The Effects of Thin and Heavy Media Images on Overweight and Underweight Consumers: Social Comparison Processes and Behavioral Implications
Author(s): Dirk Smeesters, Thomas Mussweiler, Naomi Mandel
Source: *The Journal of Consumer Research*, Vol. 36, No. 6 (April 2010), pp. 930-949
Published by: The University of Chicago Press
Stable URL: http://www.jstor.org/stable/10.1086/648688
Accessed: 15/02/2011 08:24

The Effects of Thin and Heavy Media Images on Overweight and Underweight Consumers: Social Comparison Processes and Behavioral Implications

DIRK SMEESTERS
THOMAS MUSSWEILER
NAOMI MANDEL

This study examines how advertisements containing thin or heavy models influence the self-esteem of overweight, normal, and underweight consumers. Previous research has mainly examined the influences of variations of the comparison standard on self-evaluative outcomes, whereas we examine how the relative position of the self on the comparison dimension may moderate these effects. Three studies manipulated the size (thin vs. heavy) and extremity of the size (moderate vs. extreme) of advertising models and exposed these images to individuals differing in Body Mass Index (BMI) levels. Our findings indicate that social comparison processes and subsequent self-evaluative and behavioral outcomes are different for individuals differing in their BMI.

A woman's body image is an important source of her self-esteem. Approximately 50% of girls and young women report being dissatisfied with their bodies (Bearman, Presnell, and Martinez 2006). These dissatisfactory feelings can play a major role in the development of low self-esteem, depression, and eating disorders such as bulimia (Grabe and Hyde 2006; Meyers and Biocca 1992; Stice and Shaw 1994). Among the many forces believed to play a role is the increasingly thin ideal dominating the media. The images of women presented in the media today are thinner than the majority of the female population (Wiseman et al. 1992). Frequent media exposure may cause consumers to cultivate unrealistic perceptions about the prevalence of desirable attributes, such as wealth (Shrum, Burroughs, and Rindfleish 2005) or physical ideals. Indeed, abundant exposure to thin media images has led to the commonly held belief that the thin ideal is normative and central to attractiveness. In response to critics' concerns, fashion show organizers in Milan and Madrid have recently banned extremely thin models from the catwalks (Tan 2007), presumably to protect both consumers and models from eating disorders and other consequences of low self-esteem.

In this study, we examine how advertisements containing thin or heavy models influence the self-esteem levels of overweight and underweight consumers. Overweight individuals represent a significant and growing segment of consumers. Approximately 59% of Americans (www.census.gov) and 40% of Europeans (www.epha.org) are overweight or obese. If exposure to thin media images can result in low self-esteem and eating pathologies among average-sized women (Polivy and Herman 2002), it is possible that overweight women will be even more vulnerable to these effects. Furthermore, although underweight consumers comprise only 2% of the American population, they are often victims of eating disorders and therefore might also be especially vulnerable to thin media images.

The current research examines the psychological mechanisms underpinning the effects of exposure to thin and heavy media images on women's self-esteem, as well as the resulting behavioral implications. Although there has been an abundant stream of research on this topic, the vast majority of prior research has primarily demonstrated that self-

Dirk Smeesters is associate professor of marketing at the Rotterdam School of Management, Erasmus University, P.O. Box 1738, 3000 DR Rotterdam, the Netherlands (DSmeesters@rsm.nl). Thomas Mussweiler is professor of social psychology at the University of Cologne, Richard-Strauss-Strasse 2, 50931 Cologne, Germany (Thomas.Mussweiler@uni-koeln.de). Naomi Mandel is associate professor of marketing at the W. P. Carey School of Business, Arizona State University, Tempe AZ 85287-4106 (Naomi.Mandel@asu.edu).

John Deighton served as editor and Frank Kardes served as associate editor for this article.

Electronically published October 20, 2009

 0093-5301/2010/3606-0013$10.00. DOI: 10.1086/648688

esteem and body satisfaction decrease when females are exposed to thin media images (for an overview, see Grabe, Ward, and Hyde 2008). Furthermore, previous social comparison research, in both consumer behavior and social psychology, has mainly focused on manipulating the comparison standard, such as the size of the model (thin vs. heavy) or the extremity of the model's size (moderate vs. extreme; Mussweiler, Rüter, and Epstude 2004a; Smeesters and Mandel 2006). However, few studies have taken into account the relative standing of the self on the comparison dimension, combined with a simultaneous manipulation of the comparison standard's position. This is surprising, as individuals do not all take the same position on the comparison dimension. As illustrated by the statistics above, consumers vary greatly in terms of their body mass index (BMI), taking low (<18.5), normal (>18.5 and <25), or high positions (>25) on that dimension. It remains unclear how manipulating comparison standards (e.g., moderately/extremely thin/heavy models) can influence social comparison outcomes (e.g., self-esteem) and processes for individuals with different BMI levels. In this study we demonstrate that different comparison processes and outcomes occur for individuals differing in their relative positions on the comparison dimension. We show that it is not the absolute size of the model in the ad but, rather, the relative distance between the consumer's size and the model's size that determines the ad's effects on self-esteem. We explore two different types of process measures that play a role in shaping social comparison outcomes: similarity focus (Häfner 2004; Mussweiler 2001, 2003) and accessibility of self-knowledge (Mussweiler 2003; Mussweiler and Strack 2000a, 2000b). Finally, we examine how these social comparison processes and outcomes affect real eating behavior and consumers' diet and exercise intentions. Our findings may also contribute to a growing literature on prescriptive strategies that consumers may use to improve their happiness and well-being (Mick 2008).

SOCIAL COMPARISON

Social comparison is a central feature of human social life. According to Festinger (1954), individuals are driven by a desire for self-evaluation, by which they compare their own attributes and abilities with those of others. Comparisons with others who are superior or inferior on the judgment dimension can strongly influence how people think and feel about themselves and the emotions they experience (Epstude and Mussweiler 2009). Social comparison also contributes to one's own body image perceptions (Richins 1991). The consequences of social comparison can be complex, as evaluations of the self can assimilate to or contrast away from the comparison standard (for reviews, see Collins 1996; Mussweiler 2003). Assimilation occurs when the self is judged consistently with the comparison standard, and thus self-judgments move in the direction of the comparison standard (e.g., Lockwood and Kunda 1997; Mussweiler and Strack 2000b), whereas contrast occurs when the self is judged opposite from the comparison standard, and thus self-judgments move away from the comparison standard (e.g., Richins 1991; Trampe, Stapel, and Siero 2007).

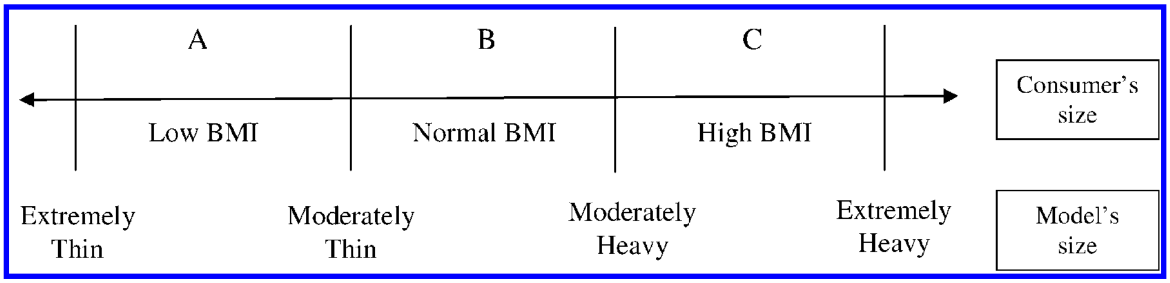
Upward social comparisons in particular may affect consumer self-judgments and behavior. For example, consumers may find upward comparisons threatening to their self-esteem, causing them to misrepresent themselves to others (Argo, White, and Dahl 2006). Researchers have repeatedly shown that women who view thin ideal images experience lower self-esteem and higher body dissatisfaction than do women who view neutral images (Grabe et al. 2008). These contrastive findings have been found for women exposed to thin ideal women in print ads, television commercials, and music videos (Hargreaves and Tiggemann 2004; Richins 1991; Tiggemann and Slater 2003). Positive assimilation effects of thin models on females' self-esteem are rare (Grabe et al. 2008). It is important to note, however, that most of this prior research has used subjective response scales (e.g., "How happy are you with your body?"), which may be problematic, because individuals use a given comparison standard as a reference point to anchor the endpoints of subjective response scales (such as Likert scales), typically leading to contrast effects (Lynch, Chakravarti, and Mitra 1991; Mussweiler and Strack 2000b). Using objective rather than subjective measures, Smeesters and Mandel (2006) showed that exposure to thin models may lead to positive (assimilative) effects on self-esteem, but only when the models are moderately thin (and not when they are extremely thin). We extend this finding by examining the cognitive processes that play a role in affecting self-evaluations and behavioral consequences when both the comparison standard and the relative position of the self are varied. Prior research suggests that exposure to thin and heavy models should affect the self-esteem of those with low and high BMI similarly to those with a normal BMI (Dohnt and Tiggemann 2006; Grabe et al. 2008). We will, however, argue and demonstrate that this is not the case.

COMPARISON MECHANISMS

Comparisons with others occur spontaneously, even when not explicitly requested or induced by experimenters (Mussweiler et al. 2004a; Stapel and Blanton 2004). According to the Selective Accessibility Model (SAM) of comparative thinking (Mussweiler 2003), during a social comparison a person may engage in one of two alternative hypothesis-testing mechanisms: similarity testing or dissimilarity testing. Both mechanisms involve a selective focus on hypothesis-consistent information about the self and a standard, so that a person engaging in similarity testing selectively activates information indicating that self and standard are similar and ignores information indicating that they are dissimilar, while a person engaging in dissimilarity testing selectively activates information indicating that self and standard are different and ignores information indicating that they are similar. Which factors drive a person toward one of these two alternative hypothesis-testing mechanisms? According to the SAM, people make a quick initial assessment of the similarity between the self and the standard as a first step

FIGURE 1

THEORETICAL FRAMEWORK



NOTE.—*Range A*: Low-BMI women assimilate to extremely thin and moderately thin models and contrast away from moderately heavy and extremely heavy models. *Range B*: Normal-BMI women assimilate to moderately thin and moderately heavy models and contrast away from extremely thin and extremely heavy models. *Range C*: High-BMI women assimilate to moderately heavy and extremely heavy models and contrast away from extremely thin and moderately thin models.

of any social comparison. Whether they engage in similarity or dissimilarity testing depends on the outcome of this initial assessment. An initial perception that the standard resembles the self triggers similarity testing and ultimately results in the activation of standard-consistent information about the self. An initial perception that the standard does not resemble the self triggers dissimilarity testing and ultimately results in the activation of standard-inconsistent information of the self. Because self-evaluation is highly contingent on the information selectively activated during the comparison, similarity testing generally leads to assimilation, whereas dissimilarity testing generally leads to contrast. For example, Smeesters and Mandel (2006) showed that females have higher appearance self-esteem after exposure to moderately thin models versus moderately heavy models (an assimilation effect due to a similarity focus and accessible standard-consistent self-knowledge), but lower appearance self-esteem after exposure to extremely thin models versus extremely heavy models (a contrast effect due to a dissimilarity focus and accessible standard-inconsistent self-knowledge).

The majority of prior social comparison literature has manipulated the standard of comparison and held the comparison target (e.g., the self) constant. However, the assimilation/contrast literature offers some examples in which both the standard and target were manipulated. Social judgment theory (Sherif, Sherif, and Nebergall 1965) compares an individual's own attitude (the target) to a range of other attitudes (the standards) to determine the individual's latitude of acceptance. Individuals tend to assimilate standards that are within this range of acceptance and contrast standards that are outside this range (Granberg and Brent 1974). Herr, Sherman, and Fazio (1983) varied both the extremity (in size) of the standard and the ambiguity of the target (an animal). Stapel and Koomen (2000) manipulated both the distinctiveness of the standard and the mutability of the target (the self). However, these prior studies address the size of the range of possible evaluations of the target (i.e., the standard deviation) rather than the point estimate of the target (i.e., the mean), as we do in the current study. For example, when the self is viewed as more malleable, the latitude of acceptance increases, thereby making assimilation (vs. contrast) more likely to occur. In contrast, we are more interested in how the individual's starting position along the comparison dimension (BMI), rather than her range of possible positions, interacts with the model's size to affect self-esteem.

We predict that the relative distance between the comparison standard and the position of the self on the comparison dimension will determine the type of comparison mechanism used, and the ultimate comparison outcome. Figure 1 illustrates our theoretical framework. If a person has a very low position on the comparison dimension and is exposed to a comparison standard with a relatively low position on the same dimension, the distance between the self and the standard is small. Hence, a person with a low BMI should feel similar to an extremely thin or moderately thin model (which fall inside the range of similarity A in fig. 1), and should feel dissimilar to an extremely heavy or moderately heavy model (which fall outside this range). Similarly, a person with a normal BMI should feel similar to a moderately thin or moderately heavy model (range of similarity B) but dissimilar to an extremely thin or extremely heavy model (consistent with Smeesters and Mandel 2006). A person with a high BMI should feel similar to an extremely heavy or moderately heavy model (range of similarity C) and should feel dissimilar to an extremely thin or moderately thin model. Following this reasoning, the extremity of the position of the comparison standard does not matter much for individuals with a low- or high-BMI position on the comparison dimension, whereas it does for normal-BMI individuals.

Feelings of (dis)similarity, based on the distance between the self and the standard, will steer social comparison processes and outcomes. Feeling similar to the model in the ad should engage the person's similarity focus, thereby activating standard-consistent information about the self, resulting in assimilative self-judgments. On the other hand, feeling dissimilar to the model in the ad should engage a dissimilarity focus, thereby activating standard-inconsistent information with the self, resulting in contrastive self-judgments.

THE PRESENT RESEARCH

In our studies, female consumers with a low, normal, or high BMI are exposed to models varying in size (thin vs. heavy) and the extremity of the size (moderate vs. extreme). We use body mass index (BMI) to determine a person's standing on the weight comparison dimension. This measurement was first described by Adolphus Quetelet (1842/1968) in the mid-nineteenth century based on the observation that body weight is proportional to the squared height in adults with normal body frames. This simple index of body weight has been consistently used in epidemiologic studies and is considered to be a good representation of one's standing on a weight dimension (WHO 1995).

We predict that participants will have a similarity or dissimilarity focus depending on the combination of their own standing on the comparison dimension (BMI) and the position of the standard. As already argued, we predict that the extremity of the comparison standard's position will not matter for individuals with a low or a high position on the comparison dimension. However, individuals with an intermediate position on the comparison dimension should be affected by the extremity of the comparison standard, as the distance between their own intermediate position and the moderate (small distance) versus extreme (long distance) position of the comparison standard varies. Therefore, we predict a significant interaction between BMI and extremity of the model's size on similarity focus, whereby extremity affects the similarity focus of normal-BMI females but not of low- and high-BMI females.

H1: The similarity focus of normal-BMI women (but not low- or high-BMI women) will shift as a function of the extremity of the model's size. More specifically, for normal-BMI women, exposure to moderately thin and moderately heavy models should lead to a similarity focus, whereas exposure to extremely thin and extremely heavy models should lead to a dissimilarity focus.

On the other hand, the similarity focus of individuals with a low or a high position on the comparison dimension should only be affected by whether the standard takes a low or a high position on the comparison dimension. Therefore, we also predict a significant interaction between BMI and the size of the model on similarity focus, whereby the size of the model affects the similarity focus of low- and high-BMI females but not of normal-BMI females.

H2: The similarity focus of low- and high-BMI women (but not normal-BMI women) will shift as a function of the size of the model.

H2a: For low-BMI women, exposure to moderately thin and extremely thin models should lead to a similarity focus, whereas exposure to moderately heavy and extremely heavy models should lead to a dissimilarity focus.

H2b: For high-BMI women, exposure to moderately heavy and extremely heavy models should lead to a similarity focus, whereas exposure to moderately thin and extremely thin models should lead to a dissimilarity focus.

We further predict that this activated similarity or dissimilarity focus will accompany changes in women's self-esteem. When having a similarity focus, consumers' self-esteem should assimilate to the standard's evaluation, because they view themselves as similar to the standard. A thin body is viewed by most women as an ideal that every woman should strive to achieve (Wertheim et al. 1997). Therefore, a similarity focus should enhance self-esteem in the case of thin standards and should lower self-esteem in the case of heavy standards. On the other hand, when having a dissimilarity focus, consumers' self-esteem should contrast away from the standard's evaluation, because they view themselves as dissimilar to the standard. In other words, a dissimilarity focus should lower self-esteem in the case of thin standards and should enhance self-esteem in the case of heavy standards. This leads to the following predictions.

H3a: For low-BMI women, both exposure to moderately thin and extremely thin models (due to a similarity focus) and exposure to moderately heavy and extremely heavy models (due to a dissimilarity focus) should enhance self-esteem.

H3b: For normal-BMI women, exposure to moderately thin models (due to a similarity focus) and extremely heavy models (due to a dissimilarity focus) should enhance self-esteem, whereas exposure to moderately heavy models (due to a similarity focus) and extremely thin models (due to a dissimilarity focus) should lower self-esteem.

H3c: For high-BMI female consumers, exposure to both moderately thin and extremely thin models (due to a dissimilarity focus) and exposure to both moderately heavy and extremely heavy models (due to a similarity focus) should lower self-esteem.

We present three studies in this paper. In the first study, we expose low-, normal-, and high-BMI female consumers to ads containing models that vary in size (thin vs. heavy) and the extremity of the size (moderate vs. extreme). We measure participants' (dis)similarity focus and self-esteem. In the second study, we collect evidence for which type of self-knowledge becomes accessible after exposure to ad models. Finally, in the third study, we examine how changes in similarity focus, accessible knowledge, and self-esteem (as a function of one's own BMI and the ad models) affect one's eating behavior, dieting intentions, and exercise intentions.

STUDY 1

We designed our first study to find evidence for hypotheses 1–3. To that end, female participants with low-, normal-, and high-BMIs were invited to the lab to participate in the study. We then exposed them to an ad booklet, containing ads with models and filler ads. We used an implicit comparison paradigm. That is, participants answered several filler questions with respect to each ad, and they were never asked to compare themselves with the models in the ad. After the ad questions, we measured participants' levels of (dis)similarity focus by using a picture comparison task in which participants were asked to what extent they thought the two presented pictures were similar or dissimilar (Mussweiler, Rüter, and Epstude 2004b). We expected participants with a similarity focus to rate the two pictures as more similar than those with a dissimilarity focus. Next, participants described themselves using the Twenty Statements Test (Kuhn and McPartland 1954), which has been used previously as an objective (nonscale) measure of appearance self-esteem (Smeesters and Mandel 2006).

Method

In our first study, 156 female undergraduates participated in partial fulfillment of course credit. In all studies, participants were invited based on their BMI, which was measured by asking participants' self-reported height and weight about a week before the experiment in another session or as part of a mass testing session. Based on this information, we could calculate individuals' BMI by dividing each individual's weight (in kilograms) by her squared height (in meters; Bray 1978). Participants were categorized as having low BMI (<18.5), normal BMI (>18.5 and <25), or high BMI (>25; Bray 1978; WHO 1995). We then randomly invited an equal number of low-, normal-, and high-BMI participants to the study. Based on their confirmation to participate, we could assure that the number of low-, normal-, and high-BMI consumers was equally balanced over the conditions of the experiment.

When coming to the lab, participants did not know that their BMI scores played a role in the study. They entered the lab in groups of up to six and completed the tasks in individual cubicles. Each participant was then randomly assigned to one of the four conditions of a 2 (model size: thin vs. heavy) × 2 (extremity: moderate vs. extreme) between-participants design. The number of participants per condition varied between 12 and 14.

The first task was labeled "Advertisement Questionnaire." Participants received a booklet containing eight full-page color ads, in randomized order: four model ads pertaining to their condition, and four filler ads with no models. Participants indicated on 5-point scales whether the ads were original, convincing, and/or informative. We used the same ads as Smeesters and Mandel (2006), who confirmed in a pretest that on a scale from −5 (extremely overweight) to +5 (extremely thin), the extremely thin models ($M = 3.56$) were rated as thinner than moderately thin models ($M = 2.48$), who were rated as thinner than moderately heavy models ($M = -1.39$), who were rated as thinner than extremely heavy models ($M = -2.44$; Tukey post hoc, $\alpha = .05$).

Next, participants completed a Picture Comparison Task (Mussweiler et al. 2004b) to measure their (dis)similarity focus. The instructions informed participants that the ostensible purpose of this task was to pretest stimuli for a future study on visual perception and that they should carefully inspect and compare these pictures. The pictures consisted of sketches of two scenes: the first sketch depicted a woman leaning over a table while holding a cup of coffee, a Christmas tree with a few presents underneath, and a fireplace; the second sketch depicted a man standing in front of a table and reaching for a bowl placed in the middle of the table, a bottle and a few glasses that were also placed on the table, and a fireplace. Subsequent to comparing both pictures, participants indicated how similar they were to one another using a 9-point rating scale that ranged from 1 (not at all similar) to 9 (completely similar).

The final part of study 1 was the completion of a questionnaire that consisted of the Twenty Statements Test (Kuhn and McPartland 1954), where participants completed 20 self-descriptive statements ("I am ____"). This free response task can validly assess individuals' momentary self-conceptions such as appearance self-esteem (Gardner, Gabriel, and Lee 1999; Smeesters and Mandel 2006). Finally, to examine whether restrained eating would have an effect on our results, participants filled out the Restraint Scale (Polivy, Herman, and Howard 1988). This scale did not have any effect on our results in any of our studies and, therefore, was omitted from our analyses. We also collected information in all of our studies concerning participants' satisfaction with their own bodies, which was measured in a mass testing session several weeks before the experiment (using the Body Dissatisfaction subscale of the Eating Disorders Inventory; Garner, Olmstead, and Polivy 1983). Although there was a trend that low-BMI individuals were more satisfied with their bodies than normal- and high-BMI individuals, this relationship was not significant ($p = .20$). Moreover, using body dissatisfaction as a variable in our results did not have any effect on the data. After completion of all tasks, participants completed a short questionnaire, which assured that no participants correctly guessed the true nature of the study.

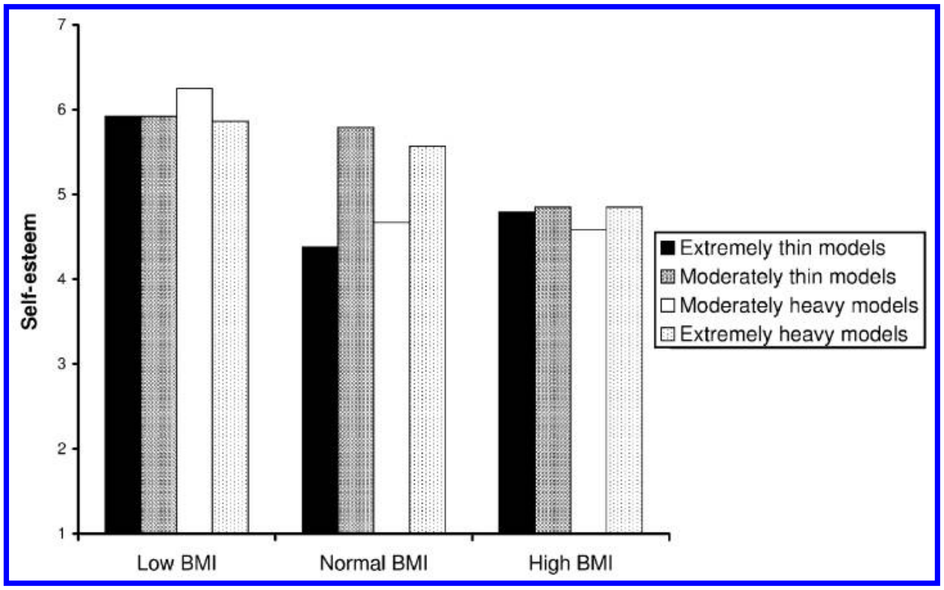
Results

Although BMI can also be treated as a continuous variable (Fitzsimons 2008), we treated BMI here as a categorical variable given (*a*) the prescribed thresholds for categorizing underweight (low BMI), normal weight (normal BMI), and overweight individuals (high BMI) and (*b*) the specific predictions that we have for individuals differing in BMI. Nevertheless, all the results from the reported ANOVAs are highly similar to those using regression analyses.

Similarity Focus. We conducted a 3 (BMI: low vs. normal vs. high) × 2 (model's size: thin vs. heavy) × 2

FIGURE 2

EXPERIMENT 1 RESULTS: SELF-ESTEEM AS A FUNCTION OF BMI, MODEL'S SIZE, AND EXTREMITY



(extremity: moderate vs. extreme) between-participants ANOVA on participants' judgments of the similarity of the two pictures. We obtained two significant two-way interactions. There was a significant two-way interaction between BMI and extremity ($F(1, 144) = 3.84$, $p < .03$). Follow-up analyses revealed that (1) low-BMI participants' similarity judgments of the two pictures did not differ between the moderate models ($M = 5.00$) and extreme models condition ($M = 5.12$; $F(1, 144) = 0.21$, $p = .65$), (2) normal-BMI participants rated the pictures as more similar after being exposed to moderate models ($M = 5.77$) compared to extreme models ($M = 4.59$; $F(1, 144) = 9.01$, $p < .01$), and (3) high-BMI participants' similarity judgment of the two pictures did not differ between the moderate models ($M = 5.12$) and extreme models condition ($M = 5.26$; $F(1, 144) = 0.12$, $p > .72$). Hence, hypothesis 1 is supported.

There was also a significant two-way interaction between BMI and model's size ($F(1, 144) = 6.52$, $p < .01$). Follow-up analyses revealed that (1) low-BMI participants rated the pictures as more similar after being exposed to thin models ($M = 5.64$) compared to heavy models ($M = 4.50$; $F(1, 144) = 8.44$, $p < .01$), (2) normal-BMI participants' similarity judgment of the two pictures did not differ between the thin models ($M = 5.30$) and heavy models condition ($M = 5.04$; $F(1, 144) = 0.23$, $p = .63$), and (3) high-BMI participants rated the pictures as more similar after being exposed to heavy models ($M = 5.64$) compared to thin models ($M = 4.78$; $F(1, 144) = 4.83$, $p = .03$). These results support hypotheses 2a–2b.

Self-Esteem. For each participant, two independent judges, who were blind for the conditions, selected and counted self-descriptive statements, either positive or negative, that referred to the participants' own physical appearance (e.g., "I am pretty," "I am slim," "I am heavy," "I am unsatisfied with my appearance"). The judges showed a high level of agreement ($r = .86$). Based on these selected statements per participant, two other independent judges, also blind for the conditions and the hypotheses, rated each participant's perception of her own physical appearance using a 5-point rating scale that ranged from 1 (very negative about her own physical appearance) to 7 (very positive about her own physical appearance). Ratings of the two judges were highly correlated ($r = .88$, $p < .01$) and combined into one single score. Our analysis for appearance self-esteem was based on these judged ratings (see Smeesters and Mandel 2006).

We conducted a 3 (BMI: low vs. normal vs. high) × 2 (model's size: thin vs. heavy) × 2 (extremity: moderate vs. extreme) between-participants ANOVA on appearance self-esteem. There was a main effect of BMI ($F(1, 144) = 12.76$, $p < .01$), which indicated that low-BMI participants ($M = 5.98$) had higher self-esteem than normal-BMI participants ($M = 5.13$, $p < .01$) and high-BMI participants ($M = 4.77$, $p < .001$). Normal- and high-BMI participants did not differ significantly from each other ($p = .17$). However, this main effect was embedded in a significant three-way interaction between BMI, model's size, and extremity ($F(1, 144) = 3.97$, $p < .03$), as shown in figure 2. We then conducted separate 2 (model's size: thin vs. heavy) × 2 (extremity: moderate vs. extreme) between-participants ANOVAs for each group of BMI participants. First, the ANOVA for low-BMI participants did not reveal any significant effects (all F's < 0.38, p's $> .54$). Second, the ANOVA for normal-BMI participants revealed a significant model's size × extremity interaction ($F(1, 49) = 9.19$, $p < .01$). Participants exposed to moderately thin models ($M = 5.79$) had higher self-esteem than participants exposed to moderately heavy models ($M = 4.67$), resulting in an assimilation effect (i(1, 49) = 4.24, $p < .05$). Participants exposed to extremely thin models ($M = 4.38$) had lower self-esteem than participants exposed to extremely heavy models ($M = 5.57$), resulting in a contrast effect ($F(1, 49) = 4.97$, $p < .04$). Third, the ANOVA for high-BMI participants did not reveal any significant effects (all F's < 0.23, p's $> .63$).

Ancillary Mediation Analysis. We tested the mediating role of similarity focus in establishing media image effects on self-esteem in a series of mediation analyses. We ran different mediation models for low-/high-BMI individuals than for normal-BMI individuals given the different way that similarity focus affects self-esteem for these individuals. For low- and high-BMI individuals, similarity focus is determined by how close these individuals feel to thin versus heavy models. For normal-BMI individuals, similarity focus is determined by how close these individuals feel to moderate versus extreme individuals.

Mediation Analysis for Low- and High-BMI Individuals. Low- and high-BMI individuals differed in terms of self-esteem. We hypothesized that these differences in self-esteem would be driven by different shifts in similarity focus to thin and heavy advertising models. We conducted a moderated mediation analysis, where model's size moderates (*a*) the effect of BMI on the mediator (similarity focus) and (*b*) the effect of the mediator on the dependent variable (self-esteem). We conducted three sets of regression equations to test for moderated mediation (Muller, Judd, and Yzerbyt 2005; cf. model 5, Preacher, Rucker, and Hayes 2007). A first equation regressed BMI, model's size, and the interaction between BMI and model's size on self-esteem. This equation only showed a main effect of BMI ($\beta = -0.47$, $t(99) = -5.33$, $p < .01$). A second equation included the same factors, but these were now regressed on similarity focus. This analysis revealed a significant interaction between BMI and model's size on similarity focus ($\beta = 1.46$, $t(99) = 3.60$, $p < .01$), indicating, as earlier reported, that low-BMI individuals have a higher similarity focus after comparison with thin models compared to heavy models, whereas the opposite is true for high-BMI individuals. A third equation added the mediator (similarity focus) and the interaction between similarity focus and model's size to the original model used in the first equation. This regression revealed that the effect of BMI on self-esteem was no longer significant ($\beta = -0.17$, $t(97) = -0.64$, $p > .52$). However, this regression revealed a significant interaction between similarity focus and model's size ($\beta = -2.14$, $t(97) = -5.56$, $p < .01$), suggesting that feelings of similarity (dissimilarity) in the case of thin models lead to positive (negative) shifts in self-esteem and feelings of similarity (dissimilarity) in the case of heavy models leads to negative (positive) shifts in self-esteem. Subsequent conditional indirect effects conducted at both levels of model's size confirm the mediating role of similarity focus. More specifically, similarity focus mediates the effect of BMI on self-esteem in the case of thin ($z = -1.97$, $p < .05$) and heavy models ($z = -2.02$, $p < .05$).

Mediation Analysis for Normal-BMI Individuals. We tested whether similarity focus also mediates the effect of exposure to advertising models on normal-BMI consumers' self-esteem. Specifically, we examined to what extent the interaction effect of model's size × extremity on self-esteem was mediated by similarity focus for these individuals. This analysis was tested in the context of mediated moderation (Muller et al. 2005; cf. model 2, Preacher et al. 2007), where extremity affects the mediator (similarity focus) and where the effect of the mediator on the dependent variable (self-esteem) depends on model's size. A first equation examined the effect of model's size, extremity, and the model's size × extremity interaction on self-esteem. This analysis confirmed the earlier reported interaction between model's size and extremity on self-esteem for normal-BMI consumers ($\beta = 1.82$, $t(49) = 3.14$, $p < .01$). A second equation including the same factors was regressed on the mediator (similarity focus) and revealed only an effect of extremity, indicating that participants had a higher similarity focus after exposure to moderate models compared to extreme models ($\beta = -0.41$, $t(49) = -3.17$, $p < .01$). The last equation added the mediator (similarity focus) and the interaction between the similarity focus and model's size to the original model used in equation 1. This analysis showed that the model's size × extremity interaction on self-esteem was no longer significant ($\beta = 0.64$, $t(47) = 1.34$, $p > .18$). On the other hand, the interaction between similarity focus and model's size on self-esteem reached significance ($\beta = -3.06$, $t(47) = -6.18$, $p < .001$). The latter interaction indicates that extremity-induced shifts in similarity focus affect self-esteem depending on the model's size. Having a similarity focus in the case of thin (heavy) models leads to a positive (negative) shift in self-esteem, whereas having a dissimilarity focus in the case of thin (heavy) models leads to a negative (positive) shift in self-esteem. Further conditional indirect effects confirmed the mediating role of similarity focus in the case of thin models ($z = -1.98$, $p < .05$) and heavy models ($z = 2.01$, $p < .05$).

Discussion

These results indicate that individuals with different BMI levels utilize different comparison processes (as measured by similarity focus) and self-judgments (as measured by appearance self-esteem) when encountering comparison standards in ads. The similarity focus of low- and high-BMI individuals was not affected by the extremity of the comparison standard. Low- (high-) BMI participants had a similarity focus when exposed to both moderately and extremely thin (heavy) models but a dissimilarity focus when exposed to both moderately and extremely heavy (thin) models (supporting hypotheses 2a–2b). Normal-BMI participants had a similarity focus when exposed to moderately thin and heavy models but a dissimilarity focus when exposed to extremely thin and heavy models (supporting hypothesis 1).

We predicted and found that these (dis)similarity foci affect participants' self-esteem. Normal-BMI participants showed assimilative positive and negative shifts in self-esteem when exposed to, respectively, moderately thin and heavy models, and contrastive positive and negative shifts in self-esteem when exposed to, respectively, extremely heavy and thin models (supporting hypothesis 3b). Mediation analyses revealed that similarity focus mediates the effect of exposing normal-BMI individuals to advertising models on their appearance self-esteem.

The level of self-esteem of both low- and high-BMI participants was seemingly unaffected by the models in the ads. This finding is, however, consistent with the pattern that would be predicted based on the (dis)similarity focus induced by exposure to advertising models. Low-BMI participants experienced positive shifts in self-esteem both in the case of thin models (assimilation as a result of a similarity focus) and heavy models (contrast as a result of a dissimilarity focus). The same reasoning applies to high-BMI participants. They experienced negative shifts in self-esteem both in the case of heavy models (assimilation as a result of a similarity focus) and thin models (contrast as a result of a dissimilarity focus). Mediation analyses confirmed that similarity focus was responsible for the difference between the low- and high-BMI individuals' self-esteem as a function of exposure to advertising models.

Although the results suggest that the difference in self-esteem between low- and high-BMI individuals is rather due to temporary shifts in self-esteem (resulting from exposure to the models) than to chronic differences in self-esteem, it is important to empirically demonstrate that this is indeed the case. Therefore, in study 2, we added a control condition (a baseline measure of self-esteem) to demonstrate that low-BMI individuals' self-esteem shifts positively and high-BMI individuals' self-esteem shifts negatively when exposed to advertising models.

STUDY 2

This study had two main objectives. A first objective was to further examine the similarity focus and self-esteem findings for low- and high-BMI individuals in study 1. We did not include normal-BMI participants because their self-esteem and knowledge accessibility patterns have already been established (study 1 of the current research; Smeesters and Mandel 2006). The procedure was similar to the one used in study 1, except for two elements. First, we added a control condition, in which participants were not exposed to any advertising models. We added this condition to demonstrate that the self-esteem of low- and high-BMI individuals would shift when exposed to advertising models. Hence, we predict that low-BMI individuals will have higher self-esteem after exposure to (moderately or extremely) thin models and (moderately or extremely) heavy models, compared to the control condition. High-BMI individuals, on the other hand, should have lower self-esteem after exposure to (moderately or extremely) thin models and (moderately or extremely) heavy models, compared to the control condition.

A second objective was to further examine the exact comparison processes of low- and high-BMI participants. Past research has demonstrated knowledge accessibility effects when only the standard was manipulated, such as for individuals with a normal BMI (Smeesters and Mandel 2006). Demonstrating the underlying role of knowledge accessibility processes would enhance our understanding of the social comparison processes of individuals that take a low or high position on the comparison dimension. Therefore, we measured which self-knowledge became accessible when exposed to either thin or heavy advertising models. We measured the accessibility of words designating thinness, words designating heaviness, and neutral words in a lexical decision task. These target words were preceded by subliminally presented words that were either related to the self-concept (e.g., I, me) or by control words unrelated to the self (e.g., the, on). The inclusion of these subliminal words allows parsing out general accessibility from self-concept accessibility. Lexical decision trials that are preceded by self-related primes assess the specific accessibility of knowledge related to the self, whereas trials that are preceded by control words rather assess the accessibility of semantic knowledge associated with the standard (Dijksterhuis et al. 1998).

With respect to trials preceded by self-primes, we expected that lexical decisions for standard-consistent words (thinness words in the case of thin models and heaviness words in the case of heavy models) would be faster than for standard-inconsistent words (thinness words in the case of heavy models and heaviness words in the case of thin models) when the distance between the self and the standard was small, and that lexical decisions for standard-inconsistent words would be faster than for standard-consistent words when the distance between the self and the standard was large. Hence, low-BMI participants should react fastest to standard-consistent words after exposure to thin models (because feeling similar to thin models should make thin self-knowledge more accessible) and fastest to standard-inconsistent words after exposure to heavy models (because feeling dissimilar from heavy models should make heavy self-knowledge more accessible). High-BMI participants should react fastest to standard-consistent words after exposure to heavy models (feeling similar to heavy models should make heavy self-knowledge more accessible) but fastest to standard-inconsistent words after exposure to thin models (feeling dissimilar to thin models should make heavy self-knowledge more accessible).

Response latencies measured on trials preceded by control primes reflect which knowledge associated with the models is accessible. As thin models should be associated with thinness and heavy models with heaviness, we expected that lexical decisions for standard-consistent words would be faster than for standard-inconsistent words across conditions.

Method

One hundred seventy-six female undergraduates participated in this study for partial fulfillment of course credit. Low- and high-BMI participants were randomly assigned to one of the four conditions of a 2 (model's size: thin vs. heavy) × 2 (extremity: moderate vs. extreme) between-participants design or to a control condition in which they were not exposed to any model. The number of participants per condition varied between 16 and 18.

Upon arrival in the laboratory, participants were told they would participate in several tasks. The first task of this study was the same Advertisement Questionnaire as in study 1. Participants received a booklet containing the four ads with models pertaining to their condition and four filler ads with no models. Participants in the control condition received a booklet containing eight filler ads (and no ads with models). This was followed by the same Pictures Comparison Task as in study 1, which measured participants' (dis)similarity focus.

For the next task, participants sat in front of a computer monitor and performed a word recognition task. The instructions on the screen informed them that they should focus on the screen every time a string of XXXs appeared. They were told that this string would be followed by a word or a nonword and that they should identify, as fast as possible, whether the word existed or not. Participants responded by either pushing the "1" (word) or the "3" (nonword) on the keyboard. To reduce variance in response latencies, participants were asked to keep their hands near the buttons throughout the task. The lexical decision task consisted of 42 trials, with 6 practice trials and 36 critical trials. The critical trials consisted of 18 trials in which the target word was an existing word and 18 trials in which the target word was a random letter string (e.g., golrr). Of the 18 target words, 6 words were associated with thinness (e.g., thin, slender), 6 words were associated with heaviness (e.g., heavy, fat), and 6 words were unrelated to thinness-heaviness (e.g., calm). One half of the target words were preceded by a self-prime (I, my, me), and the other half were preceded by a control prime (on, the, a). We created two lists for this task, so that three specific words that were preceded by a self-prime in the one list were preceded by control primes in the other and vice versa. The 36 trials were randomly presented. At the beginning of each trial, a row of XXXs appeared on the center of the screen for 1,000 milliseconds. The prime then appeared in the same location for 15 milliseconds and was immediately masked by the string of XXXs again for 500 milliseconds. Then the target word appeared, overwriting the masking stimulus, and remained on the screen until participants made a lexical decision. After participants responded, the screen remained blank for 2 seconds.

The last task of this study was the completion of the Twenty Statements Test, also used in study 1, to assess participants' appearance self-esteem. Finally, participants were tested for awareness of the subliminal priming procedure and any suspicion about the aim of the studies. None of the participants guessed the aim of the experiment or connected any of the tasks together. After they were informed that they had been exposed to subliminal primes, none of the participants could recall any of the primed words. Participants were then thoroughly debriefed.

Results

The findings of study 1 indicated that the extremity of the model's size did not play any significant role for low- and high-BMI participants. In all of the analyses of study 2, extremity also did not reveal any significant main or interaction effects on similarity focus, accessible self-knowledge, or self-esteem (F's < 0.76, p's $> .38$) and was therefore left out of the analyses.

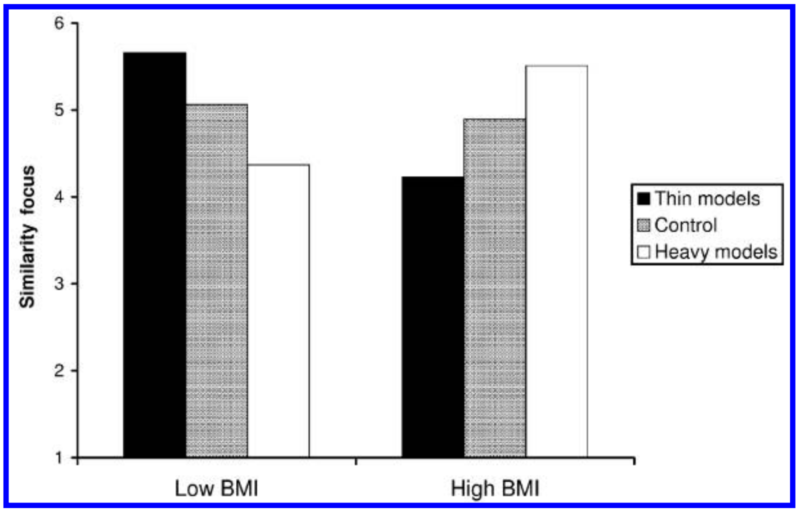
Similarity Focus. We conducted a 2 (BMI: low vs. high) × 3 (model's size: thin vs. heavy vs. control) between-participants ANOVA on similarity focus. This analysis revealed a significant BMI × model's size interaction ($F(1, 170) = 25.39$, $p < .001$), as depicted in figure 3. Low-BMI participants had a stronger similarity focus ($M = 5.66$) after exposure to thin models compared to the control condition ($M = 5.06$; $F(1, 170) = 3.78$, $p = .054$), and a weaker similarity focus after exposure to heavy models ($M = 4.37$) compared to the control condition ($M = 5.06$; $F(1, 170) = 4.46$, $p < .04$). High-BMI participants had a stronger similarity focus ($M = 5.51$) after exposure to heavy models compared to the control condition ($M = 4.89$; $F(1, 170) = 4.08$, $p < .05$) and a weaker similarity focus after exposure to thin models ($M = 4.23$) compared to the control condition ($M = 4.89$; $F(1, 170) = 4.55$, $p < .05$).

Accessible Self-Knowledge. To reduce the distorting effect of outliers, we considered data points that were 3 standard deviations above or below the mean for each word as outliers and dropped them from subsequent analysis (see Bargh and Chartrand 2000). Because reaction time data are often skewed, we also ran our analysis on logarithmic transformations of our reaction time data, which are sometimes applied to normalize the data to meet the assumptions of statistical tests (Bargh and Chartrand 2000). However, this transformation analysis was similar to the analysis of the nontransformed data, and we report the latter data.

We first calculated response latencies for standard-consistent (i.e., thinness words in the case of thin models and heaviness words in the case of heavy models) and standard-inconsistent words (i.e., thinness words in the case of heavy models and heaviness words in the case of thin models). We did not include the control model condition in this analysis as it is not possible to calculate standard-consistent and standard-inconsistent response latencies in a condition in which no standard was presented to the participants. Hence, we conducted a 2 (BMI: low vs. high) × 2 (model's size: thin vs. heavy) × 2 (prime: self vs. control) × 3 (target words: standard-consistent vs. standard-inconsistent vs. neutral) mixed ANOVA with the first two factors as between-participants factors and the last two factors as within-participants factors. The predicted four-way interaction between

FIGURE 3

EXPERIMENT 2 RESULTS: SIMILARITY FOCUS AS A FUNCTION OF BMI AND MODEL'S SIZE



BMI, model's size, prime, and target words was significant ($F(2, 272) = 11.36$, $p < .001$). This interaction is shown in figure 4.

To further analyze this four-way interaction, we conducted two separate 2 (BMI: low vs. high) × 2 (model's size: thin vs. heavy) × 3 (target words: standard-consistent vs. standard-inconsistent vs. neutral) ANOVAs, with the last factor being within-participants, on the response latencies for each type of prime. The analysis on the trials preceded by self-primes should reveal which self-knowledge becomes accessible after exposure to advertising models, whereas the analysis on the trials preceded by control primes should reveal which knowledge becomes accessible that participants associated with advertising models.

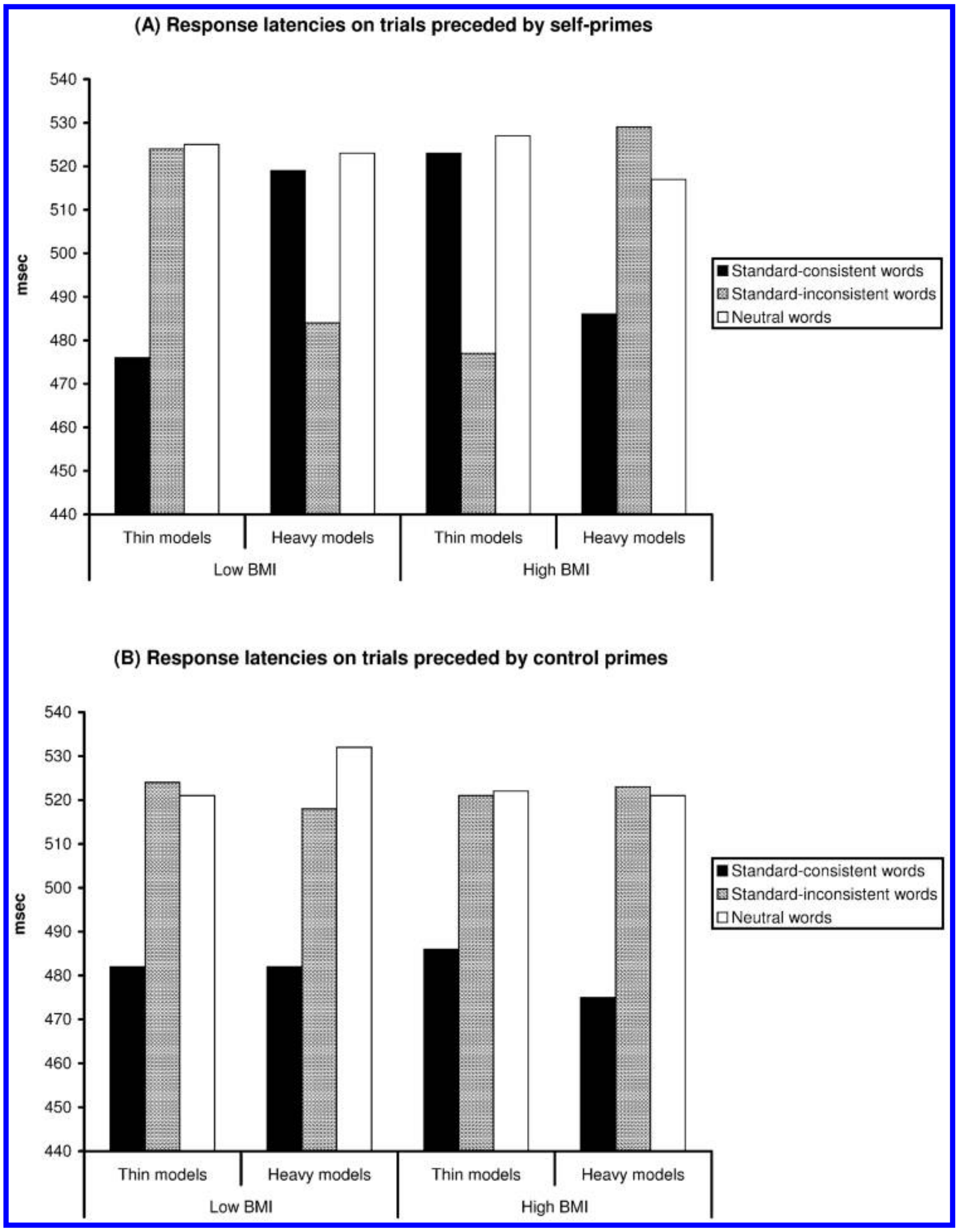
The analysis on the trials preceded by self-primes revealed a significant BMI × model's size × target words interaction ($F(2, 272) = 33.51$, $p < .001$). Low-BMI individuals exposed to thin models reacted faster to standard-consistent words ($M = 476$ milliseconds) than to standard-inconsistent words ($M = 524$ milliseconds; $F(1, 272) = 25.66$, $p < .001$) and neutral words ($M = 525$ milliseconds; $F(1, 272) = 15.69$, $p < .001$). However, low-BMI individuals exposed to heavy models reacted faster to standard-inconsistent words ($M = 484$ milliseconds) than to standard-consistent words ($M = 519$ milliseconds; $F(1, 272) = 17.11$, $p < .001$) and neutral words ($M = 523$ milliseconds; $F(1, 272) = 17.93$, $p < .001$). Further, high-BMI individuals exposed to heavy models reacted faster to standard-consistent words ($M = 486$ milliseconds) than to standard-inconsistent words ($M = 529$ milliseconds; $F(1, 272) = 10.18$, $p < .01$) and neutral words ($M = 517$ milliseconds; $F(1, 272) = 5.80$, $p < .05$). However, high-BMI individuals exposed to thin models reacted faster to standard-inconsistent words ($M = 477$ milliseconds) than to standard-consistent words ($M = 523$ milliseconds; $F(1, 34) = 16.03$, $p < .001$) and neutral words ($M = 527$ milliseconds; $F(1, 34) = 31.87$, $p < .001$).

The analysis on the trials preceded by control primes only revealed a significant main effect of target words ($F(2, 272) = 33.68$, $p < .001$). This effect indicated that standard-consistent words elicited faster response latencies ($M = 481$ milliseconds) than standard-inconsistent words ($M = 521$ milliseconds) and neutral words ($M = 523$ milliseconds).

Self-Esteem. We conducted a 2 (BMI: low vs. high) × 3 (model's size: thin vs. heavy vs. control) between-participants ANOVA on self-esteem. This analysis revealed a strongly significant main effect of BMI ($F(1, 170) = 39.84$, $p = .01$), which indicated that low-BMI participants ($M = 5.70$) had higher self-esteem than high-BMI participants ($M = 4.44$). Importantly, this main effect was qualified by a significant BMI × model's size interaction ($F(1, 170) = 5.18$, $p = .01$), depicted in figure 5. Compared to the control condition ($M = 5.17$), low-BMI participants had higher self-esteem in the thin model condition ($M = 5.89$; $F(1, 170) = 5.13$, $p = .025$) and in the heavy model condition ($M = 5.80$; $F(1, 170) = 3.98$, $p = .045$). Further, compared to the control condition ($M = 4.94$), high-BMI participants had lower self-esteem in the thin model condition ($M = 4.29$; $F(1, 170) = 4.31$, $p < .04$) and in the heavy model condition ($M = 4.34$; $F(1, 170) = 3.59$, $p = .06$). These findings indicate that the shifts in self-esteem for low- and high-BMI participants in the advertising models conditions are indeed due to social comparisons with these models rather than chronic differences in self-esteem. This is confirmed by the finding that low- and high-BMI participants' self-esteem was not significantly different in the control model condition ($M = 5.17$ and $M = 4.94$; $F(1, 170) = 0.37$, $p > .54$).

FIGURE 4

EXPERIMENT 2 RESULTS: RESPONSE LATENCIES AS A FUNCTION OF BMI, MODEL'S SIZE, AND TARGET WORDS ON TRIALS PRECEDED BY (*A*) SELF-PRIMES AND (*B*) CONTROL PRIMES

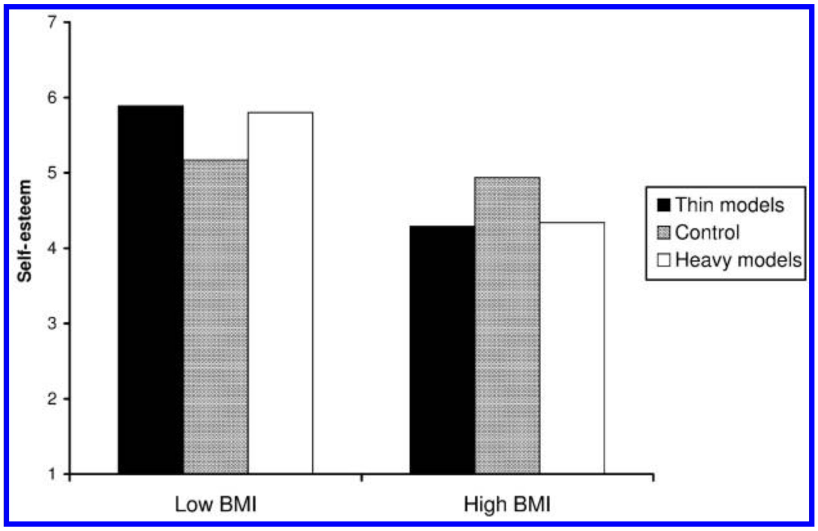


Mediation Analysis on Knowledge Accessibility. To test for mediation, we examined whether similarity focus mediates the effect of exposing low- and high-BMI participants to advertising models on the response latencies to standard-consistent words and standard-inconsistent words. The control condition was not included in the mediation analysis for the response latencies, as no comparison standard was presented in this condition. We followed the moderated mediation approach of Preacher et al. (2007).

We first conducted our regression on the reaction times to standard consistent words. A first regression found a significant BMI × model's size interaction on the reaction times (RT) to standard-consistent words ($\beta = -1.29$, $t(136) = -4.30$, $p < .01$), indicating that low- (high-) BMI consumers reacted faster to standard-consistent words when exposed to thin (heavy) models compared to heavy (thin) models. A second regression found a significant BMI × model's size interaction on similarity focus ($\beta = 1.85$, $t(136) =$

FIGURE 5

EXPERIMENT 2 RESULTS: SELF-ESTEEM AS A FUNCTION OF BMI AND MODEL'S SIZE



6.69, $p < .01$), indicating that low- (high-) BMI consumers felt more similar to thin (heavy) models compared to heavy (thin) models. A third regression revealed that the interaction between BMI and model's size dropped in significance ($\beta = -0.49$, $t(135) = -1.77$, $p > .08$), whereas there was a significant effect of similarity focus on the response latencies to standard-consistent words ($\beta = -0.38$, $t(135) = -4.37$, $p < .01$). This latter effect indicates that feeling similar to a model, either thin or heavy, leads to faster response latencies to standard-consistent words compared to feeling dissimilar. Conditional indirect effects confirm that (dis)similarity focus mediates the effect of BMI on reaction times to standard-consistent words in the case of both thin models ($z = 3.17$, $p < .01$) and heavy models ($z = -3.07$, $p < .01$).

We conducted a similar analysis on the response latencies to standard-inconsistent words. The first regression found a significant BMI × model's size interaction on the RT to standard-inconsistent words ($\beta = 1.40$, $t(136) = 4.71$, $p < .01$), indicating that low- (high-) BMI consumers reacted faster to standard-inconsistent words when exposed to heavy (thin) models compared to thin (heavy) models. A second regression found the same significant BMI × model's size interaction on similarity focus as reported above ($\beta = 1.85$, $t(136) = 6.69$, $p < .01$), indicating that low- (high-) BMI consumers felt more similar to thin (heavy) models compared to heavy (thin) models. Finally, the third regression revealed that the interaction between BMI and model's size dropped in significance ($\beta = -0.59$, $t(135) = -1.86$, $p > .06$), whereas there was a significant effect of similarity focus on the response latencies to standard-inconsistent words ($\beta = 0.79$, $t(135) = 4.15$, $p < .01$). This latter effect indicates that feeling dissimilar to a model, either thin or heavy, leads to faster response latencies to standard-inconsistent words compared to feeling similar. Conditional indirect effects confirm that (dis)similarity focus mediates the effect of BMI on reactions to standard-inconsistent words in the case of both thin ($z = -3.43$, $p < .01$) and heavy models ($z = 3.01$, $p < .01$).

Mediation Analysis on Self-Esteem. Next, we examined to what extent similarity focus mediates the interaction between BMI and model's size on self-esteem. A first regression conducted on the dependent variable revealed a significant interaction between BMI and model's size on self-esteem ($\beta = -0.28$, $t(172) = -3.97$, $p < .01$). A second regression conducted on the mediator found a significant interaction between BMI and model's size on similarity focus ($\beta = 1.86$, $t(172) = 7.17$, $p < .01$). Finally, a third regression added the mediator (similarity focus) and the interaction between similarity focus and model's size to the first regression equation. This regression revealed that the interaction between BMI and model's size was no longer significant ($\beta = 0.23$, $t(170) = 0.84$, $p > .40$), whereas there was a significant interaction between similarity focus and model's size ($\beta = -1.14$, $t(170) = -4.94$, $p < .01$), replicating the results of study 1. Similarity focus mediates the effect of BMI on self-esteem in the case of thin ($z = -4.52$, $p = .01$) and heavy models ($z = -3.89$, $p = .01$) but not in the control condition ($z = 0.32$, $p > .75$).

Discussion

These results replicated and extended study 1's findings by giving more detailed information about the comparison processes and outcomes for low- and high-BMI individuals. The results clearly indicated the importance of similarity focus and accessible self-knowledge in producing assimilative or contrastive changes in self-esteem. When the distance between the self and the comparison standard was rather small (in the case of low-BMI participants exposed to thin models and high-BMI participants exposed to heavy models), a similarity focus was activated and standard-consistent self-knowledge became accessible. In this case, self-esteem shifted in an assimilative manner, producing a positive shift for low-BMI individuals and a negative shift for high-BMI individuals. When the distance between the self and the comparison standard was rather large (in the case of low-BMI participants exposed to heavy models and high-BMI participants exposed to thin models), a dissimilarity focus was activated and standard-inconsistent self-knowledge became accessible. In this case, self-esteem shifted in a contrastive manner, producing a positive shift for low-BMI individuals and a negative shift for high-BMI individuals. Mediation analysis also confirmed the important mediating role of similarity focus in establishing which self-knowledge becomes accessible, leading to positive or negative shifts in self-esteem. These findings also confirm that the high self-esteem for low-BMI participants and the low self-esteem for high-BMI participants are not due to chronic differences in self-esteem but due to comparison processes. Interestingly, when participants were not exposed to advertising models, low- and high-BMI participants did not differ in self-esteem.

STUDY 3

In this final study, we examined the behavioral implications when participants were exposed to advertising models. More specifically, we were interested in how much participants actually ate (small cookies), as well as their dieting and exercise intentions after viewing the ads. Studies 1 and 2 established that, when exposed to advertising models, participants experience (temporary) shifts in self-esteem. These shifts might have strong implications for their behavior: it could affect how much they want to eat (thus causing weight gain), or it could motivate them to diet and exercise more (thus causing weight loss). So far, research has paid surprisingly little attention to how social comparison processes induced by media images can lead to such behavioral effects. Effects of media exposure on eating have been reported before, but mainly demonstrating that exposure to thin models can lead to disinhibited eating (Mills et al. 2002; Seddon and Berry 1996). However, the exact processes that contribute to such effects and the effects for individuals varying in BMI are unknown.

We predict that, in general, normal-BMI participants should be more directly guided by their (dis)similarity feelings with respect to the comparison standards and the subsequent shifts in their self-esteem than low- and high-BMI participants. The fact that normal-BMI individuals are not underweight or overweight does not mean that they are overly satisfied or dissatisfied with their body (Grabe et al. 2008). The self-image of normal-BMI individuals should be more malleable compared to that of low- and high-BMI individuals because they take an intermediate position on the comparison dimension (Tiggemann 2000), and hence their self-image can more easily shift in positive or negative directions. Also, the body status of normal-weight women is likely to be more ambiguous and therefore more responsive to the situational context than that of their clearly thin or overweight counterparts. Therefore, we predict that normal-BMI individuals' eating patterns and dieting/exercise intentions will be consistent with how similar or dissimilar they feel to the advertising models. Specifically, because exposure to moderately heavy (but not thin) models shifts their self-esteem downward and makes them think they are similar to heavy people, normal-BMI participants should eat less and be more willing to diet and exercise when exposed to moderately heavy models compared to moderately thin models. Further, because extremely thin (but not heavy) models shift their self-esteem downward and make them think they are dissimilar to thin people, normal-BMI participants should eat less and be more willing to diet and exercise when exposed to extremely thin models compared to extremely heavy models.

As low- and high-BMI individuals might be less guided by the shifts in their self-esteem, they might be more influenced by the advertising images themselves. In fact, recent research has shown that exposure to overweight or underweight others can influence eating behavior via cognitive processes unrelated to self-esteem (e.g., Johnston 2002). For example, the eating behavior of an overweight or underweight individual in the room can inhibit or increase the amount of food participants consume, due to the cognitive process of anchoring and adjustment rather than shifting self-esteem levels (McFerran et al. 2010). We believe that our participants will be most likely to adjust their natural inclinations regarding eating and exercise when they are confronted with an image opposite to their self-image. Confrontation with an opposite self might cause more cognitive elaboration about the actual discrepancy between the self and the other. Thinking about this discrepancy might motivate one to eat less and to diet and exercise more (Higgins 1987). Therefore, low-BMI participants might eat less and be more inclined to diet and exercise after exposure to heavy models compared to thin models, because of the discrepancy between the thin self and the heavy image (in order to avoid an undesired self). Further, high-BMI participants might eat less and be more inclined to diet and exercise after exposure to thin models compared to heavy models, because of the discrepancy between the heavy self and the thin image (in order to approach a desired self).

H4a: For low-BMI female consumers, exposure to (moderately or extremely) heavy models will lead to less eating and stronger intentions to diet and exercise compared to (moderately or extremely) thin models.

H4b: For normal-BMI female consumers, exposure to moderately heavy models will lead to less eating and stronger intentions to diet and exercise compared to moderately thin models. Further, exposure to extremely thin models will lead to less eating and stronger intentions to diet and exercise compared to extremely heavy models.

H4c: For high-BMI female consumers, exposure to (moderately or extremely) thin models will lead to less eating and stronger intentions to diet and exercise compared to (moderately or extremely) heavy models.

Method

Two hundred twenty-seven undergraduates participated in this study for partial fulfillment of course credits. Low-, normal-, and high-BMI participants were randomly assigned to one of the four conditions of a 2 (model's size: thin vs. heavy) × 2 (extremity: moderate vs. extreme) between-participants design or to a control condition in which they were not exposed to any model. The number of participants per condition varied between 14 and 16.

The first part of this study followed the procedure used in the earlier studies. Participants started with the same Advertisement Questionnaire as in study 1, containing four ads with models pertaining to their condition and four filler ads with no models. Participants in the control condition received a booklet containing eight filler ads with no models. This was followed by the same Pictures Comparison Task as in study 1 used to measure (dis)similarity focus.

Next, participants completed the Twenty Statements Test, which assessed their appearance self-esteem. After that, we measured participants' cookie intake and diet and exercise intentions. Participants then entered a room in which three plates were piled with three different flavors of small cookies (Mandel and Smeesters 2008). Each plate contained 20 cookies. The experimenter told each participant that a company wanted to test a new brand of cookie dough before it came on the market and that they would like to know which flavor tasted the best. Participants had to take one cookie per plate, taste it, and rate the cookie. They rated the cookie on several dimensions and then were told to help themselves to as many cookies as they wanted because the lab received more than enough cookies from the company. After the participants left the room, the experimenter counted the number of cookies that participants ate. Participants also answered two questions: (1) dieting intentions ("To what extent are you willing to go on a diet soon?") and (2) exercise intentions ("To what extent are you willing to work out soon?"). Both questions were on a 7-point scale with endpoints 1 (not at all) and 7 (very much).

Finally, participants filled out a postexperimental questionnaire. None of the participants raised any suspicion about any of the manipulations or any relatedness between the different tasks. Upon debriefing, a female experimenter randomly selected 102 participants (36 low-BMI individuals, 31 normal-BMI individuals, 35 high-BMI individuals) and measured their height and weight. All agreed. The other participants self-reported their weight and height again. Based on this information, none of the participants differed from their original BMI designations.

Results

We conducted a 3 (BMI: low vs. normal vs. high) × 2 (model's size: thin vs. heavy) vs. 2 (extremity: moderate vs. extreme) between-participants ANOVA on (*a*) similarity focus, (*b*) self-esteem, (*c*) cookie intake, and (*d*) a composite index of the diet/exercise questions ($r = .81$).

Similarity Focus. The results were highly consistent with hypotheses 1–2 and studies 1–2. The ANOVA revealed two significant two-way interactions. There was a significant two-way interaction between BMI and extremity ($F(2, 170) = 9.10$, $p < .01$). Low-BMI participants' similarity judgments of the two pictures did not differ between the moderate models ($M = 5.03$) and extreme models condition ($M = 4.77$; $F(1, 170) = 0.63$, $p > .43$). Normal-BMI participants rated the pictures as more similar after being exposed to moderate models ($M = 5.35$) compared to extreme models ($M = 3.53$; $F(1, 170) = 34.06$, $p < .001$). High-BMI participants' similarity judgment of the two pictures did not differ between the moderate models ($M = 4.82$) and extreme models condition ($M = 4.69$; $F(1, 170) = 0.18$, $p > .67$).

There was also a significant two-way interaction between BMI and model's size ($F(2, 170) = 13.60$, $p < .01$). Low-BMI participants rated the pictures as more similar after being exposed to thin models ($M = 5.48$) compared to heavy models ($M = 4.38$; $F(1, 170) = 12.55$, $p < .001$). Normal-BMI participants' similarity judgment of the two pictures did not differ between the thin models ($M = 4.59$) and heavy models condition ($M = 4.34$; $F(1, 170) = 0.45$, $p > .49$). High-BMI participants rated the pictures as more similar after being exposed to heavy models ($M = 5.33$) compared to thin models ($M = 4.17$; $F(1, 170) = 14.27$, $p < .001$).

Self-Esteem. As in study 1, we found a significant three-way interaction between BMI, model's size, and extremity ($F(1, 170) = 8.45$, $p < .01$). We then conducted separate 2 (model's size: thin vs. heavy) × 2 (extremity: moderate vs. extreme) between-participants ANOVAs for each group of BMI participants. First, the ANOVA for low-BMI participants did not reveal any significant effect (all F's < 0.09, p's $> .77$). However, further analyses revealed that low-BMI participants' self-esteem in the thin model ($M = 5.72$, $p < .06$) and heavy model conditions ($M = 5.81$, $p < .05$) were higher than in the control model condition ($M = 5.19$). Second, the ANOVA for normal-BMI participants revealed a significant model's size × extremity interaction ($F(1, 49) = 9.19$, $p < .01$). Participants exposed to moderately thin models ($M = 5.33$) had higher self-esteem than participants exposed to moderately heavy models ($M = 3.50$), resulting in an assimilation effect ($F(1, 57) = 20.28$, $p < .001$). Participants exposed to extremely thin models ($M = 3.79$) had lower self-esteem than participants exposed to extremely heavy models ($M = 4.69$), resulting in a contrast effect ($F(1, 57) = 4.73$, $p < .04$). Third, the ANOVA for high-BMI participants did not reveal any significant effect (all

F's < 0.51, p's $> .48$). Further analyses revealed that high-BMI participants' self-esteem in the thin model ($M = 4.17$, $p < .05$) and heavy model condition ($M = 4.37$, $p < .06$) were lower than in the control model condition ($M = 5.00$).

Mediation analyses again confirmed that similarity focus mediates the effects of exposure to moderately/extremely thin/heavy models on self-esteem of low, normal-, and high-BMI consumers.

Cookie Intake. The analysis showed a significant BMI × size × extremity interaction ($F(1, 170) = 5.22$, $p < .01$), which is depicted in figure 6. We then ran separate 2 (model's size: thin vs. heavy) vs. 2 (extremity: moderate vs. extreme) between-participants ANOVAs for each BMI group. First, the analysis for low-BMI participants only revealed a significant main effect of model's size ($F(1, 57) = 5.49$, $p < .03$). Low-BMI participants exposed to heavy models ($M = 4.03$) ate fewer cookies than those exposed to thin models ($M = 4.93$). Further analyses revealed that only participants in the heavy model condition ($p < .05$) ate significantly less than those in the control condition ($M = 4.75$) but not those in the thin model condition ($p = .45$). Second, the ANOVA for normal-BMI participants revealed a significant model's size × extremity interaction ($F(1, 57) = 13.08$, $p < .01$). Participants exposed to moderately heavy models ($M = 4.25$) ate fewer cookies than participants exposed to moderately thin models ($M = 5.93$; $F(1, 57) = 8.02$, $p < .01$), while participants exposed to extremely thin models ($M = 4.43$) ate fewer cookies than participants exposed to extremely heavy models ($M = 5.81$; $F(1, 57) = 5.23$, $p < .03$). Finally, the analysis for high-BMI participants only revealed a significant main effect of model's size ($F(1, 56) = 4.07$, $p < .05$). High-BMI participants exposed to thin models ($M = 3.90$) ate fewer cookies than those exposed to heavy models ($M = 4.77$). Further analyses revealed that only participants in the thin model condition ($p = .025$) ate significantly less than those in the control condition ($M = 5.07$) but not those in the heavy model condition ($p = .56$).

Dieting and Exercise Intentions. The analysis also showed a significant BMI × size × extremity interaction ($F(1, 170) = 8.30$, $p < .001$), shown in figure 7. The follow-up analysis for low-BMI participants only revealed a significant main effect of model's size ($F(1, 57) = 5.32$, $p < .03$). Low-BMI participants exposed to heavy models ($M = 5.62$) wanted to diet and exercise more than those exposed to thin models ($M = 4.86$). Further analyses revealed that mainly participants in the heavy model condition ($p < .03$) significantly wanted to diet and exercise more than those in the control condition ($M = 4.25$), whereas participants in the thin model condition ($p = .12$) only differed marginally significantly from the control condition. Second, the ANOVA for normal-BMI participants revealed a significant model's size × extremity interaction ($F(1, 57) = 12.91$, $p < .01$). Participants exposed to moderately heavy models ($M = 5.25$) were more willing to diet and exercise than participants exposed to moderately thin models ($M = 3.93$; $F(1, 57) = 5.27$, $p < .03$), while participants exposed to extremely thin models ($M = 5.50$) were more willing to diet and exercise than participants exposed to extremely heavy models ($M = 3.87$; $F(1, 57) = 7.74$, $p < .01$). Finally, the analysis for high-BMI participants only revealed a significant main effect of model's size ($F(1, 56) = 11.03$, $p < .01$). High-BMI participants exposed to thin models ($M = 5.30$) wanted to diet and exercise more than those exposed to heavy models ($M = 4.33$). Further analyses revealed that mainly participants in the thin model condition ($p < .01$) significantly wanted to diet and exercise more than those in the control condition ($M = 3.80$), whereas partic-

FIGURE 6

EXPERIMENT 3 RESULTS: EATING BEHAVIOR AS A FUNCTION OF BMI, MODEL'S SIZE, AND EXTREMITY

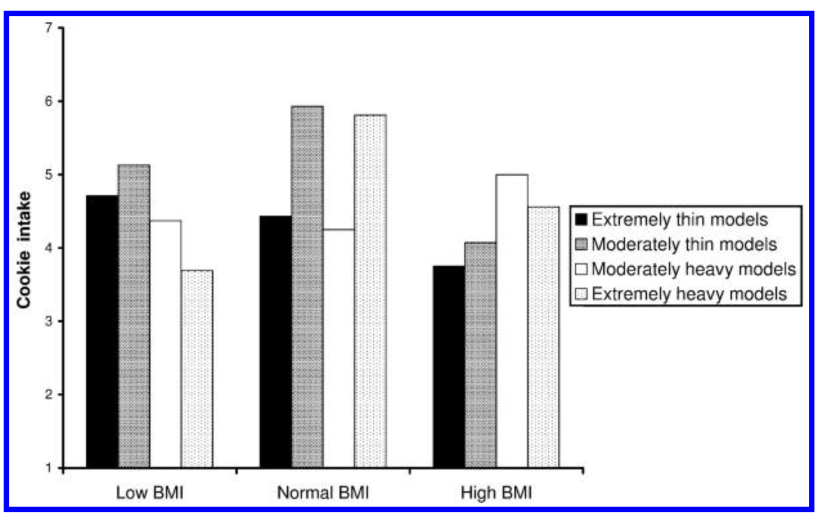
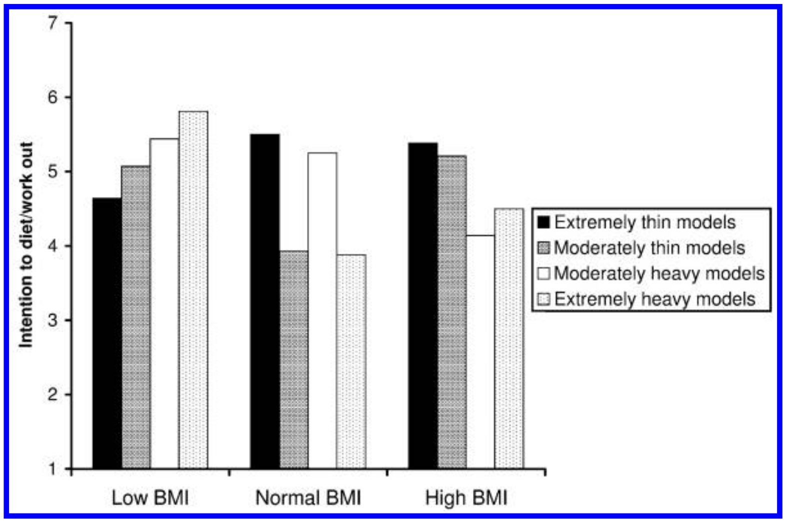


FIGURE 7

EXPERIMENT 3 RESULTS: INTENTION TO DIET AND EXERCISE AS A FUNCTION OF BMI, MODEL'S SIZE, AND EXTREMITY



ipants in the heavy model condition ($p = .11$) only differed marginally significantly from those in the control condition.

Discussion

The results of study 3 confirm the hypotheses regarding the behavioral implications of exposure to thin or heavy media images. Normal-BMI participants were directly guided by shifts in similarity focus and self-esteem. In support of hypothesis 4b, they ate less and were more inclined to diet and exercise when their self-esteem shifted downward (after exposure to either moderately heavy models or extremely thin models) compared to when their self-esteem shifted upward (after exposure to either moderately thin or extremely heavy models). Low- and high-BMI participants' behavior changed mainly when they were exposed to a media image that was discrepant with their own image. More specifically, low- (high-) BMI participants exposed to heavy (thin) models ate less and wanted to diet and exercise more than when they were exposed to thin (heavy) models. Low- and high-BMI participants' self-esteem levels are less susceptible to differential ad exposure, and yet they are still influenced by thin and heavy media images, albeit by a different route. Low-BMI participants' self-esteem increases after exposure to both thin and heavy models, which should not differentially influence their diet or exercise intentions, but the discrepancy between themselves and heavy models motivates them to avoid becoming like the heavy models (supporting hypothesis 4a). For high-BMI participants, self-esteem decreases after exposure to both thin and heavy models, which should not differentially influence their diet or exercise intentions, yet the discrepancy between themselves and the thin models motivates them to become more like the thin models (supporting hypothesis 4c).

GENERAL DISCUSSION

In three studies, we demonstrated that social comparison processes and their evaluative and behavioral outcomes are different for individuals who take different positions on the comparison dimension. Study 1 demonstrated different cognitive processes for individuals differing in their BMI. For normal-BMI participants, moderate standards activated a similarity focus, whereas extreme standards activated a dissimilarity focus. These foci led to positive or negative shifts in self-esteem, depending on the size of the model.

On the other hand, low- and high-BMI participants were only affected by the position of the standard on the comparison dimension and not by the extremity of that position. Low-BMI participants adopted a similarity focus after exposure to (moderately and extremely) thin models and a dissimilarity focus after exposure to (moderately and extremely) heavy models, in both cases leading to higher self-esteem. High-BMI participants adopted a similarity focus after exposure to (moderately and extremely) heavy models and a dissimilarity focus after exposure to (moderately and extremely) thin models, in both cases leading to lower self-esteem. Study 2 replicated these findings for low- and high-BMI participants and confirmed that these findings were not due to chronic differences in self-esteem but, rather, due to comparison processes following exposure to advertising models.

These findings extend previous social comparison research in at least four important ways. First, past research has repeatedly demonstrated that moderate comparison standards elicit assimilation effects and extreme comparison standards elicit contrast effects (e.g., Mussweiler et al. 2004a, 2004b). However, the position of the participant's self on the comparison dimension has rarely been taken into account. Our findings demonstrate that, without considering the position the self assumes on a given dimension, the resulting picture necessarily remains incomplete, and assimilation versus contrast effects are difficult to predict. Second, the present research provides a telling example by demonstrating that comparison processes and outcomes of low- and high-BMI individuals are not affected by the extremity of the comparison standard, but only by whether the standard takes a low or high position on the comparison dimension. Particularly striking is the fact that, after exposure to advertising models, low-BMI participants' self-esteem always shifts upward whereas high-BMI participants' self-esteem always shifts downward (compared to a control condition; see study 2). Third, the present research is also one of the few demonstrations of how social comparisons influence subsequent behavior. Most social comparison research focuses primarily on the self-evaluative consequence of comparing with others, while essentially ignoring behavioral effects (Mussweiler 2003; for an exception, see Stapel and Suls 2004). Fourth, to the best of our knowledge, this study is also the first to reveal the role of knowledge accessibility when individuals differing in their relative position on the comparison dimension are exposed to different comparison standards.

Surprisingly, individuals often neglect to make spontaneous comparisons when they are not specifically social in nature. For example, Wang and Wyer (2002) demonstrated that consumers often fail to compare products to each other, even when it is advantageous to do so. However, social comparisons are frequently spontaneous (Festinger 1954). The women in our studies did not receive any explicit instruction to compare themselves with the models in the ads. Consistent with Richins (1991), we find that women compare themselves spontaneously with advertising models, regardless of size (Richins 1991). Many women may find it difficult to escape the effects of social comparison processes that are spontaneous and automatic. Individuals might be able to correct for social comparison information, but only when they are aware of the biasing influence of this information (Wegener and Petty 1995). A consumer might write off a model's thinness as unattainable and, thus, not relevant for comparison (Lockwood and Kunda 1997). Alternatively, she might spontaneously make a comparison with a model and subsequently dismiss it as inappropriate or nondiagnostic (Gilbert, Giesler, and Morris 1995), not allowing it to affect her self-esteem. Furthermore, individuals may be less influenced by comparison standards following self-affirmation (Stapel and Johnson 2007).

The conceptual starting point for the present research was the selective accessibility model (Mussweiler 2003), which captures the psychological processes that underlie social comparisons with assimilative and contrastive consequences. Consistent with the tenets of this model, the present research demonstrates that a focus on similarities leads to and underlies assimilative social comparison effects, whereas a focus on differences leads to and underlies contrastive social comparison effects. These alternative judgmental outcomes of assimilation and contrast have also been the focus of a series of other judgmental models (for a more detailed comparison, see Mussweiler 2007), such as the inclusion/exclusion model (Schwarz and Bless 1992), the interpretation/comparison model (Stapel and Koomen 2001) and the global/local model (Förster, Liberman, and Kuschel 2008). It seems clear that the alternative mechanisms that are proposed by these models are closely related to the mechanisms of similarity and dissimilarity testing that were directly examined in the present research. For example, the inclusion/exclusion model holds that assimilation results, if accessible knowledge is included in the representation of the target, whereas contrast results if accessible knowledge is excluded from the representation of the target. The global/local model further assumes that inclusion, and thus assimilation, is more likely if judges adopt a global mode of information processing, whereas exclusion, and thus contrast, is more likely if judges adopt a local mode of information processing. Recent evidence suggests that these alternative modes of global versus local processing may be intimately linked to the alternative comparison foci on similarities versus differences that we examined (Förster 2009). Furthermore, it has been demonstrated that the judgmental consequences of a global versus local processing mode are driven by changes in the selective accessibility of knowledge indicating target-standard similarity versus dissimilarity (Förster et al. 2008). Finally, recent research shows that moderators of assimilative versus contrastive judgmental effects are closely linked to informational foci on similarities versus differences (Mussweiler and Damisch 2008). Together with the present findings, this suggests that the alternative comparison mechanisms of similarity versus dissimilarity testing are the critical processes that produce assimilation and contrast. A global versus local processing style may be best conceptualized as one of the factors that influence whether judges engage in similarity versus dissimilarity testing. Future research will have to scrutinize how these alternative mechanisms are interrelated.

One possible limitation of this research is the use of BMI, which is an imperfect measure of whether an individual is overweight, underweight, or normal. BMI is an indirect measure of body fat, which does not take into account muscle mass, age, gender, bone structure, or fat distribution (Rothman 2008). Obesity researchers sometimes suggest alternative measures, such as underwater weighing or waist-circumference measurement, as more valid measures of obesity (Rothman 2008). However, individuals from multiple cultures consistently identify a mean BMI level of 20.5–21.5 as "ideal," suggesting that most people have some understanding of the distribution of BMI levels in the general population as well as which BMI levels are viewed as more positive than others (Swami and Tovée 2005). Therefore, it is likely that participants with high BMI levels perceive themselves as heavy, regardless of muscle mass or fat distribution. It is also possible that not all of our participants have the same sense of what is "thin" and what is "heavy." For example, anorexic and bulimic individuals tend to overestimate their own and others' BMI (Tovée, Emery, and

Cohen-Tovée 2000), so perhaps our low-BMI participants viewed the moderately thin models as heavy. It is also possible that normal-BMI women might view themselves as heavier than they are, thereby viewing themselves as more similar to the heavy models than the thin models, regardless of extremity. However, our findings are inconsistent with these possibilities. Normal-BMI individuals assimilated with moderately thin as well as moderately heavy models (suggesting that they viewed themselves as falling within this range) and contrasted away from extremely thin and extremely heavy models. Moreover, low-BMI individuals assimilated with moderately thin as well as extremely thin models, suggesting that they did not dismiss the moderately thin models as "heavy."

Future research might examine how exposure to thin and heavy media images affects other consumption behaviors exhibited by women of various shapes and sizes. While we established effects of ad exposure on cookie consumption quantity, we did not look at how the use of such models might influence consumers' attitudes toward the ads (and brands advertised) or preferences between competing brands using such images. In other words, are the Dove "Real Women" ads an effective means to sell a product or merely an effective public relations vehicle? Given our findings that overweight consumers demonstrate lower self-esteem after exposure to any models and that normal-weight consumers demonstrate lower self-esteem after exposure to moderately heavy models (such as the Dove models) or extremely thin models (such as the majority of advertising models), we believe it is unlikely that many brands will gain market share by using heavy models in their ads. On the other hand, if the goal of the ad is to lower the consumer's self-esteem in order to make the product (such as a weight loss product or cellulite cream) seem more necessary, using heavy models might be successful, but only if the consumer believes that the advertised product offers an effective means toward restoring self-esteem. Future research might also explore the effects of ads that reflect variations on different comparison dimensions (such as height or age) on the self-esteem of consumers whose positions also vary on those dimensions (such as men of different heights or consumers of different ages).

A number of consumer researchers have recently shifted their focus to identifying the causes of maladaptive consumer behaviors, such as overeating and obesity (e.g., Chandon and Wansink 2007; Scott et al. 2008) and prescribing ways to alleviate such behaviors (Mick 2008). In light of this shifting focus, an interesting question is how overweight and normal-weight consumers might manage their self-esteem levels more effectively, in order to avoid the damaging effects of low self-esteem such as depression and eating disorders (Stice and Shaw 1994). One of our most intriguing findings was that low-BMI and high-BMI individuals start out with similar levels of self-esteem, but after exposure to any models (thin or heavy), self-esteem increases for low BMIs and decreases for high BMIs. This finding contradicts the notion, suggested by Dove and others, that overweight individuals should have higher self-esteem after looking at heavy models than after looking at thin models.

REFERENCES

Argo, Jennifer J., Katherine White, and Darren W. Dahl (2006), "Social Comparison Theory and Deception in the Interpersonal Exchange of Consumption Information," *Journal of Consumer Research*, 33 (June), 99–108.

Bargh, John A. and Tanya L. Chartrand (2000), "The Mind in the Middle: A Practical Guide to Priming and Automaticity Research," in *Handbook of Research Methods in Social Psychology*, ed. Harry T. Reis and Charles M. Judd, New York: Cambridge University Press, 253–85.

Bearman, Sarah K., Katherine Presnell, and Eric Martinez (2006), "The Skinny on Body Dissatisfaction: A Longitudinal Study of Adolescent Girls and Boys," *Journal of Adolescence*, 35 (April), 217–29.

Bray, G. A. (1978), "Definitions, Measurements and Classification of the Syndromes of Obesity," *International Journal of Obesity*, 2 (2), 99–112.

Chandon, Pierre and Brian Wansink (2007), "The Biasing Health Halos of Fast Food Restaurant Health Claims: Lower Calorie Estimates and Higher Side-Dish Consumption Intentions," *Journal of Consumer Research*, 34 (October), 301–14.

Collins, Rebecca L. (1996), "For Better or Worse: The Impact of Upward Social Comparison on Self-Evaluations," *Psychological Bulletin*, 119 (1), 51–69.

Dijksterhuis, Ap, Russell Spears, Tom Postmes, Diederik A. Stapel, Willem Koomen, Ad van Knippenberg, and Daan Scheepers (1998), "Seeing One Thing and Doing Another: Contrast Effects in Automatic Behavior," *Journal of Personality and Social Psychology*, 75 (4), 862–71.

Dohnt, Hayley K. and Marika Tiggemann (2006), "Body Image Concerns in Young Girls: The Role of Peers and Media Prior to Adolescence," *Journal of Youth and Adolescence*, 35 (2), 135–45.

Epstude, Kai, and Thomas Mussweiler (2009), "What You Feel Is How You Compare: How Comparisons Influence the Social Induction of Affect," *Emotion*, 9 (1), 1–14.

Festinger, L. (1954), "A Theory of Social Comparison Processes," *Human Relations*, 7 (2), 117–40.

Fitzsimons, G. J. (2008), "Death to Dichotomizing," *Journal of Consumer Research*, 35 (June), 5–8.

Förster, Jens (2009), "Relations between Perceptual and Conceptual Scope: How Global versus Local Processing Fits a Focus on Similarity versus Dissimilarity," *Journal of Experimental Psychology: General*, 138 (1), 88–111.

Förster, Jens, Nira Liberman, and Stephanie Kuschel (2008), "The Effect of Global versus Local Processing Styles on Assimilation versus Contrast in Social Judgment," *Journal of Personality and Social Psychology*, 94 (4), 579–99.

Gardner, Wendi L., Shira Gabriel, and Angela Y. Lee (1999), "'I' Value Freedom but 'We' Value Relationships: Self-Construal Priming Mirrors Cultural Differences in Judgment," *Psychological Science*, 10 (4), 321–26.

Garner, David M., Marion P. Olmstead, and Janet Polivy (1983), "Development and Validation of a Multidimensional Eating Disorder Inventory for Anorexia Nervosa and Bulimia," *International Journal of Eating Disorders*, 2 (2), 15–34.

Gilbert, Daniel T., R. Brian Giesler, and Kathryn A. Morris (1995), "When Comparisons Arise," *Journal of Personality and Social Psychology*, 69 (2), 227–36.

Grabe, Shelly and Janet Shibley Hyde (2006), "Ethnicity and Body Dissatisfaction among Women in the United States: A Meta-Analysis," *Psychological Bulletin*, 132 (4), 622–40.

Grabe, Shelly, L. Monique Ward, and Janet Shibley Hyde (2008), "The Role of the Media in Body Image Concerns among Women: A Meta-analysis of Experimental and Correlational Studies," *Psychological Bulletin*, 134 (3), 460–76.

Granberg, Donald and Edward E. Brent Jr. (1974), "Dove-Hawk Placements in the 1968 Election: Application of Social Judgment and Balance Theories," *Journal of Personality and Social Psychology*, 29 (5), 687–95.

Häfner, Michael (2004), "How Dissimilar Others May Still Resemble the Self: Assimilation and Contrast after Social Comparison," *Journal of Consumer Psychology,* 14 (1/2), 187–96.

Hargreaves, Duane and Marika Tiggemann (2004), "Idealized Media Images and Adolescent Body Image: 'Comparing' Boys and Girls," *Body Image*, 1 (4), 351–61.

Herr, Paul M., Steven J. Sherman, and Russell H. Fazio (1983), "On the Consequences of Priming: Assimilation and Contrast Effects," *Journal of Experimental Social Psychology*, 19 (4), 323–40.

Higgins, E. Tory (1987), "Self-Discrepancy: A Theory Relating Self and Affect," *Journal of Personality and Social Psychology*, 94 (3), 319–40.

Johnston, Lucy (2002), "Behavioral Mimicry and Stigmatization," *Social Cognition*, 20 (1), 18–35.

Kuhn, Manford H. and Thomas S. McPartland (1954), "An Empirical Investigation of Self-Attitudes," *American Psychological Review*, 19 (February), 58–66.

Lockwood, Penelope and Ziva Kunda (1997), "Superstars and Me: Predicting the Impact of Role Models on the Self," *Journal of Personality and Social Psychology*, 73 (1), 91–103.

Lynch, John G., Jr., Dipankar Chakravarti, and Anusree Mitra (1991), "Contrast Effects in Consumer Judgments: Changes in Mental Representations or in the Anchoring of Rating Scales?" *Journal of Consumer Research*, 18 (December), 284–97.

Mandel, Naomi and Dirk Smeesters (2008), "The Sweet Escape: Effects of Mortality Salience on Consumption Quantities for Low and High Self-Esteem Consumers," *Journal of Consumer Research*, 35 (August), 309–23.

McFerran, Brent, Darren W. Dahl, Gavan J. Fitzsimons, and Andrea C. Morales (2010), "I'll Have What She's Having: Effects of Social Influence and Body Type on the Food Choices of Others," *Journal of Consumer Research*, 36 (April), electronically published August 25, 2009.

Meyers, Philip N. and Frank A. Biocca (1992), "The Elastic Body Image: The Effect of Television Advertising and Programming on Body Image Distortions in Young Women," *Journal of Communication*, 42 (September), 108–33.

Mick, D. G. (2008), "Introduction: The Moment and Place for a Special Issue," *Journal of Consumer Research*, 35 (October), 377–79.

Mills, Jennifer S., Janet Polivy, C. Peter Herman, and Marika Tiggemann (2002), "Effects of Exposure to Thin Media Images: Evidence of Self-Enhancement among Restrained Eaters," *Personality and Social Psychology Bulletin*, 28 (12), 1687–99.

Muller, Dominique, Charles M. Judd, and Vincent Y. Yzerbyt (2005), "When Moderation Is Mediated and Mediation Is Moderated," *Journal of Personality and Social Psychology*, 89 (6), 852–63.

Mussweiler, Thomas (2001), "'Seek and Ye shall find': Antecedents of Assimilation and Contrast in Social Comparison," *European Journal of Social Psychology*, 31 (2), 499–509.

——— (2003), "Comparison Processes in Social Judgment: Mechanisms and Consequences," *Psychological Review*, 110 (3), 472–89.

——— (2007), "Assimilation and Contrast as Comparison Effects: A Selective Accessibility Model," in *Assimilation and Contrast in Social Psychology*, ed. Diederik A. Stapel and Jerry Suls, New York: Psychology Press, 165–85.

Mussweiler, Thomas and Lysann Damisch (2008), "Going Back to Donald: How Comparisons Shape Judgmental Priming Effects," *Journal of Personality and Social Psychology*, 95 (6), 1295–1315.

Mussweiler, Thomas, Katja Rüter, and Kai Epstude (2004a), "The Man Who Wasn't There: Subliminal Social Comparison Standards Influence Self-Evaluation," *Journal of Experimental Social Psychology*, 40 (5), 689–96.

——— (2004b), "The Ups and Downs of Social Comparison: Mechanisms of Assimilation and Contrast," *Journal of Personality and Social Psychology*, 87 (6), 832–44.

Mussweiler, Thomas and Fritz Strack (2000a), "Consequences of Social Comparison: Selective Accessibility, Assimilation, and Contrast," in *Handbook of Social Comparison: Theory and Research*, ed. Jerry Suls and Ladd Wheeler, New York: Plenum, 253–70.

——— (2000b), "The 'Relative Self': Informational and Judgmental Consequences of Comparative Self-Evaluation," *Journal of Personality and Social Psychology*, 79 (1), 23–38.

Polivy, Janet and C. Peter Herman (2002), "Causes of Eating Disorders," *Annual Review of Psychology*, 53, 187–213.

Polivy, Janet, C. Peter Herman, and K. Howard (1988), "The Restraint Scale: Assessment of Dieting," in *Dictionary of Behavioral Assessment Techniques*, ed. Michel Hersen and Alan S. Bellack, New York: Pergamon, 377–80.

Preacher, Kristopher J., Derek D. Rucker, and Andrew F. Hayes (2007), "Addressing Moderated Mediation Hypotheses: Theory, Methods, and Prescriptions," *Multivariate Behavioral Research*, 42 (1), 185–227.

Quetelet, Adolphus (1842/1968), *A Treatise on Man and the Development of His Faculties*, New York: Burt Franklin.

Richins, Marsha (1991), "Social Comparison and the Idealized Images of Advertising," *Journal of Consumer Research*, 19 (June), 71–83.

Rothman, Kenneth J. (2008), "BMI-Related Errors in the Measurement of Obesity," *International Journal of Obesity*, 32 (Suppl. 3), 556–59.

Schwarz, Norbert and Herbert Bless (1992), "Constructing Reality and Its Alternatives: Assimilation and Contrast Effects in Social Judgment," in *The Construction of Social Judgments*, ed. Leonard L. Martin and Abraham Tesser, Hillsdale, NJ: Erlbaum, 217–45.

Scott, Maura L., Stephen M. Nowlis, Naomi Mandel, and Andrea C. Morales (2008), "Do 100-Calorie Packs Lead to Increased Consumption? The Effect of Reduced Food Sizes and Packages on the Consumption Behavior of Restrained Eaters and Unrestrained Eaters," *Journal of Consumer Research*, 35 (October), 391–405.

Seddon, Lesley and Neil Berry (1996), "Media-Induced Disinhibition of Dietary Restraint," *British Journal of Health Psychology*, 1 (1), 27–33.

Sherif, Carolyn W., Muzafer S. Sherif, and Roger E. Nebergall (1965), *Attitude and Attitude Change*, Philadelphia: W. B. Saunders, 92–126.

Shrum, L. J., James E. Burroughs, and Aric Rindfleish (2005), "Television's Cultivation of Material Values," *Journal of Consumer Research*, 32 (December), 473–79.

Smeesters, Dirk and Naomi Mandel (2006), "Positive and Negative Media Image Effects on the Self," *Journal of Consumer Research*, 32 (March), 576–82.

Stapel, Diederik A. and Hart Blanton (2004), "From Seeing to Being: Subliminal Social Comparisons Affect Implicit and Explicit Self-Evaluations," *Journal of Personality and Social Psychology*, 87 (4), 468–81.

Stapel, Diederik A. and Camille S. Johnson (2007), "When Nothing Compares to Me: How Defensive Motivations and Similarity Shape Social Comparison Effects," *European Journal of Social Psychology*, 37 (5), 824–38.

Stapel, Diederik A. and Willem Koomen (2000), "Distinctness of Others, Mutability of Selves: Their Impact on Self-Evaluations," *Journal of Personality and Social Psychology*, 79 (6), 1068–87.

——— (2001), "Let's Not Forget the Past When We Go to the Future: On Our Knowledge of Knowledge Accessibility Effects," in *Cognitive Social Psychology*, ed. Gordon B. Moskowitz, Mahwah, NJ: Erlbaum, 229–46.

Stapel, Diederik A. and Jerry Suls (2004), "Method Matters: Effect of Explicit versus Implicit Social Comparisons on Activation, Behavior, and Self-Views," *Journal of Personality and Social Psychology*, 87 (6), 860–75.

Stice, Eric and Heather E. Shaw (1994), "Adverse Effects of the Media Portrayed Thin Ideal on Women and Linkages to Bulimic Symptomatology," *Journal of Social and Clinical Psychology*, 13 (3), 288–308.

Swami, Viren and Martin J. Tovée (2005), "Female Physical Attractiveness in Britain and Malaysia: A Cross-Cultural Study," *Body Image*, 2 (2), 115–28.

Tan, Cheryl Lu-Lien (2007), "Fashion Group Sets Guides to Rein in Ultra-Thin Models," *Wall Street Journal,* January 8, B4.

Tiggemann, Marika (2000). "Person × Situation Interactions in Body Dissatisfaction," *International Journal of Eating Disorders*, 29 (1), 65–70.

Tiggemann, Marika and Amy Slater (2003), "Thin Ideals in Music Television: A Source of Social Comparison and Body Dissatisfaction," *International Journal of Eating Disorders*, 35 (1), 48–58.

Tovée, Martin J., Joanne L. Emery, and Esther M. Cohen-Tovée (2000), "The Estimation of Body Mass Index and Physical Attractiveness Is Dependent on the Observer's Own Body Mass Index," *Proceedings of the Royal Society of London: Biological Sciences*, 267, 1987–97.

Trampe, Debra, Diederik Stapel, and Frans W. Siero (2007), "On Models and Vases: Body Dissatisfaction and Proneness to Social Comparison Effects," *Journal of Personality and Social Psychology*, 92 (1), 106–18.

Wang, Jing and Robert S. Wyer Jr. (2002), "Comparative Judgment Processes: The Effects of Task Objectives and Time Delay on Product Evaluations," *Journal of Consumer Psychology*, 12 (4), 327–40.

Wegener, Duane T. and Richard E. Petty (1995), "Flexible Correction Processes in Social Judgment: The Role of Naive Theories in Corrections for Perceived Bias," *Journal of Personality and Social Psychology*, 68 (1), 36–51.

Wertheim, Eleanor H., Susan J. Paxton, Helena K. Schutz, and Sharryn L. Muir (1997), "Why Do Adolescent Girls Watch Their Weight? An Interview Study Examining Sociocultural Pressures to Be Thin," *Journal of Psychosomatic Research*, 42 (April), 345–55.

Wiseman, Clair, James Gray, James Moismann, and Anthony Ahrens (1992), "Cultural Expectations of Thinness in Women: An Update," *International Journal of Eating Disorders*, 11 (1), 85–89.

WHO (World Health Organization) (1995), "Physical Status: The Use and Interpretation of Anthropometry; Report of a WHO Expert Committee," *World Health Organization Technical Report Series*, 854, 1–452.