Effects of Exposure to Thin Media Images: Evidence of Self-Enhancement Among Restrained Eaters

Jennifer S. Mills
York University
Janet Polivy
C. Peter Herman
University of Toronto
Marika Tiggemann
Flinders University

The effects of viewing media-portrayed idealized body images on eating, self-esteem, body image, and mood among restrained and unrestrained eaters were examined. Study 1 found that restrained eaters (i.e., dieters), but not unrestrained eaters, rated both their ideal and current body sizes as smaller and disinhibited their food intake following exposure to idealized body images. These results suggest that restrained eaters are susceptible to a “thin fantasy” brought about by viewing ideal body images. Study 2 found that strengthening thinness attainability beliefs can further enhance the thin fantasy demonstrated by restrained eaters following exposure to idealized body images. Study 3 examined whether demand characteristics moderate these effects of media-portrayed idealized body images. As predicted, when explicit demand characteristics were present, participants reported feeling worse following exposure to thin models. The complexities of the media’s role in the development and maintenance of body dissatisfaction and dieting behavior are discussed.

Exposure to thin, idealized body images in mass media is commonly thought to affect women adversely and to contribute to the prevalence of body dissatisfaction. However, the combined correlational and experimental literature examining the relation between media and various parameters of eating pathology in women shows dramatically mixed results in this area. Correlational studies seem to demonstrate a reliable association between exposure to idealized body images and eating disorder symptomatology (e.g., Botta, 1999; Harrison & Cantor, 1997; Stice, Schupak-Neuberg, Shaw, & Stein, 1994; Tiggemann & Pickering, 1996). Some experimental studies suggest that exposure to media projecting idealized body images has either an adverse main effect on female viewers (Ogden & Mundry, 1996; Stice & Shaw, 1994) or an interactive effect with body-image disturbance (Heinberg & Thompson, 1995). Other studies fail to demonstrate any significant effect in non-eating-disordered women (Champion & Furnham, 1999; Irving, 1990; Seddon & Berry, 1996; Waller, Hamilton, & Shaw, 1992), and still others find unexpected positive effects (i.e., self-enhancement) following such exposure (Henderson-King & Henderson-King, 1997; Myers & Biocca, 1992; Wilcox & Laird, 2000).

The effects of exposure to media-portrayed idealized body images on self-evaluation are frequently conceptualized in terms of “contrast effects,” a tendency to evaluate more negatively one’s own appearance after viewing
highly attractive individuals (Thornton & Moore, 1993), as derived from social comparison theory. Some research has shown that exposure to highly attractive target persons results in lower ratings of one's own attractiveness than does exposure to unattractive target persons (Cash, Cash, & Butters, 1983). Exposure to highly attractive, thin female images as projected by the mass media is thought to produce a high "adaptation level" (Helson, 1964) and result in lowered assessments of the attractiveness of more realistic, "average" women (Kenrick & Gutierres, 1980), including oneself. Martin and Kennedy (1993) and Richins (1991) have discussed how such social comparison processes may help to explain adverse reactions to advertised idealized body images.

By contrast, some contemporary social comparison literature predicts assimilation effects in response to others perceived as better off than oneself (Collins, 1996; Mussweiler & Strack, 2000). Viewing a highly attractive model may have inspirational effects on an individual, resulting in a positive shift in self-perception (Collins, 1996). Lockwood and Kunda (1997) have demonstrated the inspirational effects of academic superstars on university students. Presumably, a highly successful target evokes a salient possible self that is integrated into one's current self-image. Likewise, exposure to photographs of thin, attractive magazine models could make a woman temporarily feel better about herself because they inspire her and, in doing so, make salient a thinner, more attractive possible version of the self.

The dramatically mixed findings in the effects of exposure to idealized body images on mood and self-evaluation lead us to inquire about individual factors in the effect of media exposure that may explain differential response to idealized body images (i.e., inspiration vs. deflation). One individual difference variable already found to produce behavioral eating differences in response to thin media images is restraint status (Seddon & Berry, 1996; Strauss, Doyle, & Kreipe, 1994). Restrained eating (i.e., dieting) can be defined as an attempt to restrict one's food intake with the intent of decreasing or maintaining one's weight. Although dieting may be considered normative, particularly for young women (e.g., Polivy & Herman, 1995), dieting often has significant adverse health effects, including increased emotional lability, lowered self-esteem, preoccupation with food, susceptibility to binge eating, weight fluctuations, and eating disorders (e.g., Polivy & Herman, 1987). It is likely that restrained eaters respond differently to idealized body images than do unrestrained eaters because weight and shape are personally relevant for them and because their dieting is essentially an attempt to bring their weight and/or shape more in line with the ideal.

According to the "spiral model" of chronic dieting and eating disorders proposed by Heatherton and Polivy (1992), dieters engage in negative self-evaluations when confronted with slim body images. Because they feel that they do not live up to their high standards for body weight and shape, dieters initiate a series of unsuccessful diets to achieve their goal of thinness and in doing so spiral into increased negative affect and body dissatisfaction, reduced self-esteem, and increased susceptibility to dietary disinhibition and overeating.

Previous research has shown that restrained eaters’ eating behavior is influenced by exposure to thin media images. Strauss et al. (1994) found that televised images of a thin female consuming a diet product exacerbated disinhibited eating among restrained eaters. They proposed that the thin images produced ego threats in the dieters; the disinhibiting effects of ego threats on the eating behavior of restrained eaters have previously been demonstrated (e.g., Heatherton, Herman, & Polivy, 1991). However, because the Strauss et al. (1994) study did not measure the effects of thin-image exposure on indices of ego threat/distress, the conclusion that the dieters who saw the diet commercial experienced ego threats remains speculative. In a similar study by Seddon and Berry (1996), restrained and unrestrained participants saw videotaped television advertisements containing either stereotypical idealized images of women or matched advertisements containing neutral images. Exposure to ads featuring thin idealized body images caused restrained eaters, but not unrestrained eaters, to increase food consumption in a subsequent ad lib taste task. Contrary to the authors’ predictions, dieters’ self-esteem was not worsened by viewing thin bodies. Thus, no conclusions were reached as to why the restrained eaters’ intake was disinhibited.

By contrast, the results of Lockwood and Kunda (1997) suggest that restrained eaters are apt to be inspired by thin media images because weight and shape are personally relevant to them and because they are in the process of attempting to lose weight. Thus, exposure to idealized body images in the media may produce a shift toward a more positive self-image, presumably through inspiration. Disinhibited eating in response to idealized body images among dieters could just as likely reflect positive affect as negative affect, which is also known to disinhibit eating in restrained eaters (Gools, Schotte, & McNally, 1992).

STUDY 1

Study 1 therefore sought to replicate and extend the findings of Strauss et al. (1994) and Seddon and Berry (1996) by exploring whether exposure to thin body images results not only in disinhibited eating among restrained eaters but also in changes in mood and body
image that would support either the negative contrast or inspiration hypothesis. We predicted that restrained eaters, who are concerned about their weight and shape, would eat more following exposure to magazine ads portraying thin female bodies than after seeing magazine ads featuring either “plus-size” women’s bodies or neutral (product-only) images. Plus-size female models were included as a comparison group to demonstrate that it is specifically thin female body images and not female body images in general that elicit disinhibited eating among dieters. If the negative contrast explanation is correct, overeating among restrained eaters should be mediated by ego threats, which should produce an increase in restrained eaters’ current and ideal body size estimates and a worsening of mood and self-esteem. However, restrained eaters may demonstrate the self-enhancement effect based on the findings of Lockwood and Kunda (1997). Because of their high concern with weight and shape, dieters may be particularly susceptible to the inspiring effects of viewing idealized body images. If this is the case, restrained eaters should respond to idealized body images by feeling better about their own appearance following exposure to thin body images. Their increased eating would thus reflect their enhanced mood rather than ego threat/dysphoria.

Method

PARTICIPANTS

Ninety-eight female undergraduate students between the ages of 18 and 25 (M = 19.72, SD = 1.13) enrolled in Introductory Psychology at the University of Toronto at Mississauga volunteered to participate either to partially satisfy course requirements or for $7. For all three studies, American Psychological Association (1992) ethical principles were applied to all participants. Also in all three studies, height and weight were collected from participants at the end of the experiment. In Study 1, a one-way ANOVA revealed no significant differences between experimental conditions with respect to body mass index (BMI), but restrained eaters had a higher BMI (M = 25.83, SE = .93) than did unrestrained eaters (M = 21.72, SE = .43), F(1, 94) = 18.69, p < .001.

MATERIALS

Magazine advertisements. The final selection of ads was based on the judgments of a team of researchers. The thin-body ads showed a full-body photo of a female model judged to be attractive and very thin. The plus-size-body ads were selected by a team of researchers and had to show a full-body photo of a female model judged to be attractive and moderately heavy. These ads were all taken from the magazine Mode, which is a high-quality fashion magazine featuring plus-size models. The product-only ads showed no model, either male or female. All ads had to be judged to be colorful and generally attractive. Consideration was given to choosing ads for the body conditions featuring models who differed from one another in terms of complexion, hair color, and race and product-only ads depicting products similar to those in the body ads.

MEASURES

Dietary restraint. The Restraint Scale (Polivy, Herman, & Howard, 1988) consists of 10 scored items and assesses frequency of dieting, attitudes toward eating, and weight fluctuations. This measure has satisfactory test-retest reliability and construct, criterion, and concurrent validity (Heatherton, Herman, Polivy, King, & McGree, 1988). Individuals scoring 15 or more are classified as restrained eaters; those scoring 14 or less are classified as unrestrained eaters.

Mood. The Affect Rating Scale (ARS) (Atkinson & Polivy, 1976) was used to measure anxiety, depression, hostility, and total negative affect.

State self-esteem. The Current Thoughts Scale (Heatherton & Polivy, 1991) was used to measure current appearance, social, performance, and total state self-esteem.

Current and ideal body size perception. The present study adapted Fallon and Rozin’s (1985) measure of body perception to measure current and ideal body size perception. Our index consisted of two identical rows of female body silhouettes arranged from thinnest to largest (left to right). Participants circled a number on a line (i.e., 1, 1.5, 2, etc.) below the female silhouette that best resembled their (a) current body-size perception among the top row of silhouettes and (b) ideal body size among the bottom row of silhouettes. Participants’ scores could range from 1 to 9 and half scores were permitted.

PROCEDURE

The experiment was presented to participants as a market research study. After the debriefing at the end of the study, no participants revealed knowledge of the true purpose of the study. A single experimenter tested each participant in 1-hour sessions. Participants were seated alone at a table in a private room. After reading and signing a consent form and completing initial mood and hunger ratings, each participant received 12 laminated full-page color ads taken from recent issues of popular women’s magazines. The ads were presented in counterbalanced order. Participants were randomly assigned to one of three conditions, viewing (a) 7 ads showing thin bodies and 5 ads showing no model (product-only filler ads); (b) 7 ads showing large bodies and 5 ads showing no model; or (c) 12 ads showing no model (product-only). Participants were given a bogus Consumer Response Questionnaire to complete for each ad and
were told that they had 15 min to look at and rate the ads. The Consumer Response Questionnaire asked participants to indicate, on 9-point Likert-type scales, (a) the overall attractiveness of the ad, (b) the attractiveness of the model in the ad (if applicable), (c) the extent to which they see themselves as being similar to the model in the ad (if applicable), (d) the effectiveness of the ad in making them want to buy the advertised product, (e) the age group to which they think the ad would appeal, and (f) how good the ad made them feel. Principally, these questions were asked to increase the credibility of the cover story and to focus participants’ attention on the ads. However, similarity ratings were relevant to our hypotheses as derived from social comparison theory and were included in the analyses.

After 15 min, the experimenter returned to collect the ads and the completed questionnaires. The experimenter asked if the student was willing to participate in a brief questionnaire study being conducted by another researcher. All participants agreed to take part in the second, ostensibly unrelated study. Participants were presented with the state measures of interest to the study (mood, self-esteem, and body-size perception) and were instructed to complete them in the order in which they appeared. Participants rang a bell to indicate to the experimenter in the next room when they were finished.

The experimenter returned to the room and placed in front of the participant three pre-weighed plates piled high with three different flavors of small, freshly baked cookies. It was explained that a company had a new brand of cookie dough coming out on the market soon and that it would like to know which flavor to market first in an ad campaign. Participants were provided with a rating sheet for each plate and were instructed to rate the taste of the cookies on various taste dimensions. To boost the cover story, the experimenter told the participant that the plates were arranged in a particular order, that the ratings should be performed in that order, and that they should have a drink of water before tasting the next type of cookie. Participants were told that they should eat as many cookies as was necessary to ensure accurate ratings but that they should not change their ratings after tasting the next type of cookie. Participants were told that after the ratings of all three types of cookies had been completed, they should help themselves to as many cookies as they wished because the lab had “tons of them.” In 10 min the experimenter returned and collected the plates of cookies and rating forms. She then presented participants with seven more magazine ads to look at and rate on the same forms as earlier. The magazine ads were of the same type that participants had seen earlier and consisted of either (a) five thin-body ads with two control ads, (b) five plus-size-body ads with two control ads, or (c) product-only ads. In this second exposure phase, participants were told to take as long as they liked looking at the ads and to ring a bell once they were done. How long participants chose to look at and rate the ads was recorded. However, because there were no significant differences with respect to time spent looking at the ads, these data are not reported.

In the final part of the experiment, the experimenter told participants that she had some more questionnaires for them to complete that were part of the other researcher’s study. Participants then completed the personality measure of interest to the experiment (i.e., dietary restraint). The experimenter returned to debrief participants and to probe whether they were aware of the connection between the different tasks, which none was.

Results

A series of two-way Ad Type (thin bodies vs. large bodies vs. products only) × Restraint (unrestrained vs. restrained eaters) analyses of variance (ANOVAs) testing the main hypotheses were performed on the dependent measures, including mood, state self-esteem, current and ideal body-size perception, and cookie intake. Means and standard errors for the main dependent measures are presented in Table 1.

Similarity ratings. Although mainly included to boost our cover story to participants, the Consumer Response Questionnaire allowed us to examine the question of how similar participants felt to the thin and large models featured in the magazine ads. The results revealed a significant main effect of restraint, $F(1, 51) = 4.24, p < .05$; in general, restrained eaters felt more similar to the models than did unrestrained eaters. This main effect was qualified by a significant interaction between Restraint and Ad Type, $F(1, 51) = 5.24, p < .03$. Restrained eaters felt more similar to the large models ($M = 4.11, SE = .39$) than they did to the thin models ($M = 2.88, SE = .39$), $t(47) = 2.28, p < .05$, whereas unrestrained eaters felt equally similar to large ($M = 2.50, SE = .31$) and thin ($M = 2.91, SE = .33$) models.

Mood. There were no significant main or interaction effects on state anxiety, depression, hostility, or total negative affect. Thus, restrained eaters who viewed the thin-body ads did not report more negative affect than did those who viewed the large-body or product-only ads.

State self-esteem. Appearance and total state self-esteem were included in the present analyses. There were significant main effects of restraint on appearance, $F(1, 97) = 14.94, p < .01$, and total state self-esteem, $F(1, 97) = 7.62, p < .01$; restrained eaters had lower appearance and total state self-esteem than did unrestrained eaters. There was a marginal interaction between Ad Type and Restraint on appearance state self-esteem, $F(1, 97) = 3.01, p < .06$;
restrained eaters had higher appearance self-esteem in the thin-body condition than in the large-body condition, \( t(92) = 1.79, p < .10 \), with the neutral condition not significantly different from either the thin- or large-body ads. There were no significant differences among unrestrained eaters with respect to appearance state self-esteem.

**Current and ideal body size perception.** There was a significant main effect of restraint on current body size perception, \( F(1, 97) = 23.70, p < .001 \). Restrained eaters (accurately) judged their current body size as larger than did unrestrained eaters. There was also a significant interaction between Restraint and Ad Type on current body size perception, \( F(2, 97) = 4.22, p < .02 \). Restrained eaters in the thin-body condition judged their current body size to be smaller than did those in the large bodies condition, \( t(92) = 1.99, p < .05 \), and marginally smaller than did those in the control ad condition, \( t(92) = 1.61, p < .15 \). On the other hand, unrestrained eaters in the thin-body condition judged their current body size as marginally larger than did those in the control ad condition, \( t(92) = 1.75, p < .10 \). The two-way (Ad Type \( \times \) Restraint) ANOVA on ideal body size also revealed a significant interaction, \( F(2, 97) = 3.29, p < .05 \). Restrained eaters in the thin-body condition rated their ideal body size as smaller than did those in either the large-body or product-only condition, \( t(92) > 2.42, p < .05 \). Unrestrained eaters rated their ideal body size as the same across conditions.

**Cookie intake.** There was a significant interaction, \( F(2, 97) = 4.42, p < .02 \), for total food intake. As is shown in Table 1, restrained eaters ate more in the thin-body condition than in either the large-body or product-only conditions, \( t(92) > 1.95, p < .05 \). Restrained eaters ate nonsignificantly less in the large bodies condition than the product-only condition, \( t(92) = 1.37, p > .15 \). Unrestrained eaters ate the same amount regardless of ad condition.

We realized that our results would be even more compelling if we could demonstrate that trait body dissatisfaction did not better explain the observed interactions. Accordingly, we reanalyzed the key results (intake, ideal body size, current body size, appearance self-esteem) using a median split on trait body dissatisfaction (a subscale of the Eating Disorder Inventory; Garner, Olmsted, & Polivy, 1983) given before the Restraint Scale at the end of the study. The interactions between ad type and body dissatisfaction were not significant with respect to intake, ideal body size, current body size, or appearance self-esteem. That is, restraint, not body dissatisfaction, was the key individual difference variable in explaining differential responses to media-portrayed idealized body images.

**Discussion**

The results of Study 1 replicated the finding of previous researchers that restrained eaters engage in disinhibited eating after being shown media-portrayed thin, idealized body images. As we predicted on the basis of the findings of Strauss et al. (1994) and Seddon and Berry (1996), restrained eaters who viewed idealized body images in magazine ads ate significantly more than did those who viewed ads featuring either plus-size models or product-only ads. Negative affect or other evidence of ego threat, as had been predicted by Strauss et al. (1994) and Seddon and Berry (1996), did not mediate this effect, however. Exposure to idealized body images did not make restrained eaters feel worse about themselves in terms of body image, mood, or self-esteem. Instead, restrained eaters, but not unrestrained eaters, reported a thinner ideal body size and a thinner current body size following exposure to idealized body images. Restrained eaters also demonstrated a trend toward

### TABLE 1: Means of the Main Dependent Measures as a Function of Restraint and Ad Type for Study 1

<table>
<thead>
<tr>
<th></th>
<th>Thin Bodies</th>
<th>Large Bodies</th>
<th>Product Only</th>
<th>Thin Bodies</th>
<th>Large Bodies</th>
<th>Product Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>36.73 (3.88)</td>
<td>34.56 (2.44)</td>
<td>34.76 (2.00)</td>
<td>32.17 (2.48)</td>
<td>33.07 (2.67)</td>
<td>33.04 (1.95)</td>
</tr>
<tr>
<td>Depression</td>
<td>34.27 (3.44)</td>
<td>34.22 (2.75)</td>
<td>33.65 (1.87)</td>
<td>31.83 (2.13)</td>
<td>32.07 (2.24)</td>
<td>33.13 (1.95)</td>
</tr>
<tr>
<td>Hostility</td>
<td>35.09 (3.79)</td>
<td>34.78 (2.25)</td>
<td>32.71 (1.96)</td>
<td>33.17 (1.77)</td>
<td>32.29 (2.16)</td>
<td>33.61 (1.86)</td>
</tr>
<tr>
<td>Total negative affect</td>
<td>106.09 (10.59)</td>
<td>103.56 (6.95)</td>
<td>101.12 (5.42)</td>
<td>97.17 (6.13)</td>
<td>97.43 (6.76)</td>
<td>99.78 (5.37)</td>
</tr>
<tr>
<td>Appearance self-esteem</td>
<td>19.00a (1.37)</td>
<td>15.70b (1.37)</td>
<td>17.95 (7.8)</td>
<td>20.00 (1.37)</td>
<td>22.53 (9.7)</td>
<td>21.00 (9.66)</td>
</tr>
<tr>
<td>Total state self-esteem</td>
<td>73.23 (3.26)</td>
<td>61.90 (4.72)</td>
<td>67.74 (2.01)</td>
<td>78.53 (2.43)</td>
<td>75.73 (3.34)</td>
<td>72.58 (2.90)</td>
</tr>
<tr>
<td>Current body size</td>
<td>3.92c (1.37)</td>
<td>4.80d (1.37)</td>
<td>4.53 (2.9)</td>
<td>3.83 (1.9)</td>
<td>3.17 (3.0)</td>
<td>3.21 (1.18)</td>
</tr>
<tr>
<td>Ideal body size</td>
<td>2.65a (1.15)</td>
<td>3.30b (2.1)</td>
<td>3.37c (1.9)</td>
<td>3.03 (1.8)</td>
<td>2.83 (2.1)</td>
<td>2.96 (1.12)</td>
</tr>
<tr>
<td>Intake (grams)</td>
<td>85.92a (11.60)</td>
<td>46.80b (8.22)</td>
<td>63.84b (6.86)</td>
<td>56.07 (8.06)</td>
<td>69.40 (9.61)</td>
<td>61.42 (5.07)</td>
</tr>
</tbody>
</table>

NOTE: Standard errors are shown in parentheses.

a-b. Significantly different at the .05 level.

c-d. Marginally different at the .10 level.
increased appearance self-esteem after viewing the thin body ads. Despite being objectively heavier than unrestrained eaters, restrained eaters felt as similar to the thin models as did their objectively thinner unrestrained counterparts. In other words, restrained eaters engaged in self-enhancement following exposure to idealized body images. After looking at very thin models, chronic dieters report not only that they want to be thinner but that they are in fact thinner. It seems that, for the moment, restrained eaters’ motivation to inhibit eating was decreased.

This positive shift in self-perception resulting from exposure to idealized body images suggests a more complex role of the mass media in disordered eating than has been originally proposed by some (e.g., Stice & Shaw, 1994). Not all women feel worse about themselves after viewing pictures of ultra-thin models in the media. In the present study, dieters appear to have envisioned themselves as being thinner than usual after looking at idealized body images, reflecting an enhanced, not worsened, conception of their bodies. After finding evidence of counterintuitive self-enhancement following media exposure, Myers and Biocca (1992) suggested the possibility of a “thinness fantasy” induced by media exposure. Instead of feeling worse about herself after seeing slim media images, a dieter may engage in a fantasy of believing herself to be thin and experience a temporary feeling of thinness. The consequence of such a shift in self-perception may be the removal of inhibition and dietary restraint, as evidenced by restrained eaters’ disinhibited eating. Precisely why dieters overrate in response to the idealized body images is still ambiguous, but it is plausible that feeling thinner made dieters less concerned with restricting their food intake.

STUDY 2

Dietary restraint status moderated the effects of media exposure, with dieters showing evidence of self-enhancement following exposure to idealized body images in Study 1. Dieters may be more likely than nondieters to self-enhance after viewing thin models because weight and shape are personally relevant to them and they have undertaken dieting as a means of achieving a thinner physique. Dieters also have thinness attainability beliefs that may interact with exposure to thin media images to produce self-enhancement. If thinness were not achievable, they presumably would not be dieting. Lockwood and Kunda (1997) demonstrated that attainability of a desirable trait is a moderator of self-enhancement in response to “superstars.” Study 2 investigated the role of thinness attainability beliefs in heightening or diminishing the self-enhancement effect in restrained eaters. Based on Lockwood and Kunda (1997), we predicted that strengthening a dieter’s belief that thinness is attainable would heighten self-enhancement resulting from exposure to idealized body images in the media. On the other hand, weakening a dieter’s belief that thinness is achievable should extinguish self-enhancement and elicit a negative contrast effect following exposure to ideal body images. Because dieters are the ones likely to be influenced by thinness attainability beliefs, and there are no obvious predictions for nondieters, we used only restrained eaters in Study 2.

Method

PARTICIPANTS

Sixty-one female restrained eaters between the ages of 18 and 25 (M = 19.72, SD = 1.13) enrolled in Introductory Psychology at the University of Toronto at Mississauga volunteered to participate either for partial course requirement or $7. All participants scored 15 or higher on the Restraint Scale. A one-way ANOVA revealed no significant differences between experimental conditions with respect to BMI.

MEASURES

The magazine advertisements, restraint, scale, mood scale, state self-esteem scale, and index of current and ideal body size perception were all identical to those used in Study 1.

Thinness-attainability articles. Three one-page articles were written for the present study. The high-attainability article, titled “New Hope for the Slimward Bound,” described how diets can and often do work and encouraged the reader not to give up trying to lose weight (high thinness-attainability condition). The low-attainability article, titled “Fat Chance: The Truth About Dieting,” described how the vast majority of diets fail and encouraged the reader to give up trying to alter a genetically determined physique (low thinness-attainability condition). A neutral thinness-attainability article, titled “Sheep in Wolves’ Clothing,” described how wolves are misunderstood as a species and are actually very shy and docile (neutral thinness-attainability condition).

PROCEDURE

The experiment was again presented to participants as a market-research study. After debriefing at the end of the study, no participant revealed knowledge of the true purpose of the study. A single experimenter tested each participant in 1-hour sessions. Participants were seated alone at a table in a private room. After reading and signing a consent form and completing initial mood and hunger ratings, each participant was presented with a one-page article to read. Participants were randomly assigned to one of three conditions, reading either the high, low, or neutral thinness-attainability article. Participants were told that we were interested in knowing what
they thought of these articles and that they were the types of articles that might appear in a magazine. Participants were then given magazine ads, featuring either products only or thin body images with Consumer Response Questionnaires as in the previous studies and were then given the state measures used in the previous studies. Thus, the procedure in Study 1 was repeated, including only the thin body and product ad conditions, with the addition of the thinness attainability article before media exposure.

**Results**

On the basis of the findings of Study 1 and the predictions of Study 2, a series of planned comparisons within the between-subject factors of ad type and thinness attainability were analyzed. Within the high-attainability conditions, means from the thin-body ads were compared to those from the product ads to test whether self-enhancement was increased when thinness was perceived as attainable. Within the thin-ads conditions, means from the high-attainability condition were compared to those from the low-attainability condition to test whether self-enhancement was affected by attainability beliefs. Finally, within the attainability control conditions, means from the thin-ads condition were compared to those from the product-ads condition to test whether restrained eaters self-enhance under neutral conditions. Means and standard errors for the dependent measures are shown in Table 2.

**Mood.** Within the high-attainability conditions, participants who viewed the thin-body ads were marginally less anxious than were those who viewed the product ads, $t(55) = 1.79, p < .10$. Within the thin-body ad conditions, participants who read the high-attainability article were less anxious than were those who read the low-attainability article, $t(55) = 2.25, p < .05$. In terms of depression scores, within the high-attainability conditions, participants who viewed the thin ads were less depressed than were those who viewed the product ads, $t(55) = 2.59, p < .05$. With respect to total negative affect, within the high-attainability conditions, those who viewed the thin ads were less upset than were those who viewed the product ads, $t(55) = 2.03, p < .05$. Within the thin-ad conditions, those who read the high thinness-attainability article were marginally less upset than were those who read the low thinness-attainability article, $t(55) = 1.78, p < .10$. No other planned comparisons reached significance.

**Self-esteem.** Within the high thinness-attainability conditions, those participants who viewed the thin-body ads had marginally higher appearance state self-esteem than did those who viewed the product ads, $t(55) = 1.88, p < .10$. No other planned comparisons involving appearance self-esteem were significant. No planned comparisons involving total state self-esteem were significant.

**Current and ideal body size perception.** Within the neutral attainability conditions, participants who viewed the thin ads had smaller current body size estimates than did those who viewed the product ads, $t(55) = 2.00, p < .05$. No other planned comparisons involving current body size perception were significant. No planned comparisons were significant for ideal body size.

**Discussion**

Within the neutral-attainability condition, we expected to replicate the findings of Study 1 and find evidence of self-enhancement following exposure to thin ads for restrained eaters. As expected, we found that participants who viewed the idealized body-image ads felt thinner than did those who viewed the product-only ads. Thus, as in Study 1, looking at thin idealized bodies made dieters report that they, too, are thin. Also as in

### Table 2: Means of the Main Dependent Measures as a Function of Thinness Attainability Beliefs and Ad Type Among Restrained Eaters for Study 2

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<tr>
<th></th>
<th>High Thinness Attainability</th>
<th>Low Thinness Attainability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thin Bodies</td>
<td>Product Only</td>
</tr>
<tr>
<td>Anxiety</td>
<td>27.40b,c (2.67)</td>
<td>34.00d (2.67)</td>
</tr>
<tr>
<td>Depression</td>
<td>25.90b (2.26)</td>
<td>34.20b (2.26)</td>
</tr>
<tr>
<td>Hostility</td>
<td>33.30 (1.65)</td>
<td>37.90 (3.32)</td>
</tr>
<tr>
<td>Total negative affect</td>
<td>86.60b (6.82)</td>
<td>106.10 (6.82)</td>
</tr>
<tr>
<td>Appearance state self-esteem</td>
<td>19.10b (1.25)</td>
<td>15.80b (1.25)</td>
</tr>
<tr>
<td>Total state self-esteem</td>
<td>70.80 (3.68)</td>
<td>61.80 (3.84)</td>
</tr>
<tr>
<td>Current body size</td>
<td>4.20 (.43)</td>
<td>4.25 (.27)</td>
</tr>
<tr>
<td>Ideal body size</td>
<td>2.95 (.16)</td>
<td>2.75 (.19)</td>
</tr>
<tr>
<td>$n$</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

**NOTE:** Standard errors are shown in parentheses.

a-b. Significantly different at the .05 level.

c-d. Marginally different at the .10 level.
Study 1, we did not find positive mood effects resulting simply from viewing idealized body images. Without manipulating thinness-attainability beliefs, the self-enhancement effect appears to be limited to enhanced self-perception rather than affect.

When we examined dieters’ response to viewing thin ads under conditions of either enhanced or diminished thinness-attainability beliefs we did find evidence of mood and state self-esteem effects. Participants who viewed thin-body ads after reading that thinness is attainable through diet and exercise felt less anxious and better about their bodies than did those who had read that thinness is determined genetically.

STUDY 3

Studies 1 and 2 focused on the moderating role of individual differences (i.e., restraint status) and thinness-attainability beliefs on media exposure. In Study 3, we were interested in further delineating why previous experimental studies have had such markedly different results. Although differential reactions of restrained and unrestrained eaters may be part of the dilemma, it is also possible that despite similar experimental paradigms, there are significant methodological differences between studies. One potentially important methodological variable not previously explored is the extent to which experimenter demand characteristics are present for participants; that is, does a participant’s knowledge of the true purpose of a study examining the effects of viewing idealized body images on mood make more likely the finding of “adverse” effects? It seems likely that participants hold tacit theories regarding the effects of viewing ultra-thin fashion models on parameters such as depression and anxiety. Certainly, psychologists are aware of the theoretical framework provided for such an assumption by social comparison theory—that we judge ourselves relative to others and may feel deflated by exposure to a highly attractive target compared to whom we fall short (i.e., a negative contrast effect). Even popular culture, however, seems to hold this same view as expressed in a recently popular song by Baz Luhrmann that includes the advice, “Don’t read beauty magazines. They’ll only make you feel ugly.”

In Study 3, we hypothesized that demand characteristics also moderate the effects of media images on women. Because of our lack of significant findings of mood effects from exposure to idealized body images in Studies 1 and 2, despite previously reported effects in the literature, we focused on mood as a function of demand characteristics. Collins (1996) has discussed the effects of awareness of assimilation versus contrast effects on social comparison processes. Based on Collins (1996), we hypothesized that explicit demand characteristics (e.g., “How good do these pictures make you feel?”) would result in worsened mood following exposure to ideal images than following exposure to neutral stimuli. Furthermore, implicit demand characteristics (e.g., “Now that you’ve looked at these pictures, please fill out this mood questionnaire”) also may operate on restrained eaters. Typically characterized by a history of weight-loss attempts, restrained eaters may feel that they are particularly deflated by exposure to body images to which they aspire in vain. In addition, entering the “thinness fantasy” may be more difficult when dieters are forced to focus on how the thin images make them feel. Because unrestrained eaters are not motivated to emulate thin idealized body images by dieting, they may not expect to be discouraged by such images. Therefore, we predicted that restrained eaters believe that exposure to media-portrayed idealized body images ought to make them feel bad and will report worsened mood following exposure to ideal body images under conditions of implied demand but not when demand characteristics are minimized. Unrestrained eaters, on the other hand, should not show evidence of operating under implicit demand characteristics because the association between media exposure and mood should not be salient enough for them to perceive an implied demand.

Method

PARTICIPANTS

The study included 105 female undergraduate students between the ages of 18 and 25 (M = 19.72, SD = 1.13) enrolled in Introductory Psychology at the University of Toronto who volunteered to participate to satisfy course requirements. A one-way ANOVA revealed no significant differences between experimental conditions with respect to BMI.

MATERIALS

Magazine advertisements. The thin and neutral magazine ads from Studies 1 and 2 were used.

MEASURES

Restraint and mood. Mood and dietary restraint were measured as in Studies 1 and 2 with the Restraint Scale (Polivy et al., 1988) and the Affect Rating Scale (Atkinson & Polivy, 1976).

Ratings of magazine ads. The Consumer Response Questionnaire used in Studies 1 and 2 also was used in the present study. The item “How good does this ad make you feel?” was embedded in the previous items regarding the ads’ attractiveness and effectiveness in selling the advertised item. Participants indicated on a 9-point Likert scale how good the ad made them feel (not at all good to very good), with higher scores reflecting more positive feelings. A score was calculated for each participant by taking the average rating of the ads she viewed.
PROCEDURE

The experiment was initially presented to all participants as a consumer attitude study. Participants were informed that the purpose of the experiment was to examine the effects of advertising on the consumer. Before participating, all participants were told that they would be asked to rate a number of advertisements along certain dimensions. After debriefing at the end of the study, two participants in the minimized-demand condition revealed knowledge of the connection between the ads and the mood questionnaire and were excluded from the analyses. A female experimenter tested each participant individually in a 1-hour session. When she arrived at the lab, the participant was seated alone at a table in a private room and was asked to sign a consent form and to complete a short questionnaire assessing her initial mood and hunger. Afterward, each participant was presented with 10 laminated full-page color ads in counterbalanced order. Participants were randomly assigned to one of two ad conditions, viewing (a) 7 ads showing thin bodies and 3 filler (product-only) ads or (b) 10 product-only ads. Participants were told that they had 10 min to look at and rate the ads on the Consumer Response Questionnaire.

After 10 min, the experimenter returned and asked participants to complete a self-report questionnaire package. Participants were randomly assigned to one of two conditions. In the minimized-demand condition, participants were told that another researcher in the department was collecting aggregate data from undergraduate students on a number of personality dimensions. These participants were asked if they would be willing to complete some questionnaires while the next part of the consumer study was being prepared. All participants in this condition agreed to complete the questionnaires as part of the second “unrelated” task. In the implied demand condition, participants were asked to fill out the self-report questionnaire package as part of the initial study. All participants were given the mood questionnaire and were asked to ring a bell when they finished. Following completion of the questionnaire, the experimenter returned to debrief participants and to collect weight and height data.

To summarize the procedure, female restrained and unrestrained eaters were shown magazine ads featuring either thin models or neutral products and participants rated how good the ads made them feel (i.e., explicit demand). Participants then completed a multidimensional measure of mood (anxiety, hostility, and depression) that they believed was either (a) part of the same study (i.e., implied demand) or (b) for another researcher and an unrelated study (i.e., minimized demand).

RESULTS

ANOVAs were conducted to examine whether explicit and/or implicit demand characteristics affect mood ratings following exposure to media-portrayed idealized body images. Restraint was included as a subject variable.

Initial mood ratings. Initial mood ratings were included in the present analyses to rule out the possibility of pre-existing mood differences between experimental conditions. Although there were no initial mood differences between ad type or demand characteristic conditions, restrained eaters had lower (more negative) initial mood levels (\(M = 73.10, SE = 3.73\)) than did unrestrained eaters (\(M = 84.28, SE = 2.67\), \(F(1, 101) = 5.95, p < .02\)).

Explicit demand characteristics. The inclusion of the bogus Consumer Response Questionnaire in the procedure was intended to boost the cover story for all participants that the initial purpose of viewing the ads was for market research purposes. The item “How good does this ad make you feel?” was included in the present analyses to allow us to examine whether explicit demand characteristics affect participants’ judgments of their state following exposure to idealized body images from the media. There was a highly significant main effect of ad type such that participants who viewed the thin ads reported that they made them feel worse (\(M = 4.28, SE = .15\)) than did those who viewed the neutral ads (\(M = 5.03, SE = .17\), \(F(1, 101) = 8.19, p < .006\)).

Implied versus minimized demand characteristics. Anxiety, hostility, and depression ratings were included in the present analyses to allow us to examine whether implied demand characteristics affect participants’ judgments of their mood. There was a main effect of ad type on depression such that participants who viewed the thin ads had higher depression scores (\(M = 36.38, SE = 1.62\)) than did those who viewed the neutral ads (\(M = 31.96, SE = 1.03\), \(F(1, 101) = 4.49, p < .04\). However, this main effect was qualified by a three-way interaction between Dietary Restraint Status, Ad Type, and Demand Characteristics, \(F(1, 101) = 4.51, p < .04\). As shown in Table 3, restrained eaters reported feeling significantly more depressed after viewing the thin ads when implied demand characteristics were present than when demand characteristics were minimized, \(t(94) = 2.36, p < .05\). No other effects on anxiety, hostility, or depression reached significance.

DISCUSSION

The purpose of Study 3 was to examine the role of experimenter demand characteristics in the finding of adverse effects of exposure to thin media images on mood in women. When demand characteristics were present because participants knew that we were examining their mood in direct response to looking at pictures of thin fashion models, they reported feeling worse than
they did after looking at neutral images. Therefore, there does seem to be a bias among all women toward reporting that looking at thin media images makes them feel bad. Implied demand characteristics also modera-
ted the effects of exposure to thin idealized body images on mood, but only for restrained eaters. When it was suggested that the mood measurement was con-
ected to participants' viewing of thin fashion models, dieters reported feeling more depressed after viewing thin media images than when they were told that the mood questionnaire was unrelated to the ads. Nondieters reported the same depression levels whether demand characteristics were implied or minimized. These results demonstrate that participants hold implicit theories regarding the effects of viewing media-portrayed idealized body images on mood and underscore the importance of reducing demand characteristics to ensure internally valid results.

GENERAL DISCUSSION

The set of studies presented here provides important evidence concerning the question of whether and how exposure to media-portrayed idealized body images affects a female audience. Study 1 found evidence of self-enhancement among restrained eaters following exposure to thin-ideal bodies in magazine ads. While seemingly counterintuitive, media-induced self-enhancement has been reported previously (Henderson-King & Henderson-King, 1997; Myers & Biocca, 1992; Wilcox & Laird, 2000) but has been ignored by other researchers in this field. It appears that dieters experience a thin fantasy from looking at very thin, idealized body images in popular media. The notion that exposure to idealized images might produce positive effects in viewers is at first difficult to imagine for those who have come to take the social comparison or negative contrast assumption for granted. A positive response to idealized images, however, might help to explain the otherwise paradoxical fact that some women seem to enjoy viewing idealized images and seek out these images (Mills, Polivy, & Herman, 2001).

Study 2 demonstrated that differences in thinness-attainability beliefs affect how participants react to media-portrayed idealized body images. Unlike restraint status, however, this variable is malleable (at least among restrained eaters) and was influenced by reading a short article on whether body size is determined by diet and exercise or by genetics. The finding that high thinness-attainability beliefs heighten self-enhancement helps to explain why it is specifically restrained eaters who demon-
strate media-induced self-enhancement. Fashion models inspire dieters to be thinner; this is specific to restrained eaters, who are chronically concerned with their weight and shape. Exposure to such images thus makes salient to dieters a thinner possible self. Our results fit well with Lockwood and Kunda’s (1997) theory that superstars (or supermodels in this case) can have inspirational effects on individuals. These authors have shown that self-relevant superstars provoke self-enhancement and inspiration when their success seems attainable but self-deflation when it seems unattainable. Thus, according to their theory, individuals for whom thinness is a self-relevant characteristic and who perceive it to be attainable (i.e., dieters) feel inspired by idealized body images and evaluate their own bodies more posi-
tively. Inspiration appears to be a viable explanation for why some women enjoy reading beauty and fashion mag-
azines and why they may go out of their way to read them.

Finally, Study 3 found evidence that demand charac-
teristics also moderate the effects of exposure to the thin-ideal on women. Women appear to hold implicit theories regarding the effects of such exposure on mood; thus, neglecting to distract participants from the purpose of the experiment can elicit adverse media effects. This seems to be true especially for restrained eaters, who respond not only to explicit demand charac-
teristics but also to implicit suggestions that the experi-
ment is examining the participants’ response to media images.

This brings us to the question of how the present set of results fits with the previous literature on this topic. The prevailing view in the literature is that thin media images promote body dissatisfaction (and associated negative

<table>
<thead>
<tr>
<th>Implicit Demand Characteristics</th>
<th>Minimized Demand Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin Ads</td>
<td>Neutral Ads</td>
</tr>
<tr>
<td>Restrained eaters</td>
<td>41.86 a (5.60)</td>
</tr>
<tr>
<td>n</td>
<td>7</td>
</tr>
<tr>
<td>Unrestrained eaters</td>
<td>35.83 (2.25)</td>
</tr>
<tr>
<td>n</td>
<td>16</td>
</tr>
</tbody>
</table>

NOTE: Standard errors are shown in parentheses.

a-b. Significantly different at the .05 level.
mood) in (all) young women. The present findings dispute this assumption. Moreover, the fact that many women apparently enjoy reading beauty and fashion magazines is certainly inconsistent with the idea that idealized body images make women feel bad about themselves. Our results demonstrate that dieters in particular derive positive self-evaluation from looking at thin, attractive models. Exposure to media-portrayed idealized body images appears to allow dieters to envision themselves with a body more in line with their ideal.

Nondieters, on the other hand, do not react to thin media images by wanting to be thinner or seeing themselves that way. They do, however, exhibit a trend toward the theorized negative contrast effect when judging their own bodies relative to those of the magazine models; nondieters felt slightly (although not significantly) fatter after being shown thin, idealized body images. The identification of one group of women who indulge a pleasant fantasy by looking at fashion and beauty magazines helps to explain why some women choose to expose themselves to media containing high thin-ideal content.

The finding of self-enhancement among dieters following exposure to media-portrayed idealized body images suggests the need for revisions to the spiral model of chronic dieting and eating disorders (Heatherton & Polivy, 1992). The hazard of exposure to fashion and beauty magazines, as demonstrated in the present study, is not that the images immediately and automatically make women feel depressed and discouraged but rather that they make vulnerable women (dieters) want to be even thinner than they ordinarily do. They foster a fantasy of a thinner self to vulnerable women. It seems that dieters think that they can look more like the models they see in the magazines if only they were to buy that advertised product or go on a different recommended diet.

Based on the findings of Strauss et al. (1994) and Seddon and Berry (1996), we predicted that restrained eaters would eat more following exposure to media-portrayed idealized body images than compared to those who saw neutral advertisements. Whereas Study 1 did find that dieters disinhibited their eating in response to viewing thin media images, this effect did not prove reliable in Study 2. Eating in Study 2 was minimal across conditions and no significant interactions were obtained. One possible explanation for not finding this eating effect in Study 2 is that restrained eaters may have felt more self-aware after reading the attainability articles. Heightened self-awareness has previously been shown to inhibit eating in dieters (Heatherton, Polivy, Herman, & Baumeister, 1993). However, this explanation for the absence of media-induced disinhibition in Study 2 remains speculative at present.

LIMITATIONS AND DIRECTIONS
FOR FUTURE RESEARCH

Possible limitations of the present series of studies include the strength of the media manipulation we used. We do not know whether a more powerful media manipulation (e.g., exposing participants to more advertisements or other media such as movies or television) might produce different results. However, as demonstrated in Study 3, it is imperative for research in this area to consider the balance between a powerful manipulation and the minimization of demand characteristics. As well, although the Restraint Scale is widely accepted as a trait measure and although restraint was assessed well after the media exposure in all three studies, it is not known whether the classification of restrained and unrestrained eaters might have been influenced by the experimental manipulations. It is perhaps more ideal to measure dietary restraint prior to the experiment, without increasing the demand characteristics of the study (i.e., a separate and unrelated testing session).

Another limitation may be a possible reduction of external validity because participants were looking at the ads for purposes of cooperation with an ostensible market research study and not for enjoyment’s sake. Also, there were small numbers of participants in some of the experimental conditions in Study 3, although that should have limited our ability to find the differences we predicted. Finally, there were some inconsistencies in the data across studies and measures. Whereas self-enhancement was found for body-size perception, it was not found for mood. These conflicting findings raise questions about the distinction between mood and self-evaluation with respect to self-enhancement and suggest directions for future research and theory. For instance, can someone be inspired if her mood is not improved but her self-perception is? Another question is why restrained eaters disinhibited their intake after viewing thin media images. We speculated that this eating effect was due to temporary improvements in restrained eaters’ body image, but this explanation remains to be empirically tested. Future research could clarify exactly why dieters overeat in response to thin media images and examine the longer term effects of exposure to fashion and beauty magazines on dieters’ eating behavior.

CONCLUSIONS

The present set of experiments found repeated evidence that restraint status predicts the effects of media-portrayed idealized body images on women. Restrained eaters appear to exhibit self-enhancement following exposure to media-portrayed idealized body images. Specifically, restrained eaters are susceptible to a thin fantasy brought about by viewing ideal body images. Dieters’ beliefs regarding thinness attainability also
moderate the effects of exposure to thin media images; strengthening dieters’ thinness attainability beliefs heightens self-enhancement in response to thin media images. Finally, emphasizing demand characteristics reversed self-enhancement and resulted in increased reports of depression following exposure to ads featuring thin bodies. We speculate that the presence and prominence of demand characteristics may account for inconsistent findings of self-deflation (vs. self-enhancement) following exposure to idealized body images. Our results, therefore, clarify the inconsistencies in previous research in this area. We conclude that the mass media play a significant, but complicated, role in disordered eating by featuring thin body images that encourage fantasy and provide inspiration for women for whom weight and shape are personally relevant by presenting thinness as attainable. In the long term, women for whom fashion and beauty magazines provide enjoyment and inspiration may be internalizing an increasingly unrealistic ideal body for themselves and become at risk for increasing degrees of eating pathology.

NOTES
1. Although the Restraint Scale is widely accepted as a trait measure, it was administered at the end of the study to minimize any potential score fluctuations as a function of the experimental manipulations. The Eating Disorder Inventory (Garner, Olmsted, & Polivy, 1983) was administered immediately before the Restraint Scale but was not a primary subject variable of interest.
2. Participants also were given a taste test following the state measures and before the personality measures. However, with all participants being restrained eaters, eating was minimal and no significant main effects or interactions were found.
3. Planned comparisons were used instead of analysis of variance to test only specific relations suggested by Study 1, thereby reducing the chance of Type I error.

REFERENCES


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