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# Model Size in Magazine Advertising and Body Esteem among Female College Students: The Moderating Role of BMI

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## ABSTRACT

*Weight and body concerns have reached epidemic proportions among female college students. Such high levels of body dissatisfaction can lead to disastrous results. Since the mass media is considered an important purveyor of the thin ideal, the present study investigated the impact model size in magazine advertising has on the body esteem of female college students. Because it is unlikely that all women will respond similarly to the models depicted in such ads, the present study tested the potentially moderating role of Body Mass Index (BMI) on the model size – body esteem relationship. As hypothesized, subject BMI did moderate this relationship. Findings suggest that low/normal BMI females respond differently to skinny and plus-size models portrayed in magazine ads compared to their high BMI counterparts.*

## INTRODUCTION

How would you feel about your body if the standard of beauty for your gender was the typical model used in ads or even the Barbie Doll? While the average U.S. woman is 5'4" and weighs 140 pounds (Bissell and Rask 2010), the typical model in the U.S. is 5'11" and weighs 117 pounds (Media and Eating Disorders 2006). Even the Barbie doll, the body ideal for many American women, is a size 5, stands 5'6" tall and weighs 110 pounds (Stephens, Hill and Hanson 1994). And, it appears that the thin ideal is becoming even thinner (Bissell and Rask 2010; Stephens, Hill and Hanson 1994). All the while, the average weight of American women has increased.

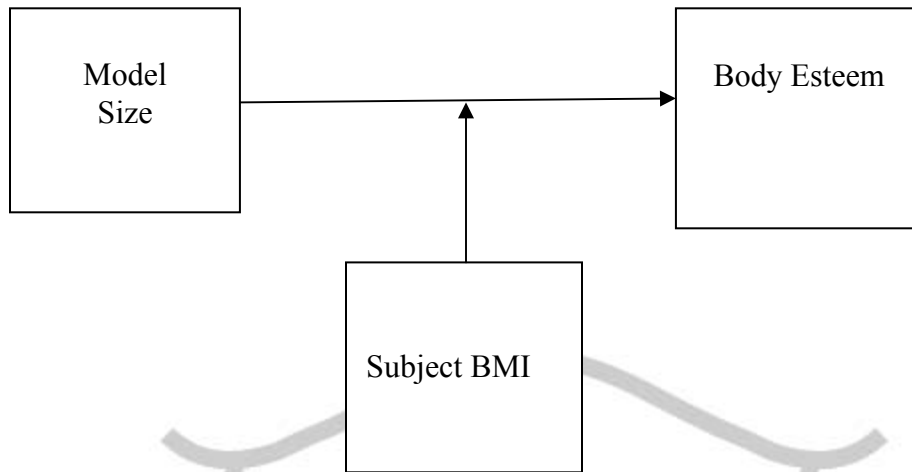
It is not too great a leap of faith to suggest that the thin ideal portrayed in the various media plays an important role in the growing body dissatisfaction among American females. Nowhere is this body angst more acute than in the female college student population. As Grossbard et al. (2009) state, "College students are particularly susceptible to social pressure associated with physical appearance, as these developmental periods are critical for the formation of one's identity and self-worth across a number of domains, including physical self-evaluations" (page 199). A vast majority of freshman college students (85%), according to Drewnowski and Yee (1987), want to lose weight. This figure includes one-half to two-thirds of normal weight females who also feel they are too heavy (Stephens, Hill and Hanson 1994). Low et al. (2003) assert that weight and body concerns have reached epidemic levels among female college students.

Such high levels of body dissatisfaction can lead to disastrous results. Winzelberg et al. (2010) report that as many as 25% of female college students are considered at risk of developing an eating disorder. One study of female college students found that one-third used laxatives or induced vomiting at least once a month to control their weight (Mintz & Betz 1988). Body dissatisfaction has also been linked to lower levels of self-esteem and psychological well-being (Cash & Hicks 1990), anorexia, bulimia, starving, bingeing, purging, excessive exercising and even cosmetic surgery ([www.scribd.com](http://www.scribd.com)) and depression (Bissell and Rask 2010). Only 30-40 percent of those suffering from anorexia ever fully recover (South Carolina Department of Mental Health 2006).

Given the above, the prevalence of body dissatisfaction among female college students, in particular, and females of all ages in general is a significant barrier to the mental and physical well-being of the female population. Since the mass media is considered by many to be the strongest purveyor of the thin ideal among American women, it should also be considered a risk factor in body dissatisfaction (Hargreaves & Tiggemann 2003). Harrison and Cantor (1997) state, "The mass media may operate as important influences on disordered eating through their impact on the values, norms, and aesthetic standards embraced by modern U.S. Society" (page 41). Based upon a large scale meta-analysis, Grabe, Ward and Hyde (2008) conclude that increased media consumption leads to higher levels of body dissatisfaction among women. The more one is exposed to thin models the more dissatisfied she becomes with her own body.

What is not as clear as the apparent relationship between thin models and body dissatisfaction is the impact that heavy or plus-size models have on body dissatisfaction. Early results in this area have been mixed (e.g., Dittmar 2004). If skinny models have a detrimental effect on body dissatisfaction it stands to reason that average or plus-size models should have a positive (reduce) impact on body dissatisfaction. The primary objectives of the present research are to (1) investigate the impact of both heavy and skinny models on body esteem among female college students, and (2) to test a possible moderating role of body mass index (BMI) on the model size-body esteem relationship. Figure one depicts the model to be tested. It is naive to think that all women respond similarly to exposure to the thin ideal in advertising. Contributions of the present study include the use of an experiment to carefully consider the impact of both heavy and skinny models on body dissatisfaction in female college students, a particularly vulnerable population, the investigation of the potentially moderating role of BMI in the above relationship, and the use of magazine ads as the media of choice to study these relationships. Earlier research has shown that magazines have a more powerful impact in conveying the thin ideal than does television (Harrison and Cantor 1997).

**Figure 1**  
The Proposed Moderating Role of BMI on the Model Size – Body Esteem Relationship



### **Model size and Body Dissatisfaction**

The tendency to compare ourselves to others appears to be a basic human motivation (Pettigrew 1967). Our physical appearance is no exception. We look to others and the media to evaluate our attractiveness. The “Gold Standard” for research with female college students and idealized images in advertising is pioneering research conducted by Richins. Richins (1991) found that female college students compare themselves with idealized advertising images which raises their comparison standards (upward social comparisons) and lowers their satisfaction with their own attractiveness. The logical outcome of these comparisons is increased body dissatisfaction - the larger the discrepancy between the actual and ideal self the greater the body dissatisfaction. Through the use of focus groups, surveys, and experiments with female college students, Richins found that participants did compare themselves to the idealized advertising images. And, that the lower body satisfaction that resulted from such comparisons was likely due to rising comparison standards. After viewing idealized images of females in advertisements, participants rated average-looking women as less attractive (page 81). Media exposure leads women to accept the beauty standards set by advertising as reality. Like much of the research to follow, Richins concludes that “exposure to highly attractive images can negatively affect feelings about the self, such as satisfaction with appearance” (page 81).

A more recent meta-analysis of 77 studies conducted by Grabe, Ward, and Hyde (2008) came to the same conclusion as Richin’s earlier work: exposure to media images extolling a thin-ideal body type leads to greater body dissatisfaction. Those who saw more thin models in advertising were more dissatisfied with their body. Some estimate that the typical U.S. consumer is exposed to as many as 3,000 ads daily (www.scribd.com). Given this deluge of ads, many of which depict the thin-ideal body type, it should come as no surprise that viewers begin to accept such media portrayals of women as reality. And, experiments conducted by Bissell and Rask (2010) found that female college students who endorsed the thin ideal were more dissatisfied with their bodies. Given the above, we offer our first hypothesis:

**H1:** Exposure to thin models in magazine ads will lead to lower body esteem among female college students.

In contrast to the above, the impact of plus-size models on body satisfaction is open to debate. It seems logical to expect that if thin models increase body dissatisfaction that plus-size models should make women feel better about their bodies. But the evidence to date has been mixed.

Several studies have found that average or plus-size models may not negatively impact body image and may function as well as thin models in selling products. Two experiments conducted with 76 women who currently or presently suffered from eating disorders were conducted by Halliwell, Dittmar and Howe (2005). The experimenters altered the images of two models using Adobe Photoshop to create the thin model advertisements (for perfume). For the plus-size models, the researchers stretched the models' body by 25% so that it was equivalent to an average UK dress size of 14. The same slogans and perfume bottles were used to create equivalent ads across the two experimental conditions. Care was taken to assure that both the thin and average size models were equivalent in attractiveness. The independent variable consisted of the two experimental groups and a control condition. The dependent variable was a measure of body-focused anxiety (post-exposure only). Advertising effectiveness was measured by asking the subjects to rate their attitudes towards the ad and brand. Those participants who were exposed to the average-size models reported significantly lower levels of anxiety concerning their body than did control group participants (no model). The authors referred to this phenomenon as a "relief effect". Body-focused anxiety was reduced for those viewing average-size models. The study's results also suggest that no difference exists between the size of the model portrayed in an advertisement and the ad's effectiveness. Thin models were no more effective than average-size models in regard to attitudes toward the ad and brand. Similar results have been found in studies by Halliwell and Dittmar (2004), Peck and Loken (2004) and Hafner and Trampe (2009).

Several recent studies, however, paint a very different picture of the impact of average or plus-size models on body image. Bissell and Rask (2010) conducted an on-line experiment that compared a non-manipulated image of a Dove model to three manipulated images of the same Dove model's face on an ultra-thin, muscular/athletic and plus-size body. Photoshop was used to merge the three body types and Dove model face. The subjects were asked about each model's attractiveness and thinness as well as societal views of thinness and levels of self-discrepancy. The over-arching goal of the experiment was to assess whether the Dove Campaign For Real Beauty was effective in impacting how women felt about the beauty of others and themselves. For the purposes of question at hand, exposure to the Dove average-size model did not lead to lower levels of self-discrepancy across the treatment groups. In sum, there was no evidence of the "relief effect" found by Halliwell et al. (2004) when using average-size models.

An even more recent series of studies conducted by Smeesters, Mussweiler and Mandel (2010) found that plus-size models evince little or no positive impact on their intended target audience. The researchers conclude that ad campaigns like Dove's Campaign For Real Beauty do little to improve women's body image and purchase intent. In fact, such ads might actually undermine enthusiasm in average and plus-size consumers. "It is not the absolute size of the model in the



ad,” state the researchers, “but, rather, the relative distance between the consumer’s size and the model’s size that determines the ad’s effect on self-esteem” (page 931).

Although the evidence regarding the impact of plus-size models on body image is equivocal, the present study will test the following hypothesis:

**H2:** Exposure to plus-size in models in magazine ads will lead to higher body esteem among female college students.

### **Model Size, BMI, and Body Dissatisfaction**

As might be expected, the relationship between model size in advertising and body image is more nuanced than the simple conclusion that all women will respond similarly to the models depicted in ads. It is unlikely that thin models exert a negative influence and average or plus-size models a positive influence on body image uniformly across all women.

Factors that might impact one’s vulnerability to media messages include age (adolescents may be more vulnerable than adults), those who place a higher importance on their appearance, have internalized the thin ideal, who consume more mass media, have low or contingent self-esteem or who are more prone to make upward social comparisons or have large self-discrepancies.

Surprisingly, one factor that has not received sufficient research attention is the weight of the respondent/subject. Body Mass Index (BMI) has been shown to be the most consistent biological correlate of body dissatisfaction among females. Studies have shown that high BMI leads to greater body dissatisfaction (Grossbard et al. 2009). In the U.S., where the thin-ideal is dominant and growing thinner, women with high BMI have larger self-discrepancies and hence, greater body dissatisfaction. In a series of three studies discussed earlier, Smeesters et al. (2009) found that it was not the size of the model used in the ad that impacted the participant’s body image. The researchers concluded that it was the perceived discrepancy between the model and subject’s body size that determined the ad’s impact on the subject’s body esteem. This is consistent with satisfaction theory that states the larger the negative discrepancy between an ideal and actual state, the greater the dissatisfaction. The authors conclude that female college students’ reaction to different model sizes in ads depends on their own body type. Given the above, we offer the following hypothesis:

**H3:** The relationship between model size and body dissatisfaction will be moderated by the subject’s BMI.

### **METHOD**

The sample used in this study consisted of 222 undergraduate females ranging in age from 19 to 23 years old with an average age of 21. The students all participated as members of the departmental subject pool and earned partial course credit for their participation. The study took approximately 10-15 minutes to complete. The study had been previously approved by the Human Subjects Committee of the university.

## Materials & Procedure

Students who agreed to participate in this study were sent an e-mail which contained a link to the test site. Upon clicking on the provided link subjects were randomly assigned to one of three conditions: ads with plus-size models, thin models or control group. Earlier, ten ads for each of the two treatment groups were chosen from fashion magazines. The ads were chosen to represent the extremes of model body size. The ads were scanned for use in an electronic survey format. The control group completed a questionnaire that addressed an unrelated subject. BMI was later calculated for each subject who was placed in one of two groups: high BMI ( $BMI \geq 25.0$ ) or low/normal BMI ( $BMI < 25.0$ ). Eighty-two and eighteen percent of the sample were placed in the low/normal or high BMI groups, respectively.

The questionnaire was administered via the Qualtrics software system. Upon entering the system subjects were told that they would be completing a study of how people respond to various magazine advertisements. The subjects were then instructed to peruse the following ten magazine ads and answer the two questions at the end of each advertisement. The purpose of the questions was to ensure that the subject spent sufficient time viewing the model in each advertisement. Representative questions dealt with the color of particular items of clothing or similar questions that drew the subject's attention to the model in the advertisement. After viewing the ten ads, as a manipulation check, subjects were asked to rate the size of the models in the previous ads. This manipulation check confirmed that the model's in the skinny model treatment group were seen as significantly thinner than the plus-size models. Mean for the skinny models was 1.46 versus 4.34 for the plus-size models on a 5-point scale ranging from very skinny (1) to very heavy (5). A sample of a "skinny" and "plus-size" magazine ad can be found in the study's appendix.

Subjects were then asked to complete the six-item Body Image States Scale (BISS) developed by Cash et al. (2002). The BISS was designed to measure how respondents currently felt about the following six domains related to their body/appearance:

1. Over-all physical appearance (dissatisfaction-satisfaction)
2. Body size and shape (satisfaction-dissatisfaction)
3. Weight (dissatisfaction-satisfaction)
4. Physical attractiveness (extremely attractive-extremely unattractive)
5. Current looks compared to usual (great deal worse-great deal better)
6. Looks compared to the average person (a great deal better-great deal worse)

Responses to each of the six questions were recorded on 9-point, Likert-type scales. Half of the responses read negative to positive and the other half positive to negative. Instructions included a strong, bold-faced statement that respondents were to report how they feel RIGHT NOW AT THIS VERY MOMENT. Cronbach's alpha for the six-item scale was .80.

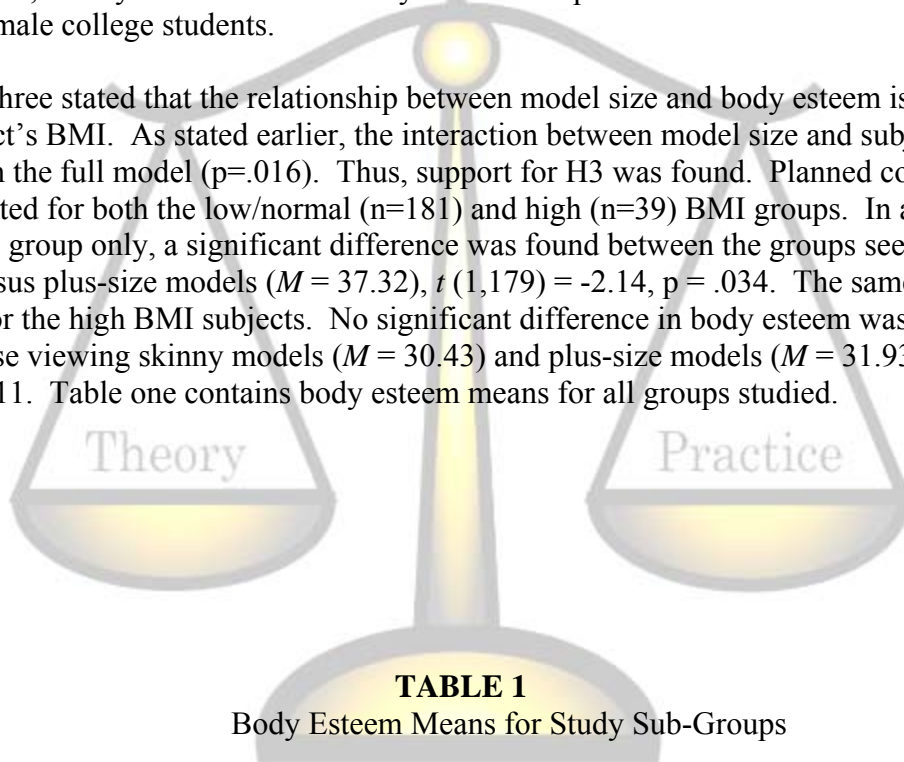
The final block of questions asked such classification information as gender, age, year in school, height and weight. The last of which were used to calculate each subject's BMI.

## RESULTS

To test the study's three hypotheses a 3(model Size = skinny, plus-size, and control group) x 2 (BMI: low/average < 25.0 and high ≥ 25.0) between subjects analysis of variance (ANOVA) was employed. The full model was significant [ $F(5,221) = 9.28, p < .001$ ] as were the main effects for model size [ $F(2,221) = 7.35, p = .001$ ], BMI [ $F(1,221) = 33.03, p < .001$ ] and the interaction between model size and BMI [ $F(2,221) = 4.21, p = .016$ ].

Hypotheses one and two predicted that model size in magazine ads would impact body esteem in female college students. Results of a one-way ANOVA with body esteem as the dependent variable and model size as the independent variable was significant [ $F(2,227) = 3.4, p = .045$ ]. Planned comparisons found that the body esteem of those viewing skinny models ( $M$  body esteem = 33.73) was significantly lower than those viewing plus-size models ( $M$  body esteem = 36.24),  $t(1,225) = -1.98, p = .049$ . Thus, support is found for both H1 and H2. Consistent with our hypotheses, skinny models lowered body esteem and plus-size models increased body esteem in female college students.

Hypothesis three stated that the relationship between model size and body esteem is moderated by the subject's BMI. As stated earlier, the interaction between model size and subject BMI was significant in the full model ( $p = .016$ ). Thus, support for H3 was found. Planned comparisons were conducted for both the low/normal ( $n = 181$ ) and high ( $n = 39$ ) BMI groups. In analysis using the low BMI group only, a significant difference was found between the groups seeing skinny ( $M = 34.49$ ) versus plus-size models ( $M = 37.32$ ),  $t(1,179) = -2.14, p = .034$ . The same analysis was conducted for the high BMI subjects. No significant difference in body esteem was found between those viewing skinny models ( $M = 30.43$ ) and plus-size models ( $M = 31.93$ ),  $t(1,37) = -.513, p = .611$ . Table one contains body esteem means for all groups studied.



Experimental Group	BMI Group	
	Low/normal	High
Skinny models	34.49 n=61	30.43 n=14
Plus-size models	37.32 n=60	31.93 n=15
Control Group	34.95 n=61	22.00 n=11
Total	35.58 n=182	28.68 n=40

A higher body esteem score = higher body esteem.



## DISCUSSION

Body image is a key component of the physical and mental well-being of female college students. A poor body image can lead to a host of problems including starvation diets, purging, bingeing, excessive exercise regimens, anorexia, bulimia, depression, anxiety, feelings of low self-worth and even unnecessary cosmetic surgery. Given the above, it is critical that we expand our knowledge of the risk factors that lead to poor body images among female young adults. One such acknowledged risk factor is the media. The ubiquitous nature of advertising suggests its role is an important one in establishing beauty standards for contemporary females. Numerous studies have shown that increased media exposure lowers body satisfaction among females (Levine and Murnen 2009). And, magazines which glamorize or extol the thin ideal (e.g. fashion magazines) have been shown to increase body dissatisfaction among their readers.

The primary contribution of the present study is its contribution to the knowledge base related to model size and body image. To date, insufficient research has included the body size of viewers/readers into its research design. It stands to reason that not all women will respond similarly to the various sizes of models portrayed in the media today. Too many studies have studied the impact of model size on body image without taking into account the potentially moderating effect of body size on the model size - body image relationship. We found that this relationship was, indeed, impacted by the body size of female college students.

Before we tested this potentially moderating impact of body size, we confirmed that skinny models, compared to plus-size models, lowered body esteem among our female college student sample. Plus-size models appeared to improve body esteem. This is consistent with the “relief effect” found by Halliwell, Dittmar and Howe (2005). The researchers found that subjects who were exposed to average-size models (compared to thin models) reported lower levels of body anxiety.

The present study’s ANOVA which included the interaction between model size and body size of the subject, however, suggests the relationship between model size and subject body size is more nuanced than previous results suggest. The present study found that low (underweight)/normal BMI subjects ( $BMI < 25.0$ ) experienced a significant boost in their body esteem when they were exposed to plus-size models compared to skinny models. Those who viewed plus-size models also reported higher levels of body esteem compared to the control group who completed an unrelated task ( $p = .075$ ). For the low/normal BMI group, viewing skinny models registered no significant difference compared to the control group.

These relationships are markedly different, however, for the high BMI group ( $BMI \geq 25.0$ ). The high BMI subjects reported a lower over-all body image and no difference was found for the impact of skinny and plus-size models on the body esteem of high BMI subjects. A significant difference was found between the control group and both the skinny and plus-size models for high BMI females. Surprisingly, viewing either skinny or plus-size models actually increased body esteem in this group. It could be that a relief/hope effect is operating depending upon the model size depicted. High BMI females may sense relief that others struggle with their weight

when viewing ads with plus-size models and hope that there is a chance to improve one's weight after viewing skinny models.

The present study's results suggest that the majority of female college students (low/normal BMI group) are indeed sensitive to the size of the model depicted in magazine ads. Skinny models attenuate and plus-size models boost body esteem for the majority of female college students. This is good news in the sense that the use of average or plus-size models can have a salubrious effect on the body esteem of female college students.

Consistent with the findings of Smeesters, Mussweiler and Mandel (2010), high BMI subjects were less sensitive to the size of the model depicted in the advertisement. This suggests addressing body esteem and its negative correlates in this group may be a more difficult task. The finding that even skinny models may boost the body esteem of high BMI females suggests additional research is needed amongst high BMI females. And, it won't be sufficient to focus only on BMI. Other factors including media habits and exposure, internalization of the thin ideal, the perceived pressure to be thin and self-objectification, the tendency to value appearance over and above ability or other attributes (Marlow and Huon 2005), all need to be explored if we are to improve our understanding of the role media plays in the body esteem of young females.

Although this study expands our knowledge of the role BMI plays in the impact of model size in advertising on body esteem in female college students, it must be tempered by certain limitations. First, although we had a large sample ( $n = 222$ ) of subjects, we could have benefited from a larger sample of high BMI participants. Future studies may benefit from an over-sampling of this particular population. Second, the use of video images as substitutes for hard-copy magazine ads may have impacted our results in an unintended fashion. Studies have shown that magazine advertising is a powerful purveyor of the thin ideal and the use of actual magazine ads should be encouraged. Third, the images of skinny and plus-size models used in the present study did not control for the attractiveness of the models. Halliwell, Dittmar, and Howe (2005), however, concluded that it is model size not model attractiveness that drives body image concerns.

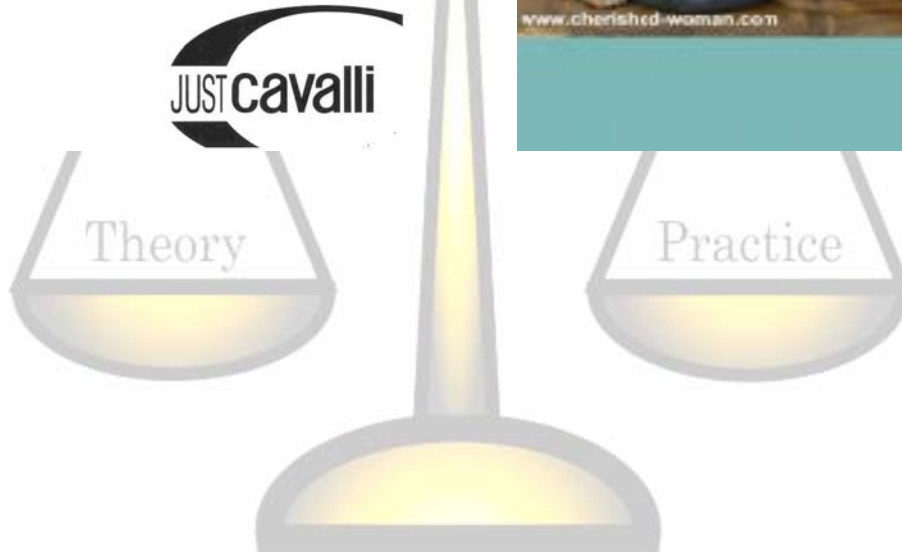
## APPENDIX

### Sample Magazine Advertisements

“Skinny” Model Ad



“Plus-size” Model Ad



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## ABOUT THE AUTHORS

James A. Roberts (PhD, University of Nebraska-Lincoln) is the Ben H. Williams Professor of Marketing in the Hankamer School of Business at Baylor University in Waco, Texas. His research focuses on the dark side of consume behavior including the topics of materialism, compulsive buying, and credit card abuse. He has published over 70 journal articles in the marketing, consumer behavior, and psychology literature. Dr. Roberts' recent book, *Shiny Objects: Why we spend money we don't have in search of happiness we can't buy* (Harper Collins, 2011) will soon be published in Chinese after being well received in the U.S.

Chloe' Roberts is currently a junior at Midway High School in Waco, Texas. This article is her first academic publication and is the result of her science fair project that qualified for the Texas State Science Fair competition.

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