that instructions as to what to do during the task are crucial. This echoes Henderson-King, Henderson-King, and Hoffman's (2001) recent call for a better understanding of the mechanisms by which women's feelings about their bodies are influenced by social or media messages, with a closer examination of automatic and controlled processing.

The study also demonstrated that the actual amount of comparison in which the women engaged is an important predictor of negative mood, body dissatisfaction, and weight anxiety. More formally, actual comparison partially mediated the relationship between media exposure and negative mood and body dissatisfaction. This supports the conceptualization of social comparison as an important linking process between media images and negative consequences for the woman. Further, it seems that social comparison can be elicited through image type, through instructional set, and by women's natural (trait) tendencies for making comparisons, all of which the regressions show to contribute independently.

In fact, the last of these (the trait variable of tendency to make comparisons) emerged as the strongest independent predictor of all outcome variables. Thus social comparison offers a potential specific target for our preventative interventions. Future research might usefully address the proposition that if women and girls can be persuaded or educated not to compare themselves with others, then some of the negative impact of media exposure might be reduced.

In summary, the present study provides strong support for the relevance of social comparison theory in understanding the relationship between media promotion of the thin ideal and women's body dissatisfaction. The study has demonstrated that both individual differences in predisposition to make comparisons, and the actual process of comparison, play important roles. In fact, the present experiment is the first to examine both in the same study. Women's trait tendency to compare their

bodies to other women as a means of self-assessment contributes (together with the experimental manipulations of image type and instructional set) to the degree to which the comparison process is stimulated, as well as to women's body dissatisfaction, negative mood, and weight anxiety. As a whole, notwithstanding the limitations discussed, the study provides persuasive evidence that future efforts to examine media effects would be well served by consideration of the social comparison processes involved.

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