The Role of Photoshopping on Body Dissatisfaction in Female Undergraduates

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Abstract
Exposure to unattainable thin body ideals in media has a well-documented negative effect on vulnerable young women’s body satisfaction. Digital retouching alters advertising images to the point that the silhouettes portrayed become unrealistic. It has been proposed that unmodified images might mitigate the negative effects of media exposure on body image. Thus, our goal was to examine whether exposure to unmodified images was less deleterious to body satisfaction than exposure to retouched images among young women. Participants were female undergraduates eighteen years of age or older, who watched a short cartoon interspersed with advertising images. Participants saw either retouched or unmodified images from the same lingerie company. Participants completed the implicit relational assessment procedure (IRAP), as well as questionnaires on mood, body dissatisfaction, social comparison, and media-ideal internalization. Overall, regardless of condition or appearance comparison, participants reported higher negative affect after viewing media images. Participants’ level of appearance comparison during the experiment moderated the findings such that among participants with high appearance comparison, those viewing retouched images reported a greater decrease in body satisfaction. No differences were found using the IRAP data. These preliminary findings suggest that, among individuals with high tendency to social comparison with media images, advertising campaigns using unmodified images could potentially be helpful. Advertising should include unmodified images to account for this portion of the population, but future research should focus on dimensions that protect against the increase in negative affect of all participants in the hopes of improving advertising for all.
The Role of Photoshopping on Body Dissatisfaction in Female Undergraduates

Introduction

Effect of the Thin Ideal

Images that promote the thin ideal have a well-documented negative effect on vulnerable young women’s body dissatisfaction. This negative effect can be traced to exposure to the unattainable ideals conveyed in such images (Stice, Spangler, & Agras, 2001).

Negative impacts. A review of the current literature shows a number of studies linking thin-ideal image exposure with female body dissatisfaction and disordered eating behaviors. As compared to neutral images, exposure to media images that promote the thin ideal have a negative effect on body satisfaction (Harper & Tiggemann, 2008). In addition, exposure to such thin-ideal images as compared to control images has also been found to foster behaviors consistent with eating disorders (Hawkins, Richards, Granley, & Stein, 2004). Since the control images typically presented in these studies include objects rather than people, Stice and Shaw (1994) expanded the body of literature to compare the impact of advertising featuring women that conform to the thin ideal, advertising with average-sized women, and neutral images. They found that only the thin-ideal images increased body dissatisfaction and bulimic symptomology. Meta-analytic studies have confirmed a robust effect of the exposure to thin-ideal advertising on body dissatisfaction, $d = -0.31$ (Groesz, Levine, & Murnen, 2002). Therefore, the thin ideal images emerged as the only type of advertising tested that increases body dissatisfaction and disordered eating.

Social comparison. Social comparison has been hypothesized to be a possible moderating factor for the aforementioned negative results. In a unique study, female undergraduates were exposed to a confederate whose appearance was in line with the thin ideal
or a confederate of average body size. Those who were exposed to the confederate embodying the thin ideal exhibited an increase in body dissatisfaction, indicating that social comparison was one of the important factors influencing body dissatisfaction (Krones, Stice, Batres, & Orjada, 2005). Females overall have been found to exhibit higher social comparison than males and such comparisons have been correlated with disordered eating (Cattarin, Thompson, Thomas, & Williams, 2000; van den Berg et al., 2007; Warren, Schoen, & Schafer, 2010). Thus, the degree to which participants compare themselves to others may serve to increase or decrease their body satisfaction or eating behavior. In a meta-analytic review, social comparison was found to be a moderator of the relationship between thin-ideal exposure and body dissatisfaction in many studies. In some, it was experimentally manipulated to show that such comparisons are automatic processes and can be modified through conscious processing (Want, 2009). However, in the current study, no manipulations will aim to decrease social comparison with the aim of increasing external validity as much as possible.

**Internalization.** Internalization of the thin ideal describes the degree to which individuals subscribe to dominant messages emphasizing the value of thinness. Individual levels of internalization of the thin ideal have been shown to significantly moderate the effect of thin ideal images on body dissatisfaction and disordered eating. Adherence to the thin-ideal has been shown to predict bulimic symptoms (Stice & Shaw, 1994). Furthermore, young women who initially endorsed high levels of thin ideal internalization and body dissatisfaction reported negative affect as a result of long-term exposure to magazines with thin-ideal content, through a 15-month subscription service (Stice et al., 2001). Overall, the degree of internalization moderated the effect of the thin ideal on body dissatisfaction and associated eating behaviors.

Problems with measurement arise when explicit measures are subject to social
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expectations, or when the participants themselves may not be aware of influences affecting their answers (Greenwald, McGhee, & Schwartz, 1998). In regards to self-esteem measures, participants may be hesitant to endorse behaviors or attitudes contrary to socially acceptable norms. Therefore, the Implicit Relational Assessment Procedure (IRAP) was developed to combat those issues as an implicit measure of attitudes. Response time in the IRAP is designed to be too quick to allow for deep thought and relies solely on immediate associations, as opposed to questionnaires (Barnes-Holmes et al., 2006). The IRAP has been validated in various studies and populations, but only in recent years has begun being utilized as a measure of self-esteem. Juarascio et al. (2011) used the IRAP to measure implicit internalization. They found female undergraduates’ levels of internalization of the thin-ideal at the beginning of freshman year predicted increases in weight, body dissatisfaction, and disordered eating behaviors. This study would also serve as further validation for the body esteem IRAP.

Cross-cultural evidence. Results implicating media exposure and social comparison as having a negative effect on body satisfaction have, overall, borne out cross-culturally. Studies based in Taiwan (Chang et al., 2013), India (Shroff & Thompson, 2004), Poland (Forbes, Doroszewicz, Card, & Adams-Curtis, 2004), Italy and France (Rodgers & Chabrol, 2009) produced results similar or identical to those in the United States.

Thin Ideal In Advertising

Most, if not all, of the images used in advertising are photo-shopped or digitally enhanced to make the figures portrayed appear as close as possible to the thin ideal, with no disclosure as to the extent of the editing. Significant research has studied the impact of print media promoting the thin ideal; there has been less study into other media types.

Type of exposure. While the majority of research has been conducted on print media,
some research methods have included television (Hargreaves & Tiggemann, 2003), music videos (Prichard & Tiggemann, 2012), and the Internet (Bair, Kelly, Serdar, & Mazzeo, 2012). These studies have revealed that body dissatisfaction increased upon exposure to thin-ideal images, regardless of media type (Bell & Dittmar, 2011). Nowadays, young women are viewing images on a screen just as often, if not more often, than they are seeing print pictures, therefore it is important to conduct research evaluating the effect of images presented on screen so as to increase ecological validity as much as possible.

**Image labeling.** With the advent of modern technology, images used in advertising are almost without exception digitally modified. Models who are already extremely slender are further edited to the point that their body is completely unrealistic. In recent years, various governments have proposed or adopted laws that require the labeling of modified images as such, or forbid digital alteration all together. The laws have been widely contested and criticized for lacking empirical basis. While a number of studies have addressed the usage of labeling, results have been mixed. One study used two types of labels: a disclaimer admitting that the photo was retouched, or a warning that attempting to mimic the model could be unhealthy. As compared to an unlabeled model and a neutral car control, this labeling had no differential effect of on body dissatisfaction or intent to diet following exposure to the images (Ata, Thompson, & Small, 2013). Slater, Tiggemann, Firth, and Hawkins (2012) compared exposure to generalized warning labels, specific warning labels that described the edits made to each picture, or no label. They found a significant difference, with both participants in both of the label conditions endorsing lower body dissatisfaction compared to those in the no-label condition. However, this same group failed to replicate these findings in a subsequent study (Tiggemann, Slater, Bury, Hawkins, & Firth, 2013). There have also been studies documenting a negative effect on body
dissatisfaction of a disclaimer label, both immediately after exposure (Harrison & Hefner, 2014) and with a significant time window between measurements of two weeks and two months (Selimbegovic & Chatard, 2015).

Another study included photos labeled as unmodified as well as control images without a label (Tiggemann, Slater, & Smyth, 2014). However, no significant difference in mood or body dissatisfaction was found between participants in both of the experimental groups. While the 2014 study was similar to the proposed study, it used images that were most likely photoshopped, but judged to be believable as unmodified. The present study therefore builds upon this by exploring differential effects on body dissatisfaction of images that are truly unmodified compared to images that are known to be photoshopped. More encouragingly, in another study, weight-information labels (e.g. “6 kg underweight,” “3 kg underweight,” and “normal weight”) were found to reduce body dissatisfaction and social comparison when the labels were attached to the appropriate model. When inaccurate labels were placed on models (such as identifying an underweight model as “normal weight”), adolescent girls showed higher body dissatisfaction (Veldhuis, Konijn, & Seidell, 2012). Further research is necessary to determine label qualities that inform most effective usage. For example, weight information labels may be superfluous; it may only be necessary to inform the viewer that the image has been retouched.

Current Study

While it has been suggested that the use of non-modified images might mitigate the decreases in body satisfaction resulting from media exposure, this has not been empirically studied with images known to be unaltered. It is possible that unmodified images have a less deleterious effect on body image than retouched images. Research on this topic could help inform public policy and evidence-based recommendations to industry. A lingerie clothing
company targeting adolescent girls has recently decided that as of January 2014 none of their advertising will contain photo-shopped images. This provided a unique opportunity to study the potential effect of unmodified images on body esteem.

The present study utilized an experimental manipulation presented as a market research study that exposed female undergraduates to advertisements that were either retouched or unmodified. Participants saw only retouched or unmodified images. The goal was to determine whether exposure to unmodified images was less deleterious to body image than exposure to photo-shopped images in an experimental design. The primary hypotheses were that, following exposure to the advertisements, participants having viewed the retouched images would demonstrate lower implicit body esteem and endorse higher body dissatisfaction, compared to participants who viewed the unmodified images. Furthermore, it was hypothesized that appearance comparison would moderate the effects of being exposed to either retouched or unmodified images, such that participants who engaged in more comparison with the images would show higher body dissatisfaction after the exposure.

Methods

Participants

Participants were female Northeastern University undergraduates eighteen years of age or older ($N = 200$). Over half the sample were freshman and sophomores in college. The mean age was 19.57 ($SD = 1.36$). The mean body mass index, calculated from self-report weight and height, was 22.75 ($SD = 3.48$), which is in the normal adult weight range. Sixty-three percent of the sample identified as Caucasian, 18.5% identified as Asian, 4.5% identified as African American or Hispanic, 7.5% reported identifying with multiple ethnicities, and 1.5% identified as other. One participant did not respond to this question. The ethnic diversity of this sample is
roughly comparable to the overall ethnic diversity of the university.

**Measures**

Participants completed pretest questionnaires including a demographic questionnaire that collected age, year in university, height, weight, and race/ethnicity information and an advertising consumption habit questionnaire developed by the researchers to lend credence to the marketing survey cover. Posttest questionnaires included a short questionnaire developed by the researchers that serves as an attentional check; the consumer response questionnaire (Tiggemann & McGill, 2004) as well as some additional questions to assess consumer intentions and behaviors related to the advertisements.

**Body dissatisfaction.** Visual analogue scales (VAS) were used to measure state body dissatisfaction (Heinberg, Thompson, & Stormer, 1995). Seven scales were included with lines anchored from “none” to “a lot.” Participants indicated their current negative and positive feelings as well as their satisfaction with their appearance and weight. These scales are widely used in the literature for assessing change in body image–related attitudes and feelings following media exposure (Ata et al., 2013; Tiggemann et al., 2013). They were included before and after the manipulation to assess state changes in body dissatisfaction.

The Body Image State Scale (BISS) was also included to measure state body dissatisfaction (Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002). The scale includes six questions assessing satisfaction or dissatisfaction with one’s current body experience. Participants indicated their level of satisfaction or dissatisfaction by indicating their answer to each statement (e.g. “Right now I feel…” with answers ranging from “Extremely dissatisfied with my weight” to “Extremely satisfied with my weight”). It has shown high test-retest reliability ($\alpha = .69$ for women), internal consistency ($\alpha = .77$ for women) and construct validity.
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(Cash et al., 2002). This measure was included after the manipulation.

Participants also completed the implicit relational assessment procedure (IRAP). The IRAP has been validated in both clinical and non-clinical populations as a measure of body esteem and implicit attitudes towards thinness and fatness (Parling, Cernvall, Stewart, Barnes-Holmes, & Ghaderi, 2012). This task requires the participant to respond “I am” or “I am not” to stimuli words related to thinness or fatness, modeled after Timko et al. 2010 (Timko, England, Herbert, & Forman, 2010). This task measured their implicit attitudes pre- and post-exposure.

As a brief behavioral measure, participants had the opportunity to enter in a lottery for the chance to win a tank top from the lingerie company featured in the retouched or unmodified images. One option was revealing while the other was looser fitting (see Appendix). Their choice served as a behavioral measure of body satisfaction.

**Internalization of the thin ideal.** The sociocultural attitudes towards appearance questionnaire (Heinberg et al., 1995; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004) is a 30-item measure that assesses the degree to which the participants’ have incorporated the culturally normative ideal of thinness into their worldview. Participants rate their agreement with each statement (e.g. “I've felt pressure from TV or magazines to lose weight.”) on a five-point Likert scale, with higher scores indicating a greater endorsement of social appearance ideals. This scale has demonstrated good internal reliability ($\alpha = .96, .94$) in both control and clinical samples (Thompson et al., 2004). The SATAQ also displays excellent external validity when compared to similar scales such as the eating disorder inventory (Garner, Olmstead, & Polivy, 1983) and the ideal body internalization scale (Stice, 2001; Stice & Agras, 1998). This questionnaire was administered during the post-testing phase.

**Social comparison.** Participants completed the social comparison questionnaire (Schutz,
Paxton, & Wertheim, 2002), a frequently-used 14-item questionnaire assessing appearance and general comparison tendencies with various targets (e.g. “If you do compare your body with others, who do you compare your body with?” with answer options including friends, girls at school, fashion models and others). This measure has demonstrated good internal reliability (α = .80) for comparison targets. Dieting in response to comparison targets (α = .84) revealed good external validity. In this study we used the questions relating to appearance comparison.

We also included the State Appearance Comparison Scale (Tiggemann & McGill, 2004), which consists of 3 items that assess the appearance comparison processes engaged in during the course of the study and has previously been used in media-exposure designs. Participants rate their agreement with each item on a 7-point Likert scale (e.g. “To what extent did you think about your appearance while viewing the magazine advertisements?”). This scale has high internal reliability (α = .91).

**Images**

The images presented were created by the lingerie company for advertising purposes and obtained from the company’s Facebook page. The retouched images were developed and uploaded before January 2014. They have no labels on them beyond advertisements. The unmodified images were created and posted after January 2014. They have this label, or similar, along the bottom: “This girl has not been retouched.” Both sets of advertisements featured various promotional deals that have no dates to increase plausibility. A typical “loading” wheel was included over the advertisements without obscuring them, for credible reasoning why the commercial has appeared. The images were presented as the company intended them to create a more natural viewing experience for the participant.

**Procedures**
Participants were adequately informed and consented by study procedures. They were then randomly assigned to one of two groups: retouch or unmodified. Both groups completed the same pretest measures. They then were briefed on IRAP procedures and completed the assessment. Both groups then watched the same neutral video (Tom and Jerry) with a brief commercial break. The retouch group saw three images from the lingerie company before January 2014, with two neutral advertisements interspersed. This “commercial break” sequence repeated once at the beginning, about a third of the way through and two-thirds of the way through. The unmodified group saw three images that have been produced since January 2014, with the same two neutral images. This group also saw “commercial breaks” staggered at the same intervals. All participants then completed the IRAP again and the posttest measures. Questionnaire responses were collected with the online web software Qualtrics.

**Data Analyses**

To explore hypotheses 1 and 2, we conducted repeated measures ANOVAs with pre-test and post-test scores on the explicit and implicit measures of body image as the repeated dependent variable and condition as the between subjects factor. For the third hypothesis, we conducted a 2 x 2 repeated measures ANOVA with time (pre-test/post-test) x condition (retouch/unmodified) using appearance comparison as a moderator.

**Results**

An independent samples t-test revealed no significant differences between the retouch condition and the unmodified condition in age, ethnicity or body mass index. Table 1 shows dependent variable means by condition and assessment period. We conducted 2 X 2 (time X condition) repeated measures ANOVAs to examine differences between the groups over time on each of the dependent measures. These analyses were also conducted using social comparison, as
measured by the Social Appearance Comparison Scale, as a moderator. Participants were classified as high comparers (top tertile) and low comparers (bottom two tertiles) using a tertiary split. Table 2 shows the dependent variable means by condition, social comparison, and assessment time point.

**Body Dissatisfaction**

**IRAP.** The repeated measures ANOVA for the IRAP including all participants yielded a significant result for time $F(1, 176) = 9.73, p = .00, \eta^2 = .05$, but not an interaction effect, $F(1, 176) = .57, p = .45, \eta^2 = .00$. When using appearance comparison as a moderator, among the low comparison group, a significant effect of time appeared, $F(1, 111) = 10.46, p = .00, \eta^2 = .09$, but not an interaction effect, $F(1, 111) = 1.55, p = .21, \eta^2 = .014$. Among the high comparison group, there was no effect for time, $F(1, 64) = .93, p = .34, \eta^2 = .02$, or an interaction effect, $F(1, 64) = 1.1, p = .75, \eta^2 = .00$.

In order to explore the convergent validity of the IRAP as a measure of body dissatisfaction, we conducted a correlation analysis exploring the relationship between the pre and posttest IRAP means and other measures of body dissatisfaction including the BISS and the SATAQ Internalization Generalized subscore. Given that these correlations are slightly low, findings should be interpreted with caution. Pretest and posttest IRAP scores were significantly correlated, $r = .38$. However, IRAP scores at both time points revealed only a weak correlation with BISS results, $r = .22$ for pretest IRAP and $r = .24$ for posttest IRAP. Furthermore, IRAP scores were not significantly correlated with the SATAQ Internalization General subscore, $r = -.03$ for pretest and $r = -.05$ for posttest.

**Tank top.** We conducted an Independent-Samples Mann-Whitney U Test that showed no significant difference between condition for the tank top question, Mann-Whitney $U = 5171.00$, ...
When using the tertiary split on social comparison, the Independent-Samples still showed that there was still no significant difference between conditions ($p = .28$ for the low comparers, and $p = .92$ for the high comparers).

**VAS.** When considering the entire sample, the time x condition ANOVA revealed an effect for time, $F(1, 198) = 23.55, p = .00, \eta^2 = .11$, but not an effect for the interaction between time and condition, $F(1, 198) = 2.18, p = .14, \eta^2 = .01$. Among the low comparison group, the time x condition ANOVA with the composite VAS body satisfaction score did not show an effect of time, $F(1, 121) = 3.42, p = .07, \eta^2 = .03$, nor a time x condition interaction, $F(1, 121) = .00, p = .64, \eta^2 = .00$. Among the high comparison group, the ANOVA with the composite VAS body satisfaction score did show an effect of time, $F(1, 76) = 31.17, p = .00, \eta^2 = .29$ and a time x condition interaction, $F(1, 76) = 4.43, p = .04, \eta^2 = .06$.

**Negative Affect (VAS)**

The VAS scales for all participants showed an effect of time, $F(1, 199) = 26.04, p = .00, \eta^2 = .12$, but not an interaction effect of time X condition, $F(1, 199) = .819, p = .37, \eta^2 = .00$. Among the low comparison group, a time x condition repeated measures ANOVA with the composite VAS negative affect revealed a significant effect of time using, $F(1, 121) = 8.18, p = .01, \eta^2 = .06$. There was no Time X Condition interaction, $F(1, 121) = .02, p = .90, \eta^2 = .00$. Among the high comparison group, a significant effect of time also appeared, $F(1, 76) = 18.65, p = .00, \eta^2 = .20$, but not a time X condition interaction, $F(1, 76) = .89, p = .35, \eta^2 = .01$

**Discussion**

This study investigated the impact of photographic retouching on body dissatisfaction in female undergraduates using a naturalistic exposure method. While findings were not robust across all means of assessment, overall they provide the first initial support for the usefulness of
using unmodified images in advertising, among some viewers. This was one of the first studies
to use images that were completely unmodified, rather than simply believable as unmodified.

All participants experienced a decrease in body satisfaction as measured through the VAS
after exposure to media images. One possible reason for this decrease is that while the
unmodified images were not altered, the models presented could still be considered to be
promoting the thin ideal. Media depicting the thin ideal has been linked to increased body
dissatisfaction in multiple studies (see Grabe, Ward, & Hyde, 2008 for a meta-analysis).

Among participants who compared themselves a great deal to the models in the
advertisements, viewing any advertisement, regardless of photoshopping condition, led to a
decrease in body satisfaction. However, viewing the unmodified advertisements led to
significantly less decrease in body satisfaction when compared to viewing retouched images.
This finding is similar to other studies that found high social comparison moderated the
relationship between media exposure and body dissatisfaction (Cattarin et al., 2000; Leahey,
Crowther, & Ciesla, 2011; Lin & Kulik, 2002). For these participants, the unmodified images
may seem more attainable than the retouched ones and therefore reduce body dissatisfaction.

Participants overall experienced an increase in negative affect after viewing either set of
advertisements. This is very similar to other studies that also found that thin-ideal exposure
increased negative affect in participants (Ata et al., 2013; Harper & Tiggemann, 2008; Hawkins
et al., 2004; Prichard & Tiggemann, 2012). For the purposes of advertising effectiveness,
cultivating body dissatisfaction and negative feelings may drive consumers to purchase products
to alleviate their feelings.

The IRAP findings in this study were inconclusive. There was an effect of time, but no
between condition effects. When participants were divided by a tertile split, only the low
comparing group showed an effect of time and neither grouping showed an interaction effect. In addition, the correlation between the IRAP and other measures of body dissatisfaction, such as the BISS and the SATAQ (Internalization General subscore), were surprisingly low. Despite directly replicating their procedures, this is dissimilar to the findings of Timko et al. (2010), who found a high correlation between the IRAP and other measures of body-esteem. In this previous study, the overall IRAP score was highly correlated with the Body Image Acceptance and Action Questionnaire ($r = .32$), SATAQ Pressure subscore ($r = -.30$), the Depression and Anxiety Stress Scales ($r = -.29$) and the Body Shape Questionnaire ($r = -.48$). One possible explanation for this finding is that the previous study only included Caucasian women. Therefore, it may be that the IRAP is a more valid assessment of body image among the female Caucasian population as compared to ethnic minorities. Our participants were more ethnically diverse and therefore not have the cultural associations and beliefs about body image (Vaughan, Sacco, & Beckstead, 2008). Future research might investigate methods to improve IRAP reliability among other ethnic groups.

The tank top measure was a brief behavioral measure that assessed whether or not participants actively chose different stimuli based on their assigned condition. It was hypothesized that participants that had seen the retouched images would be more likely to choose the less revealing tank top due to their own body dissatisfaction after seeing the thin-ideal models. There was no significant effect. There are a few potential explanations for why the behavioral measure failed to detect between condition differences. First, participants might have been addressing the question more practically than intended. This study was largely conducted during the late fall and winter months. Since it was specifically stated that the participant would be “most likely to wear right now” and 73.74% chose the longer top, the tank top that they chose
might have had more to do with weather than body dissatisfaction. Second, choices may be due to the participant’s overall awareness of their appearance rather than momentary body satisfaction or lack therefore. A Spearman’s rank-order correlation analysis showed that body mass index was a significant predictor of tank top choice, $\rho = -.18$, $p = .01$. Participants that had a higher body mass index were more likely to choose the long tank top.

Previous studies have found that internalization of the thin ideal moderates the effect of advertising (Ata et al., 2013; Bair et al., 2012; van den Berg et al., 2007; Warren et al., 2010). Though the researchers included a measure assessing internalization of the thin ideal, we did not analyze its utility as a moderator. It is possible that internalization of the thin ideal leads to state social comparison or that internalization and social comparison are both independent moderators.

This study acknowledges a number of limitations. First, though researchers included the IRAP and the tank top paradigm to assess implicit body esteem, neither detected between condition differences, suggesting that they may not have been capturing the dimensions we intended. Thus, the evidence to support our hypotheses was limited to self-report data. Secondly, this study was conducted in an undergraduate university setting, and results may not generalize to the wider population of women and girls.

In the interest of creating a more naturalistic exposure method, the researchers included the label that was placed by the clothing company itself on the unmodified images. The retouched images did not have any label. While this study is an indication that unmodified images reduce body dissatisfaction in high comparison individuals, the confounding independent variables of labeling and retouching limit what can be concluded about retouching alone. Therefore, it is possible that the labeling of the images produced an effect, rather than the lack of digital retouching. Future research should be conducted to tease out these differences in a two by
two design including advertisements that are labeled and retouched, unlabeled and retouched, labeled and unmodified, and unlabeled and unmodified. This experiment would help to clarify the differential effects of labeling and digital retouching, as well as in conjunction.

From the perspective of public policy, this research has implications for some viewers. Unmodified images may reduce body dissatisfaction experienced by advertising audiences who are prone to comparing themselves – and are likely to most vulnerable population in terms of body image. If these findings are replicated, it could provide evidence that could be used to argue for more restrictive laws governing the use of photographic retouching. However, digital retouching cannot account for higher negative affect after viewing media images. Serious consideration should be given to the content of advertising. Including models that are average has been shown to increase body satisfaction among women when compared to thin-ideal models (Anschutz, Engels, Becker, & van Strien, 2008; Diedrichs & Lee, 2011). Policymakers should consider disallowing the use of models below a certain body mass index.

In sum, the present study is the first of its kind to utilize images that are completely unmodified in a research setting. Unmodified images may serve to minimalize the damage to body satisfaction among a subset of viewers with a high tendency for social comparison. However, these findings also indicate that digital retouching may not wholly explain the negative effects of media. Utilizing advertising content that does not promote the thin ideal may be more beneficial for a larger section of the population. Future studies should replicate these results in other populations such as adolescents and older women, as well as addressing the role of labeling on body satisfaction.
Table 1

Means and Standard Deviations for Dependent Measures

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<tr>
<th>Measure</th>
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<td>107.52</td>
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<td>113.00</td>
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*Note.* Retouched $n = 101$, unmodified $n = 99$. VAS = Visual Analogue Scale, IRAP = Implicit Relational Assessment Procedure, BISS = Body Image States Scale, SACS = Social Appearance Comparison Scale, SATAQ = Sociocultural Attitudes Towards Appearance Questionnaire (Internalization General Subscale).
Table 2

 Means and Standard Deviations for Dependent Measures by Social Comparison Tertiary Split

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</tbody>
</table>

Note. VAS = Visual Analogue Scale, *p < .05.
Citations


Stice, E., & Shaw, H. E. (1994). Adverse effects of the media portrayed thin-ideal on women and


Appendix

Full Length Tank Top

Cropped Tank Top