DOES SIZE MATTER? THE IMPACT OF MODEL'S BODY SIZE ON WOMEN'S BODY-FOCUSED ANXIETY AND ADVERTISING EFFECTIVENESS

EMMA HALLIWELL AND HELGA DITTMAR
University of Sussex

An increasing number of studies shows that exposure to thin ideal bodies in the media has negative effects on young women's body images, at least in the short-term. However, this research has (a) consistently confounded the effects of thinness and attractiveness, and (b) not investigated the potential use of alternative images in advertising that do not decrease women's body esteem. This study examines the impact of three types of advertisements—featuring thin models, average-size models, or no models—on adult women's body-focused anxiety, and on advertising effectiveness. As expected, exposure to thin models resulted in greater body-focused anxiety among women who internalize the thin ideal than exposure to average-size models or no models. Yet, advertisements were equally effective, regardless of the model's size. This implies that advertisers can successfully use larger, but attractive, models and perhaps avoid increasing body-focused anxiety in a large proportion of women.

Levels of concern and public debate about whether the use of very thin models in the media has a detrimental effect on women are increasing. For example, the government in the UK held a body image summit in June 2000 to discuss the need for policies regarding such media images, and the Medical Association concluded "the media play a significant role in the aetiology of eating disorders" (BMA, 2000).

Psychological research has an important role in addressing two questions that are crucial to this debate. Is it true that displaying very thin

models as the ideal makes for better advertising? Is the thin ideal really detrimental to adult women? Hardly any studies have addressed possible links between advertising effectiveness and the use of thin models. However, some research has investigated the impact of thin media images.

ADVERTISING EFFECTIVENESS

While there has been extensive criticism of the use of ultra-thin models in advertising, the advertising industry seems reluctant to change its approach. The argument against using larger models is that "thinness" sells, whereas "fatness" does not. A spokesperson for the agency representing top models Naomi Campbell and Claudia Schiffer asserts that "Statistics have repeatedly shown that if you stick a beautiful skinny girl on the cover of a magazine you sell more copies... At the end of the day, it is a business and the fact is that these models sell the products" (Gillian, 2000, p. 7).

   This effectiveness argument is commonly used to defend the use of thin images in advertising, but there is little empirical support for this view. Experimental studies demonstrate that the physical attractiveness of a model in an advertisement increases consumers' positive attitudes toward the product, their willingness to purchase (Kahle & Homer, 1985), and actual purchase (Caballero & Solomon, 1984).

   Yet, the influence of a model's body size on advertising effectiveness has not been examined systematically. So, while there is empirical support for the proposition that advertising should employ attractive images, we do not know if it needs to employ extremely thin models.

THIN MEDIA IMAGES AND THEIR IMPACT ON WOMEN

Compared to the actual population of adult women, thin female models are drastically over-represented in magazines and television, so that only a small minority of women have the body size shown in virtually all advertising (Fouts & Burggraf, 1999, 2000; Spitzer, Henderson, & Zivian, 1999). Women's ideal body weight as depicted in magazines has decreased over the last 40 years, so that the average model now is more than 20 percent underweight (e.g., Wiseman, Gray, Mosimann, & Ahrens, 1992). Parallels are frequently drawn between the decreasing size of the female body ideal and both escalating levels of women's body dissatisfaction and increases in the incidence of eating disorders (e.g., Jacobi & Cash, 1994; Stice, Schupak-Neuberg, Shaw, & Stein, 1994; Striegel-Moore, Silberstein, & Rodin, 1986). There is now growing em-

pirical support for the view that these images play a role in fueling women's body dissatisfaction.

Experimental studies on the impact of media images report that exposure to the thin ideal can and does lead to short-term decreases in body image (e.g., Irving, 1990; Grogan, Williams, & Conner, 1996; Heinberg & Thompson, 1995; Posavac, Posavac, & Posavac, 1998). There are some contradictory findings for particular groups of young women (Henderson-King & Henderson-King, 1997; Mills, Polivy, Herman, & Tiggemann, 2002; Myers & Biocca, 1992). However a recent meta-analysis assessed the results of 25 experimental studies and demonstrated that—on average—young women feel worse after exposure to thin images than other types of images (Groesz, Levine, & Murnen, 2002).

There are two conceptual issues concerning this type of research that should be considered. The first concerns possible demand characteristics; Mills et al. (2002) note that, because of the popular belief that thin models in advertising are "bad for you," participants' suspecting the true purpose of these studies may make identification of adverse effects more likely. Clearly studies that compare ratings of body image before and after exposure (e.g., Heinberg & Thompson, 1995) are prone to the creation of demand characteristics. It is therefore preferable to assess body image concerns only once: after exposure. However, Mills et al. (2002) argue that to eliminate demand characteristics, the images and the body image measures should, ideally, be assessed in different studies. They addressed this issue empirically by administering a post-exposure mood measure either as part of the same study ("implied demand characteristics") or as part of a separate study ("minimized demand characteristics"). Respondents' anxiety and hostility were not affected, but dieters reported more depression when the mood measure was part of the same, rather than a separate, study. It may not always be possible to present post-exposure measures as part of a separate study, but, clearly, researchers need to present such measures in an unobtrusive way and include a check that participants have remained naive to the true purpose of the research.

The second conceptual issue involves confounding the manipulation of weight and attractiveness. To date, all studies comparing exposure to different size models have, intentionally or not, contrasted thin models with less attractive, larger models. Irving's (1990) classic study provides a typical example of this as the thin models were more attractive (mean rating 4.8) than the average-size models (mean rating 3.8). This confound is problematic: it is unclear whether the reported results reflect the impact of models' body sizes or their attractiveness, or a combination of both. Therefore, a method is needed that avoids this confound.

Recent experimental research in this field has attempted to identify factors that may protect women against the negative effects of exposure to thin ideals (Heinberg & Thompson, 1995; Henderson-King, Henderson-King & Hoffmann, 2001; Posavac et al., 1998). Posavac et al. (1998) argue that body dissatisfaction, conceptualized as a "stable personality characteristic," acts as a moderator of vulnerability to media images. They found that women who were satisfied with their bodies did not report heightened weight concern after viewing thin images. However, women's body dissatisfaction is so widespread that it can be described as a "normative discontent" (Rodin, Silberstein, & Striegel-Moore, 1985). This would suggest that extremely thin images of beauty portrayed in the media could be detrimental to the body image of a large number of women.

Heinberg and Thompson (1995) found that a composite measure of awareness and internalization of sociocultural attitudes to appearance moderated the effects of media exposure. However, it seems important to us to draw an explicit distinction between women being simply aware of the importance society places on appearance and thinness, and women having internalized this importance as a personal belief system. The Sociocultural Attitudes toward Appearance Questionnaire (SATAQ; Heinberg, Thompson, & Stormer, 1995) consists of independent awareness and internalization subscales. Awareness of sociocultural ideals of thinness and attractiveness is assessed through the endorsement of statements such as "In our society, fat people are regarded as unattractive." Internalization is assessed using statements such as "I believe that clothes look better on thin models." A number of studies document that internalization is a stronger predictor of body image disturbance than awareness (Heinberg et al., 1995; Cusumano & Thompson, 1997; Stice, 1994). While the majority of women are aware of sociocultural attitudes concerning appearance, not all women internalize these attitudes to the same extent. Therefore, it is plausible that internalization, rather than simply the awareness, of sociocultural pressure will act as a moderator of media exposure.

THE PRESENT STUDY

Previous experimental studies on the impact of thin media ideals manipulated the weight of the models shown, but at the same time varied the attractiveness of these models. Thus, it is unclear whether it is the thinness of the models, or their attractiveness, or a combination of both, that has an impact on women's body esteem. It also means that attractive images have been compared with less attractive images, when attractiveness is known to sell. Therefore, these studies are not investigating alternative images that could realistically be used in advertising.

The study reported here aims to address both of these limitations. It presents an initial investigation of alternative images in advertising that are likely to be effective in selling products, but that—at the same time—may not induce distress in a sizeable proportion of women. It also extends previous research by de-confounding the effects of weight and attractiveness. Computer imaging software is used to stretch the size of models presented in the advertisements, thereby keeping attractiveness constant. Crucially, the current study actually assesses advertising effectiveness, and therefore is able to engage with debates about the need to use thin models in advertising.

This investigation also extends the examination of individual factors that moderate the effects of exposure to thin models on women's body-focused concerns through using the awareness and internalization subscales of the SATAQ already discussed. It is expected that internalization, rather than awareness, will moderate the effects of exposure to the thin ideal.

Finally, this study addresses a further limitation of previous research: its reliance on young student samples. It is unclear whether negative effects of exposure to the thin ideal are unique to very young women or whether this phenomenon extends to adult women. Therefore, a more diverse sample of women with a wider age range is used.

Three exposure conditions were used: no models, traditional thin models, and average-size models. Recently, Marks and Spencer conducted the largest ever survey of women's body sizes in the UK, and they concluded that a dress size 14 is now the norm for British women (Arlidge, 2000). This is equivalent to a U.S. size 12. Given that the participants in this study were British, a UK size 14 was used in the average-size model condition. As this represents the average dress size for the sample, it presents a more realistic comparison target for women than the thin ideal. These images, compared to the traditional thin model, may not be so drastically discrepant from women's views of their own bodies or their views of how their bodies could potentially look. Therefore, women who place considerable importance on their physical appearance as a measure of self-worth, may not be detrimentally affected by advertisements showing such models.

We expected that for high internalizers, exposure to advertisements featuring a thin model would result in higher body-focused anxiety than exposure to advertisements featuring an average-size model or no model, while there would be no difference for women low on internalization. Furthermore, we predicted that there would be no difference between body-focused anxiety among women exposed to an average-size model or no model, regardless of the extent to which they internalize sociocultural attitudes.

The investigation of the impact of model's body size on advertising ef-

fectiveness was exploratory. The advertising industry's argument that "thinness sells" suggests that the use of a thin model in advertising is more effective than the use of an average-size model or no model. However, previous research has only shown that the attractiveness of a model is associated with advertising effectiveness. Therefore, as long as it is ensured that both thin and average-size models are equally attractive, there should be no difference in the effectiveness of these two types of advertisements.

METHOD

PARTICIPANTS

Snowball sampling, through e-mail, was used to recruit non-student women. The final sample consisted of 202 women, 96% of whom were Caucasian and 88% of whom resided in the UK. Of these participants, 59 formed the control group, while 65 and 78 formed the two experimental groups respectively. Demographic information collected included age, income, relationship status, and Body Mass Index (BMI, a common measure of weight relative to height). The average age of participants was 30.8 years ($sd = 9.20$), and the median age was 28 years. The age range was large (19-67), but over 80% of the sample were under 35 years of age. The average BMI was 23.31 ($sd = 3.67$, range 16.6 = underweight to 44.9 = obese), categorized as normal according to population-relevant guidelines (British Heart Foundation, 1994). Annual household income ranged from less than £5,000 to more than £50,000 ($7,500 - $75,000), and the sample included women who were single (25%), in relationships but not living with their partners (21%), living with their partners (28%), or married (24%).

Analyses revealed that there were no significant demographic differences between the women in the three experimental conditions in terms of age ($F_{2,195} = 1.13$, ns), income ($\chi^2_{14} = 8.02$, ns) or relationship status ($\chi^2_6 = 6.33$, ns). Neither was there a difference in BMI ($F_{1,190} = .38$, ns), and the average BMI of women in each condition was classified as normal: 23.40 ($sd = 3.50$) for women in the thin model condition, 23.01 ($sd = 4.13$) in the average-size condition and 23.60 ($sd = 3.45$) in the non-model condition.

As would be expected, there was a moderate positive correlation between BMI and age ($r = .28$; $p < .001$), indicating that older women are slightly heavier. Although neither age nor BMI differed by exposure condition, the links between them did. The correlation between BMI and age was $r = .48$ ($p < .001$) in the control condition, $r = .27$ ($p < .05$) in the average-size model condition, and $r = .11$ (ns) in the thin model condition. Given this confound, it was decided to use both BMI and age as

covariates in all statistical analyses in order to detect possible systematic relationships with body-focused anxiety.

MATERIALS

Images and Advertisements. Each condition was represented by two images, and all advertisements created for this study showed deodorants. Adobe PhotoShop software was used to cut the image of a deodorant bottle from a real advertisement and impose it on to the new advertisements. The first brand was called "Gold" and the second "Jewel." Advertising slogans were added, but given the aim to compare the selling power of the images rather than slogans, they were kept relatively bland: "A gentle new anti-perspirant for women" (Advertisement 1) and "Dry and effective protection" (Advertisement 2). In order to create the advertisements for the control condition, images of two different landscapes—a sand dune and a meadow—were selected from recent magazine publications and scanned into a computer. Images of deodorant bottles and slogans were added. For the experimental advertisement conditions, images of two models featured in recent, popular women magazines' fashion spreads were selected because they were good examples of the thin ideal displayed in the media. The images selected had to fulfill some additional requirements, so that the computer "stretching" would produce realistic images (see below).

Information from a leading model agency website (www.models1.co.uk) revealed that the average waist measurement of the first 20 models was 24.05 inches (*sd* = .76, range 23-26). This represents a UK dress size 8 (Debenhams, 2001) and a U.S. dress size 2 (Banana Republic, 2001). It was assumed that the models used in this study were approximately UK size 8, U.S. size 2, with a waist size of 24 inches. In order to create the two advertisements for the thin condition, an image of a deodorant bottle and an appropriate slogan were added to the original images from the fashion spreads.

To create the advertisements for the average-size condition, PhotoShop was used to stretch the size of the model's body. Stretching a picture of a regular model, rather than using different models, allows all factors except body size to be controlled. In order to ensure that the resulting image looked realistic, model pictures had to meet certain requirements. The pictures had to be full-length, the models had to face the camera and wear figure-hugging clothes. Also, as only the bodies, not the heads, of the models were stretched, models with long, loose hair were chosen, so that their hair could be used to hide the join in the new image. The bodies were stretched by 25% of their original size, to a

30-inch waist, UK dress size 14 (Debenhams, 2001), U.S. size 12-14 (Banana Republic, 2001).

Pilot Study: Attractiveness of the Models. To check that the manipulation of body size had not affected the attractiveness of the models, women were recruited to rate the attractiveness of each model. An e-mail snowball sample was used, whereby e-mails were sent to 40 non-student women, asking them to rate the attractiveness of either the two thin or the two average-size models on a six-point scale, ranging from very unattractive (1) to very attractive (6). Thus, each participant gave two ratings, one for model "Gold" and one for model "Jewel." In total, 15 ratings were collected for the thin models and 17 ratings for the average-size models. Attractiveness ratings were analyzed by a 2 (size of model) × 2 (model) ANOVA with repeated measures on the second factor. There was a significant main effect for model, $F_{1,30} = 56.12$, $p < .001$, with the model featured in the Gold advertisement rated as significantly more attractive (*Mean* = 4.81, *sd* = .79) than the model in the Jewel advertisement (*Mean* = 3.14, *sd* = 1.19). Importantly, there was no main effect for model size ($F_{1,30} = .68$, *ns*), nor was there a significant two-way interaction ($F_{1,30} = 1.34$, *ns*). The means for the Gold model were 4.81 and 4.88, compared to 3.25 and 2.86 for the Jewel model. Thus, although the model for Gold is seen as significantly more attractive than the model for Jewel, the important finding for the present study is that the change in the models' body size did not influence their attractiveness. In fact, it was a bonus that there was a significant difference in attractiveness; this allows us (a) to test the hypothesis that attractiveness is related to advertising effectiveness and (b) to assess possible interactions between model attractiveness and body size, which would not have been possible if both models are equally attractive.

MEASURES

The Sociocultural Attitudes Toward Appearance Questionnaire (SATAQ; Heinberg, et al., 1995). The SATAQ is a 14-item measure that comprises two subscales of awareness and internalization already described. Respondents indicate their agreement with various statements on a six-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (6). Heinberg et al. (1995) reported reliabilities of .71 and .88 for awareness and internalization respectively. Among the present sample, the reliabilities were slightly lower but nevertheless acceptable, with Cronbach's alphas at .63 for awareness and .82 for internalization.

Advertising effectiveness was measured by three components drawn from previous studies. *Attitude to the advertisement* was measured by the question "How would you describe your reaction to the ad?" and *atti-*

tude to the brand by the question "What is your initial reaction to the brand described in the ad?" Participants responded on two six-point semantic differentials: unfavorable - favorable and negative-positive (MacKenzie & Lutz, 1989), and these two dimensions were highly correlated (.78 for advertisement and .79 for brand). The third component was *purchase intent*, measured with a single item: "If this brand cost the same as the brand(s) of [product] you normally buy, how likely would you be to purchase it on your next shopping trip?" (Coulter & Pinto, 1995). Responses on a six-point Likert scale range from very unlikely (1) to very likely (6). These three components formed an internally coherent measure, as evidenced by Cronbach alphas of .74 and .83 for the two advertisements. Given the qualitative difference between components, average ratings for each component were added together to form a total advertising effectiveness index (range = 3-18).

The Physical Appearance State and Trait Anxiety Scale (PASTAS: Reed, Thompson, Brannick & Sacco, 1991) . The PASTAS assesses anxiety associated with various body sites. In the present study, the scale was administered as a state measure of anxiety, where participants rated on a six-point scale how anxious they felt "right now" about various body sites, ranging from not at all anxious (1) to extremely anxious (6). The original scale includes 16 body sites, and reported reliabilities range from .82 to .92 (Reed et al., 1991). For the purposes of this study, only weight-related body sites were included, and the reliability of this shortened measure was .94.

PROCEDURE

The study was presented on the Internet, with a carefully constructed cover story about advertising and consumer preferences. Participants were recruited through e-mail and directed to the study's website. Twenty women personally known to the first author assisted in recruitment. None of these women were undergraduate students, and they were specifically asked to target non-student women whom they knew personally. None of these recruitment assistants took part in the experiment themselves, but they e-mailed information about the present study to friends and acquaintances. Recruitment continued through a snowball effect as the invitation to take part in the research also asked participants to pass on the e-mail to other women who they thought were likely to participate. The study was completed online, and when participants had completed all measures they submitted their responses, which were automatically returned via e-mail to the first author. This return was set up in such a way that participants' e-mail addresses were disguised to ensure anonymity.

The first webpage introduced the research as assessing women's consumer preferences with regard to advertising: it was stressed that the research was academic in nature, not commercial, and that the advertisements presented had been specifically created for this research. Participants were told that they would see two advertisements and their task was to evaluate both, as well as to select the advertisement that most appealed to them. It was explained that as the researchers were interested in "the kinds of people who prefer particular sorts of ads," they would be asked to fill in a few questions about their personal attitudes and beliefs. To begin the experiment, participants had to click a button at the bottom of the screen; this button randomly assigned each participant to one of the three conditions.

All participants began by filling in a set of questions ostensibly about values in society and their individual attitudes. Embedded within these questions was the SATAQ. Examples of filler items among the awareness scale included: "most people in today's society strive to be rich" or "intelligence is important if you want to get ahead in our culture." Filler items among the internalization scale included: "watching advertisements on TV makes me wish that I were richer" or "I buy products based on the performance or quality of that product."

This was followed by the presentation of the first advertisement, which featured a thin model, an average-size model or no model. After viewing the first ad, participants indicated their attitudes to it, their attitudes to the brand, and their intentions to purchase the product. The second advertisement was presented and participants were required to make the same ratings. In order to support the cover story, participants then indicated which advertisements they preferred and gave brief open-ended explanations for their choices.

Participants were then asked to indicate how nervous or tense they were feeling "right now" about various aspects of their lives. Embedded within these questions was the shortened version of the PASTAS focusing on weight-related sites. Filler items included participants rating how anxious they felt about "my personality," "my intelligence," "my family relationships," and "the extent that others respect me."

Finally, in order to check whether participants were aware of the true purpose of the study, they were asked to state in their own words what they thought the specific purpose of this study was. They ended by completing a demographics section, asking for age, income, relationship status, and weight and height (so that BMI could be calculated).

Responses about the "specific" purpose of the research were used to check that participants were naive and that they believed the cover story. All but five participants were completely unaware of the true purpose of the research. These five were not fully aware of the experimental

TABLE 1. Pearson Correlations of Body–Focused Anxiety with Study Variables

Exposure condition	Awareness–SATAQ		Internalization–SATAQ	
Thin models	.16	(.14)	.65***	(.64***)
Average–size models	.14	(.08)	.62***	(.56***)
Control (no models)	.12	(–.01)	.28*	(.29*)
Overall	.13	(.05)	.51***	(.50***)

Note. Correlations in brackets are partial, controlling for age and BMI. *$p < .05$, **$p < .01$, ***$p < .001$.

design, but they nevertheless guessed the focus on the effects of media images or body image. Given the possibility that this may have introduced demand characteristics, they were excluded from the analysis.

RESULTS

ASSOCIATION OF STUDY VARIABLES WITH BODY-FOCUSED ANXIETY

In order to investigate the relative importance of awareness and internalization of sociocultural attitudes toward appearance as potential moderators of the impact of thin media images, correlational data were examined. Table 1 shows the correlations between body-focused anxiety, and awareness or internalization of sociocultural attitudes respectively. Two correlations are reported, first the zero-order correlation, and second (in brackets) partial, controlling for age and BMI.

Body-focused anxiety was strongly correlated with internalization of sociocultural attitudes, as expected, particularly in the exposure conditions that showed an attractive model. However, there were no significant relationships between awareness of sociocultural attitudes and anxiety. This pattern of findings is virtually unaffected by women's age or BMI. These results suggest that internalization is a strong predictor of body image disturbance, while awareness of sociocultural attitudes toward appearance is not. They also support the proposed categorization of women on the basis of their internalization of ideals concerning appearance, rather than awareness.

A median split was used to create high and low internalization groups. The cut-off score for internalization was 4. Thus, this sample-based split coincides with a cut-off that is meaningful theoretically in terms of the 6-point scale used, where 3 represents "slightly disagree" and 4 "slightly agree." Therefore, in the "high internalization" group, on average, women agreed with statements (i.e., scored 4 or more on a

TABLE 2. Participants in Each of Three Exposure Conditions by Level of
Internalization

| Internalization | Condition | | | Total |
	Control	Average–Size Models	Thin Models	
High	34	33	31	98
Low	25	32	47	104
Total	59	65	78	202

6-point scale), while those in the "low internalization" group, on average, disagreed with the internalization statements. Table 2 shows the cell sizes for each condition by level of internalization.

Body-focused Anxiety. Anxiety scores were analyzed by a 3 (condition) × 2 (internalization) ANCOVA with age and BMI as covariates, and therefore estimated marginal means are reported as well as partial η^2 as a measure of effect size. Age did not emerge as significant ($F_{1,180} = .71$; *ns*; $\eta^2 = .00$), but, unsurprisingly, BMI showed a relationship with body-focused anxiety ($F_{1,180} = 26.07$; $p < .001$; $\eta^2 = .13$). Independent of age, heavier women tended to report more anxiety ($r_{partial} = .36$; $p < .001$), but there was no indication that BMI interacted systematically with either exposure condition or level of internalization. Thus, increasing weight made women more anxious, but did not moderate their vulnerability to the impact of media images, either by itself or in conjunction with level of internalization.[1]

The analysis did not reveal a significant main effect for exposure condition ($F_{2,180} = 1.77$; *ns*; $\eta^2 = .02$). Not surprisingly, there was a main effect for level of internalization ($F_{1,180} = 47.46$; $p < .001$; $\eta^2 = .19$), with participants high on internalization reporting greater body-focused anxiety (*Mean* = 2.98, *se* = .11) than those low on internalization (*Mean* = 2.03, *se* = .11). As predicted, there was a significant two-way interaction between condition and internalization ($F_{2,180} = 4.88$; $p < .01$; $\eta^2 = .05$), suggesting that the images had a different impact depending on whether women strongly internalized the thinness ideal or not. In order to examine the

---

1. In a supplementary analysis, age and BMI were examined as potential moderators. Women were classified as high or low on BMI and on age on the basis of median splits. Level of BMI and age were then examined along with condition and level of internalization as independent variables in an ANOVA of the same format. All interaction terms—between BMI, age, and the other independent variables—were nonsignificant, indicating that neither BMI nor age moderate the impact of media exposure on women's body focused anxiety.

TABLE 3. Estimated Marginal Means of Body–Focused Anxiety by Exposure
Condition among Women Low and High in Internalisation

| Internalization | Condition | | | |
	Control	Average–Size Models	Thin Models	Overall
Low	2.28 (.20)	1.87 (.18)	1.95 (.14)	2.03 (.11)
High	2.65 (.17)	2.87 (.18)	3.41 (.18)	2.98 (.11)
Overall	2.46 (.13)	2.37 (.12)	2.68 (.12)	

Note. Standard error in parentheses.

nature of this interaction and to test our hypotheses directly, sets of
planned comparisons were conducted separately for women high and
low in internalization, consisting of two orthogonal contrasts each. The
first tested whether body-focused anxiety was higher after exposure to
thin models than after exposure to the other two types of models
(one-tailed), and the second compared women's response to aver-
age-size models with those to landscape ads containing no models
(two-tailed). For low internalizers, the image contrasts failed to reach
significance ($F_{2,93} = 1.52$; *ns*), whereas, as predicted, they were significant
for high internalizers ($F_{2,85} = 3.41$; $p < .05$). The mean levels of anxiety
reported by women low and high on internalization after exposure to
each advertisement type are shown in Table 3.

Among participants reporting high levels of internalization, body-fo-
cused anxiety was lowest following exposure to no models, somewhat
increased after viewing average-size models and peaked following ex-
posure to thin models (see Table 3). The first planned comparison, con-
trasting exposure to thin models with the other two conditions, revealed
that those who had seen the thin models reported significantly higher
levels of anxiety (Contrast estimate = .61, $p < .01$). The contrast estimate
means that the average difference in body-focused anxiety amounts to
about two-thirds of a scale point on a 6-point scale. Importantly for our
hypothesis, the second contrast showed that body-focused anxiety fol-
lowing exposure to average-size models was not significantly greater
than anxiety reported after seeing no models (i.e., landscapes; Contrast
estimate = .22; *ns*). Finally, to gain a view of the difference in anxiety
level after viewing average-size or thin models, analysis demonstrates
that the mean difference represented a moderate effect size: $d = .46$
(Cohen, 1988).

The first three hypotheses were strongly supported. Internalization of
sociocultural attitudes concerning appearance moderated the impact of
advertising images on body-focused anxiety such that anxiety in women

low on internalization was not affected by the size of the models in advertising, while body-focused anxiety in women high on internalization was. Women who internalized sociocultural pressures concerning appearance experienced greater anxiety following exposure to thin models than when exposed either to average-size models or landscapes. There was no difference in levels of body-focused anxiety following exposure to averaged-size models or to no models, regardless of level of internalization. Furthermore, these effects were not moderated by women's age or BMI.

These results suggest that, among women who internalize sociocultural attitudes toward appearance, viewing thin models induces weight-related appearance concerns, whereas viewing average-size models does not. Thus model size matters for body-related anxiety, but does it matter for advertising effectiveness?

Advertising Effectiveness. Advertising effectiveness indices for the two advertisements shown were analyzed by a 3 (Condition) × 2 (Internalization) × 2 (Advertisement) ANCOVA with repeated measures on the last factor, and age and BMI as covariates. Given that the no models, landscape condition was qualitatively different from the two model conditions (where the same woman is depicted, but with different body sizes), it was decided to split the ANCOVA into two parts by partitioning the sums of squares for the Condition factor a priori into two contrasts. The first compared the landscape advertisements with advertisements showing a model, and the second compared the thin with the average-size models.

This second contrast is of central importance to our argument, because it allows us to assess whether model's body size had an impact on perceptions of advertising effectiveness. If model size influenced advertising effectiveness, we would expect a significant main effect for Condition on this contrast. However, the findings for this contrast showed that there was no main effect for exposure condition. There was no significant difference between the thin and the average-size models in terms of perceived advertising effectiveness ($F_{1,182} = 0.22$, *ns*; $\eta^2 = .00$). The mean of the advertising effectiveness index for the models was virtually identical when their body sizes were average (*Mean* = 8.15; *se* = .28) and when they were thin (*Mean* = 8.30; *se* = .26). A full set of advertising effectiveness means by exposure condition and model is given in Table 4. Thus, our main finding in this study with respect to effective advertising is that models' body sizes by themselves did not influence advertising effectiveness.

An additional finding is a small, but significant, difference in perceived advertising effectiveness between ads that showed models and

TABLE 4. Estimated Marginal Means of Advertising Effectiveness by Exposure
Condition for Two Advertisements

	Condition			
Advertisement	Control	Average–Size Models	Thin Models	Overall
Jewel	7.06 (.34)	6.76 (.32)	6.79 (.30)	6.87 (.18)
Gold	11.08 (.40)	9.55 (.38)	9.81 (.35)	10.14 (.22)
Overall	9.07 (.29)	8.15 (.28)	8.30 (.26)	

Note. Standard error in parentheses.

ads that did not (landscapes). Findings for the first contrast ($F_{1,182} = 4.50$, $p < .05$; $\eta^2 = .04$) showed that advertisements with no models were seen as somewhat more effective than advertisements that depicted attractive women (*Mean* = 9.07; *se* = .29 vs. *Mean* = 8.23; *se* = .27).

The assessment of whether model attractiveness influences advertising effectiveness was somewhat more complex: we would expect a significant main effect for Advertisement overall, and then expect significant differences between the two models in single-*df* comparisons on the advertising effectiveness index, both when they are thin and of average body size. The overall main effect for Advertisement was highly significant ($F_{1,182} = 112.13$, $p < .001$; $\eta^2 = .38$), but the main interest lay in pinpointing whether this effect occured when comparing the two models, without taking the landscape condition into account. Two single-*df* comparisons between the two models showed that advertising effectiveness differed significantly. Ads featuring the more attractive model Gold were rated as more effective than those featuring the model Jewel, both when they were thin ($F_{1,182} = 35.04$; $p < .001$) and when they were average-size ($F_{1,182} = 24.62$; $p < .001$).

The central finding for the second condition contrast demonstrated that differences in advertising effectiveness between the two models were due to attractiveness *independently* of model size, because the two-way interaction between condition and advertisement was not significant ($F_{1,182} = .18$; *ns*; $\eta^2 = .00$). This showed that the finding that model size did not impact on advertising effectiveness was similar for both model Gold and model Jewel. This conclusion is further supported by the absence of other significant findings or interactions. The internalization main effect, and two-way interactions between the two condition contrasts and level of internalization, were all nonsignificant (all $Fs_{1,182} < 2.06$, *ns*).

Thus, the main result is that attractiveness influenced advertising effectiveness, but model size did not. An average-size, attractive model was equally effective in advertising as a very slim attractive model.

DISCUSSION AND CONCLUSION

Internalization of sociocultural attitudes toward thinness and appearance moderated the impact of advertising on women's body-focused anxiety. Internalization, rather than awareness, as a crucial moderator has implications for intervention strategies, because it suggests that lowering women's—and girls'—levels of internalization could protect them from the potential negative impact of advertising.

For high internalizers, viewing thin models in advertising led to significantly greater body-focused anxiety than viewing average-size models or no models at all. Furthermore, body-focused anxiety did not differ between women who viewed average-size models and those who viewed advertisements that did not feature models. This finding may reflect a closer match between women's actual body sizes (or potential body sizes) and the bodies of average-size models than between adult women's bodies and thin models. Spitzer et al. (1999) reported that 99 percent of traditional female models, such as those used in the thin condition, were underweight. In fact, female models are shown to be more than 20 % underweight (Garfunkel, Schwartz, & Thompson et al., 1980). In contrast, women participants in this study, in each condition, had an average BMI that was categorized as normal. It is possible that women perceived less discrepancy between the way their bodies looked and the bodies of the attractive but larger models, and consequently viewing these images did not lead to increased body-focused anxiety, as least as far as weight-related body sites were concerned.

A major contribution of this research is to demonstrate empirically that it is the thinness of the models used in advertising, rather than their attractiveness, that is problematic as far as women's weight-related anxiety is concerned. There was no difference in the attractiveness of each model at thin and at average-size, but it was the thin version of the model that led to increased body-focused anxiety among susceptible women. This finding is particularly important because it is weight-related anxiety that is likely to lead to potentially unhealthy weight loss behaviors. However, the effects of exposure to thin and average-size attractive models on nonweight-related body image concerns are not addressed. It is possible that exposure to both average and thin models may have a similar impact on appearance-related rather than weight-related body esteem. This is an area that warrants further research.

This study showed that adult, non-student women across a wider age range can be negatively affected by the use of slim models in advertising.

The phenomenon is therefore not limited to student populations or very young women (used exclusively in previous studies), and these findings suggest that the presentation of idealized female bodies in the media continues to be problematic for some women into adulthood. However, the finding that age did not affect the negative impact of thin media images has to be interpreted bearing in mind that the great majority of our sample was under 35 years old. It may therefore be the case that, while negative media effects for high internalizers occur until their mid-30s, older women are less affected by media ideals. Future research should investigate possible age differences in later adulthood.

Like most other experimental research in this area, this study only investigated the effects of short-term exposure. If negative effects can be demonstrated as a consequence of a single exposure to thin models, repeated exposure may have even more damaging effects. A recent longitudinal study by Stice, Spangler and Agras (2001) demonstrated that prolonged exposure to the thin ideal had a negative impact on a particular subset of vulnerable female adolescents. Clearly, there is a need for future research to examine the long-term effects of exposure to the thin ideal on adult women's body image concerns and eating behaviors.

Finally, an important innovation of this study with enormous applied implications is the empirical assessment of advertising effectiveness. The results support previous findings that "attractiveness sells" (Kahle & Homer, 1985; Caballero & Solomon, 1984), as the advertisements featuring the more attractive model were perceived as more effective. However, in this study the use of very slim models in advertisements did not increase their effectiveness. Thus, in terms of selling power, it seems that models' body sizes may not matter nearly as much as the advertising industry claims. In fact, as far as average-size compared to thin models is concerned, size did not matter at all in this study.

Of course, this finding needs both corroboration as well as further examination. It is unclear whether thin and average body sizes of advertising models are equally effective for different types of consumer products. For instance, women models advertising food products may provide a particularly interesting case (Dittmar & Blayney, 1996). Still, the present study goes some way toward refuting the claims of the advertising industry that only thinness sells. Instead, by using attractive average-size models, advertising could avoid increasing body-focused anxiety in a large proportion of women while still successfully selling products.

REFERENCES

Arlidge, J. (2000, June 25). Now bigger is the ideal figure. *Observer*, p. 15. London: Guardian Newspapers Ltd.

Banana Republic (2001). *Size guide*. [Online]. Available at www.bananarepublic.com.

British Heart Foundation. (1994) *Coronary heart disease statistics.* London: Author.

British Medical Association (BMA). (2000). *BMA takes part in body image summit.* [Online]. Available at web.bma.org.uk/pressrel.nsf.

Caballero, M.J., & Solomon, P.J. (1984). Effects of model attractiveness on sales response. *Journal of Advertising, 13*(1), 17-23.

Cohen (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). New York: Academic Press.

Coulter, R.H., & Pinto, M.B. (1995). Guilt appeals in advertising: What are their effects? *Journal of Applied Psychology, 80*(6), 697-705.

Cusumano, D.L., & Thompson, J.K. (1997). Body image and body shape ideals in magazines: Exposure, awareness, and internalization. *Sex Roles, 37*(9-10), 701-721.

Debenhams (2001). *Size guide*. Available at www.debenhams.com.

Dittmar, H., & Blayney, M. (1996). Women's self-reported eating behaviours and their responses to food and non-food TV advertisements. *European Eating Disorders Review, 4,* 217-231.

Fouts, G., & Burggraf, K. (1999). Television situation comedies: Female body images and verbal reinforcements. *Sex Roles, 40*(5-6), 473-481.

Fouts, G., & Burggraf, K. (2000). Television situation comedies: Female weight, male negative comments, and audience reactions. *Sex Roles, 42*(9-10), 925-935.

Garner, D. M., Garfunkel, P. E., Schwartz, D., & Thompson, M. (1980). Cultural expectations of thinness in women. *Psychological Reports, 67,* (2), 483-491.

Gillian, A. (2000, May 31). Skinny models 'send unhealthy message'. *Guardian* (p. 7). London: Guardian Newspapers Ltd.

Groesz, L.M., Levine, M.P., & Murnen, S.K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31,* 1-16.

Grogan, S., Williams, Z., & Conner, M. (1996). The effects of viewing same-gender photographic models on body-esteem? *Psychology of Women Quarterly, 20*(4), 569-575.

Heinberg, L.J., & Thompson, J.K. (1995). Body image and televised images of thinness and attractiveness: A controlled laboratory investigation. *Journal of Social and Clinical Psychology, 14,* 324-338.

Heinberg, L.J., Thompson, J.K., & Stormer, S. (1995). Development and validation of the Sociocultural Attitudes toward Appearance Questionnaire. *International Journal of Eating Disorders, 17*(1), 81-89.

Henderson-King, E., & Henderson-King, D. (1997). Media effects on women's body esteem: Social and individual difference factors. *Journal of Applied Social Psychology, 27*(5), 399-417.

Henderson-King, D., Henderson-King, E., & Hoffman, L. (2001). Media images and women's self-evaluations: Social context and importance of attractiveness as moderators. *Personality and Social Psychology Bulletin, 27*(11), 1407-1416.

Irving, L.M. (1990). Mirror images: Effects of the standard of beauty on the self- and body-esteem of women exhibiting varying levels of bulimic symptoms. *Journal of Social and Clinical Psychology, 9*(2), 230-242.

Jacobi, L., & Cash, T.F., (1994). In pursuit of perfect appearance: Discrepancies among

self-ideal percepts of multiple physical attributes. *Journal of Applied Social Psychology, 24,* 379-396.

Kahle, L.R., & Homer, P.M. (1985). Physical attractiveness of the celebrity endorser: A social adaptation perspective. *Journal of Consumer Research, 11*(4), 954-961.

MacKenzie, S.B., & Lutz, R.J. (1989). An empirical-examination of the structural antecedents of attitude toward an ad in an advertising pretesting context. *Journal of Marketing, 53*(2), 48-65.

Mills, J.S., Polivy, J., Herman, P., & Tiggemann, M. (2002). Effects of exposure to thin media images: Evidence of self-enhancement among restrained eaters. *Personality and Social Psychology Bulletin, 28,.*(12) 1687-1699.

Myers, P.N., & Biocca, F.A. (1992). The elastic body image: The effect of television advertising and programming on body image distortions in young women. *Journal of Communication, 42,* 108-133.

Posavac, H.D, Posavac, S.S., & Posavac, E.J. (1998). Exposure to media images of female attractiveness and concern with body weight among young women. *Sex Roles, 38*(3-4), 187-201.

Reed, D.L., Brannick, M.T., & Sacco, W.P. (1991). Development and validation of the Physical Appearance State and Trait Anxiety Scale (PASTAS). *Journal of Anxiety Disorders, 5*(4), 323-332.

Rodin, J., Silberstein, L.R., & Striegel-Moore, R.H. (1985). Women and weight: A normative discontent. In T.B. Sonderegger (Ed.), *Nebraska Symposium on Motivation* (Vol. 32, pp. 267-307). Lincoln, NE: University of Nebraska Press.

Spitzer, B.L, Henderson, K.A., & Zivian, M.T. (1999). Gender differences in population versus media body sizes: A comparison over four decades. *Sex Roles, 40*(7-8), 545-565.

Stice, E. (1994). A review of the evidence for a sociocultural model of bulimia nervosa and an exploration of the mechanisms of action. *Clinical Psychology Review, 14,* 633-661.

Stice, E., Schupak-Neuberg, E., Shaw, H.E., & Stein, R.I. (1994). Relation of media exposure to eating disorder symptomatology: An examination of mediating mechanisms. *Journal of Abnormal Psychology, 103*(4), 836-840.

Stice, E., Spangler, D., & Agras, W.S. (2001). Exposure to media-portrayed thin-ideal images adversely affects vulnerable girls: A longitudinal experiment. *Journal of Social and Clinical Psychology, 20*(3), 270-288.

Striegel-Moore, R.H., Silberstein, L.R., & Rodin, J. (1986). Toward an understanding of risk factors for bulimia. *American Psychologist, 41*(3), 246-263.

Wiseman, C.V., Gray, J.J., Mosimann, J.E., & Ahrens, A.H. (1992). Cultural expectations of thinness in women: An update. *International Journal of Eating Disorders, 11*(1), 85-89.