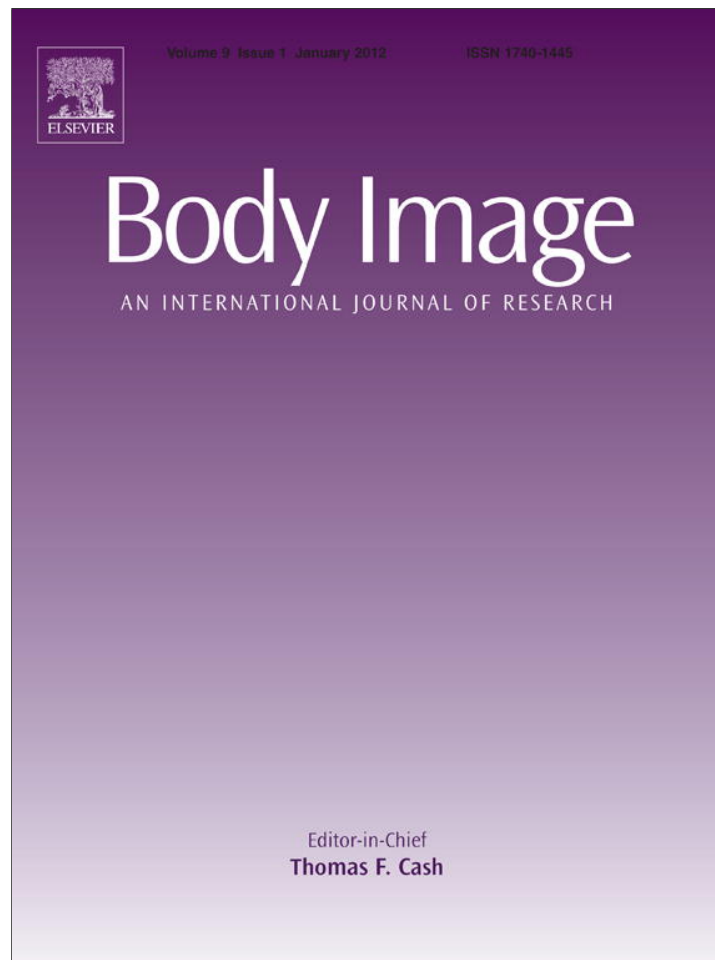


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Inspiration or deflation? Feeling similar or dissimilar to slim and plus-size models affects self-evaluation of restrained eaters[☆]

Esther K. Papies^{*}, Kim A.H. Nicolaije^{**}

Department of Social Psychology, Utrecht University, Utrecht, The Netherlands

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ABSTRACT

The present studies examined the effect of perceiving images of slim and plus-size models on restrained eaters' self-evaluation. While previous research has found that such images can lead to either inspiration or deflation, we argue that these inconsistencies can be explained by differences in perceived similarity with the presented model. The results of two studies ($n_s = 52$ and 99) confirmed this and revealed that restrained eaters with high (low) perceived similarity to the model showed more positive (negative) self-evaluations when they viewed a slim model, compared to a plus-size model. In addition, Study 2 showed that inducing in participants a similarities mindset led to more positive self-evaluations after viewing a slim compared to a plus-size model, but only among restrained eaters with a relatively high BMI. These results are discussed in the context of research on social comparison processes and with regard to interventions for protection against the possible detrimental effects of media images.

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Introduction

Media images portraying slim models and representing the current beauty ideal of thinness, are ubiquitous in our society. We are presented with slim ideals on a daily basis, for example when reading a magazine, watching television, or simply walking down the street. Comparing yourself with such standards can lead to self-deflation (i.e., more negative self-evaluations), by making evident that you look nothing like the standard (e.g., Richins, 1991; Stice & Shaw, 1994; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005). Indeed, an extensive body of research has demonstrated that exposure to media images depicting the idealized, slim body is related to body image concerns for women (Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002). As a result, and in response to recent societal criticism on such effects of extremely slim models in the media, some major cosmetics companies have started to use plus-size models in their campaigns (e.g., 'Dove'). On the other hand, comparing yourself with an idealized slim standard may also

work as an inspiration (i.e., more positive self-evaluations), by serving as an inspirational role model (e.g., Lockwood & Kunda, 1997). At the same time, comparing oneself to a plus-size model may have deflating effects if one feels rather similar to the model (Anschutz, Engels, Becker, & van Strien, 2009; Bosch, Buunk, Siero, & Park, 2010; Smeesters, Mussweiler, & Mandel, 2010), and make one feel good about oneself if it is obvious that one is much slimmer than the model (Smeesters et al., 2010).

While it is clear that slim media images can have a profound effect on the perceiver's own body image (e.g., Groesz et al., 2002), the specific effects on particularly weight-concerned individuals have been inconsistent. In the present paper, therefore, we investigate the effects of slim and plus-size models on such individuals (i.e., restrained eaters), and we will argue that it is one's spontaneous assessment of one's similarity to the model which determines whether a model works as an inspiration or deflation.

Social Comparison and Restrained Eating

Like any other judgment, people's evaluation of themselves is relative in nature and depends on the context in which the judgment is made (Festinger, 1954; Mussweiler, 2003). When thinking about our own academic performance, for example, we can feel better when we compare ourselves to a college Freshman, but less smart when we compare ourselves to a top researcher in our field. A central finding in research on social comparison processes is that people are more likely to compare themselves with others on domains which are personally relevant to them (e.g., Brewer & Gardner, 1996; Lockwood & Kunda, 1997; Major, Sciacchitano,

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^{*} Corresponding author.

^{**} Corresponding author. Present address: CoRPS, Department of Medical and Neuropsychology, Tilburg University, PO BOX 90153, 5000 LE Tilburg, The Netherlands.

E-mail addresses: e.k.papies@uu.nl (E.K. Papies), k.a.h.nicolaije@uvt.nl (K.A.H. Nicolaije).

& Crocker, 1993). Lockwood and Kunda (1997), for example, found that participants were more inspired by a standard who excelled at their own intended profession (e.g., teacher) than by one who excelled at a different profession (e.g., accountant), which they considered less relevant.

In the context of media images depicting models, we suggest that these models, when their weight and body shape are salient, are more likely to affect the self-evaluation of individuals who consider weight and body shape as very important than individuals who consider this a less relevant domain. A group of individuals for whom weight and body shape are particularly relevant are restrained eaters (i.e., chronic dieters; Herman & Polivy, 1980). Restrained eating is associated with decreased satisfaction with one's own body and with body image concerns (e.g., Gerner & Wilson, 2005; Johnson & Wardle, 2005), and restrained eaters chronically try to regulate their food intake with the intent of decreasing or maintaining their body weight—although this often is unsuccessful (e.g., Ouweland & Papies, 2010; Papies & Hamstra, 2010). Indeed, previous research has indicated that the effects of viewing idealized media images are stronger for individuals who are dissatisfied with their bodies or who qualify as restrained eaters (Groesz et al., 2002; Mills, Polivy, Herman, & Tiggemann, 2002; Posavac, Posavac, & Posavac, 1998; Trampe, Stapel, & Siero, 2007).

Inspiration or Deflation

Thus, an extensive body of research has shown that exposure to media images depicting the thin-ideal body can trigger contrasting, negative self-evaluations in women, and particularly in those with body image or weight concerns (e.g., Grabe et al., 2008; Groesz et al., 2002; Mills et al., 2002; Posavac et al., 1998; Richins, 1991; Trampe et al., 2007; Trottier, Polivy, & Herman, 2007). However, the findings of experimental studies examining these effects on restrained eaters have at times been inconsistent. Some studies suggest that images of slim bodies have especially negative effects on the self-evaluation of restrained eaters. A study by Trottier et al. (2007) for example, found that restrained eaters, but not unrestrained eaters, who were exposed to a slim standard experienced more negative self-conceptions. Other studies, however, suggest the opposite effect, namely that such images have an inspirational effect on restrained eaters. For instance, a study by Mills et al. (2002) showed that restrained eaters engaged in self-enhancement following exposure to images of slim bodies: instead of feeling worse about themselves, they engaged in a fantasy of being thin and experienced a temporary feeling of thinness. Again, there were no effects on unrestrained eaters. Similarly, Joshi, Herman, and Polivy (2004) found that restrained eaters reported a more positive self-image after exposure to slim models than to control images. In a similar fashion, while studies examining the effect of thin media images on women in general show mostly detrimental effects and that these effects are more pronounced for women with existing body concerns, some studies also report that some women even have a tendency to feel better about themselves after exposure to thin models (Posavac et al., 1998; Smeesters et al., 2010).

These inconsistent findings concerning the effects of exposure to slim models raise the question of the factors underlying these different responses. Here, we propose that the differential effects can be explained by a variable which has been found to determine the direction of social comparison in other domains, namely the degree to which perceivers spontaneously perceive similarity between themselves and the model.

Perceived Similarity

Based on recent advances in social psychology, the selective accessibility model (Mussweiler, 2003) aims to explain whether

assimilation or contrast occurs when one is confronted with a relevant comparison standard. This model proposes that in the beginning of the social comparison process, the perceiver first makes a quick and holistic assessment of the similarity between the self and the standard, briefly considering a small number of salient features (e.g., category membership, salient person characteristics) to determine whether the self is generally rather similar, or rather dissimilar from the target (Mussweiler, 2003, p. 475). The outcome of this initial assessment of perceived similarity then determines whether the subsequent social comparison process is driven by similarity testing or dissimilarity testing. When perceived similarity is high, the individual will engage in a process of similarity testing, which will lead to the activation of standard-consistent information about the self. On the other hand, low perceived similarity will trigger a process of dissimilarity testing, which leads to the activation of standard-inconsistent information about the self. As a result of these knowledge accessibility differences, similarity testing is more likely to lead to assimilation effects, and dissimilarity testing to contrast effects. In sum, whether a perceiver will assimilate to or contrast away from the standard thus depends on the information activated during that quick and holistic initial assessment (Häfner, 2004; Mussweiler, 2003; Smeesters & Mandel, 2006), and thus on salient feature of the stimulus (e.g., the body shape of a model) and the similarity with the perceivers' representation of herself on that dimension (e.g., the own body schema).

As an example, consider the effects of an attractive model in an advertisement. According to the selective accessibility model, perceiving such a model would lead to assimilation (i.e., feeling more attractive oneself) if the perceiver spontaneously feels generally similar to the model and therefore activates standard-consistent knowledge. However, it would lead to a contrast effect (i.e., feeling less attractive oneself) if the perceiver spontaneously feels rather different from the model and therefore activates standard-inconsistent knowledge. Thus, the quick and holistic assessment of the similarity between oneself and the model may have important consequences for the direction of social comparison effects.

Two experimental studies in the domain of body image research provide initial support for the notion that the occurrence of contrast or assimilation in self-evaluation depends on differences in perceived similarity, and that this can be experimentally manipulated. Brown, Novick, Lord, and Richards (1992) showed that the information about the date of birth of a standard affects the direction of self-evaluation. In their study, after exposure to an image of an attractive model, participants perceived themselves as more attractive when they believed that they had the same birthday as the model, suggesting that they assimilated toward the model. However, they perceived themselves as less attractive when they believed that they had a different date of birth (i.e., they contrasted away from the model). Thus, these findings suggest that merely changing a subtle but temporarily salient cue such as a date of birth can change how participants evaluate themselves after exposure to media images. Similarly, in a study by Häfner (2004), participants' perceived similarity to models in advertisements was manipulated by priming them with either similarities or differences in the headlines of the advertisements (e.g., 'same body-same feeling' or 'feel the difference'). In this study, after exposure to an advertisement of an attractive model, participants showed a higher motivation to change their appearance when they had been primed with differences (i.e., they contrasted away from the model), but a lower motivation to change their appearance when they had been primed with similarities (i.e., they assimilated to the model). Thus, these findings suggest that priming similarities led to assimilation, and priming differences to a contrast effect, and they indicate that the initial assessment of one's similarity to the model can be influenced by subtle external cues.

Panel A



Panel B



Figure 1. Advertisements of slim (Panel A) and plus-size model (Panel B) used in Studies 1 and 2.

In line with this, we argue that differences in perceived similarity could potentially explain earlier inconsistent findings with respect to the effects of slim models in the media on the self-evaluation of restrained eaters. In most earlier studies, subtle cues in the experimental materials or set-up may have induced the restrained participants to consider themselves rather different from the model and thus to contrast effects, leading to lower self-evaluations compared to a control condition (see Häfner, Jagsch, Kund, Mager, Pereira, & Zimmermann, 2008, for a similar argument). In other studies, the reverse effect may have been triggered by subtle cues pointing toward similarities with the attractive model. In the present studies, we therefore examined participants' perceived similarity to the model and examine its effects on the self-evaluation of restrained eaters who have been confronted with models in advertisements, both by measuring and by experimentally manipulating subjective perceptions of similarity. In addition, and in order to be able to fully test our perceived similarity account, we included not only slim models, but also plus-size models in our studies and examined their effects on self-evaluation.

The Present Research

The present research, therefore, tests whether perceived similarity to a model will moderate its effects on restrained eaters' self-evaluation. We suggest that restrained eaters will feel better about themselves if they feel similar to a slim model than if they feel similar to a plus-size model, but they will feel better about themselves if they feel dissimilar to a plus-size model than if they feel dissimilar to a slim model. Since earlier studies have shown that very subtle cues can change the direction of social comparison (e.g., Brown et al., 1992; Häfner, 2004), and since one's own body weight in comparison to others is difficult to assess accurately, we hypothesize that these effects will be driven more by participants' psychological representation of their similarity to the model, than by the actual similarity based on body weight (i.e., BMI). In line with earlier findings showing that unrestrained eaters and individuals who are satisfied with their own bodies are much less affected by idealized media images (see Groesz et al., 2002; Mills et al., 2002; Posavac et al., 1998), we expected no effects on unrestrained eaters.

Two experiments were conducted to examine these hypotheses. Study 1 was designed as an initial test of the hypothesis that, after being confronted with slim or plus-size models whose body shape was highly salient, the self-evaluation of restrained eaters depends on their perceived similarity to the model. In Study 2, we also attempted to influence the self-evaluation of restrained eaters by a procedural priming manipulation inducing a similarities- or differences-mindset before presenting the advertisement featuring either a slim model or a plus-size model. Here, we predicted that inducing a mindset of similarities or differences would influence restrained eaters' self-evaluation in a similar way as high or low perceived similarity in Study 1.

Study 1

Method

Participants and design. Fifty-four women participated in the study in exchange for a small reward. Data from two participants were excluded because of an extremely high BMI (BMI = 37) and an extremely high restraint score (Restraint > 18). The final sample consisted of 52 participants with a mean age of 20.98 ($SD = 3.88$) ranging from 16 to 39. The mean BMI was $M = 21.71$ ($SD = 2.82$) with a range from 17 to 28, and the mean score on dietary restraint was $M = 10.94$ ($SD = 2.65$) with a range from 6 to 16. Analyses of variance revealed that participants in the two model conditions did not differ significantly in terms of age, BMI, dietary restraint, or educational level¹ (all $p > .48$). The study used a between-participants design, with 2 advertisement conditions (slim model vs. plus size model) and with perceived similarity and dietary restraint included as continuous predictors.

Advertisements. Both advertisements featured the same simple background and showed a picture of a mock brand of deodorant accompanied by the claim 'pure freshness' (see Figure 1). There

¹ The distribution of educational level in Study 1 was as follows: secondary school 11.5%, community college 21.2%, vocational university 46.2%, university 21.2%.

was no other product information available in the advertisement (see Häfner & Trampe, 2009, for a similar procedure). In the slim model condition, a full-body picture of a slim female model in lingerie was presented next to the deodorant. In the plus-size model condition, this was replaced by a full-body picture of a plus-size female model in lingerie. In both conditions, therefore, the body shape of the model was made highly salient. The two advertisements featured different models, but they had the same height, age, ethnicity, hair style, stood in the same pose, had the same neutral facial expression, and wore the same lingerie.

Measures.

Self-evaluation. Self-evaluation was measured by a five-item rating scale, asking 'How satisfied are you with your weight?', 'How satisfied are you with your body?', 'How satisfied are you with your appearance?', 'How attractive do you find yourself?', and 'How good do you feel about yourself?'. These items could be answered on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much) and formed an overall index of participants' self-evaluation (Cronbach's $\alpha = .88$; see Trampe et al., 2007, for a similar procedure).

Dietary restraint. Dietary restraint was measured with the Revised Restraint Scale (Herman & Polivy, 1980). In line with earlier studies on the cognitive processes in restrained eating, the Concern for Dieting subscale was used, which has been recommended to assess participants' chronic concern with dieting (Papies, Stroebe, & Aarts, 2008; Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008; van Strien, Breteker, & Ouwens, 2002). It consists of six items, such as 'Do you often diet?' and 'Do you feel guilty after overeating?' (Cronbach's $\alpha = .66$). For the present studies, a Dutch translation of this scale was used (Jansen, Oosterlaan, Merckelbach, & van den Hout, 1988).

Perception of model. Perceived slimness and beauty of the model were measured by asking the participants how slim and how beautiful they judged the model in the advertisement to be, on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much; see Häfner & Trampe, 2009, for a similar procedure).

Perceived similarity. Perceived similarity was measured by asking the participants how similar they felt to the model in the advertisement, on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much).

Procedure. To gain access to a convenience sample of student and non-student participants with about 15 min to spare, potential participants (i.e., all young women) were approached in a national intercity train to participate in a short study about an advertisement. After obtaining informed consent,² participants were randomly assigned to one of the two conditions: viewing either an advertisement featuring a slim model or an advertisement featuring a plus-size model. Participants were asked to look at the advertisement, so that they would be able to give their opinion about it later on. After participants had looked at the advertisement for a minute, they were asked to evaluate the advertisement on a number of items (e.g., is the advertisement original/convincing/informative?; see Smeesters & Mandel, 2006, for a similar procedure). These questions were asked to increase the credibility of the cover story and to focus participants' attention on the advertisement. Next, participants were asked to fill in

some other questionnaires, presumably to be able to control for the fact that human perception and motivation are to a large extent influenced by people's personality and attitudes (see Trampe et al., 2007, for a similar procedure). Participants were first given an unrelated filler questionnaire, to distract their awareness of the true purpose of the study. Then, self-evaluation, dietary restraint, self-reported body weight and height, perceived slimness and beauty of the model, and perceived similarity were assessed. Participants were asked about how slim and beautiful they judged the model to be in the end of the procedure, to make sure that this manipulation check would not artificially influence participants' self-evaluation by pointing their attention toward the slimness or beauty of the model. Perceived similarity was measured at the very end, so that participants were not actually forced to compare themselves to the models by answering this question before we assessed self-evaluation. After completing all the questionnaires, participants were thanked, debriefed and given a small reward for participation (a chocolate bar or an apple). None of the participants revealed suspicion of the true purpose of the study.

Results

Descriptive statistics of dietary restraint, self-evaluation, BMI, and perceived similarity are presented in Table 1. As a manipulation check, participants' ratings of the slimness and beauty of the models were analyzed in *t*-tests for independent samples. As expected, the plus-size model was perceived as less slim ($M = 3.37$, $SD = 1.21$) than the slim model ($M = 5.80$, $SD = 0.82$), $t(50) = 70.56$, $p < .001$. However, it is important to note that the plus-size model was perceived as equally beautiful ($M = 4.74$, $SD = 1.06$) as the slim model ($M = 4.52$, $SD = 1.30$), $t(50) = 0.46$, $p = .50$.

All our analyses were regression analyses conducted in the General Linear Model (Field, 2005; Tabachnick & Fidell, 2001). The GLM is a multivariate regression model that allows one to assess the influence of categorical and continuous predictor variables and their interactions as in a multivariate ANOVA, while retaining the continuous character of other variables (Tabachnick & Fidell, 2001, pp. 901–903). In order to reduce multicollinearity, continuous predictor variables were transformed to standardized scores before computing cross-product terms (Dunlap & Kemery, 1987).

First, in order to check whether there were any differences between restrained and unrestrained eaters in the extent to which they perceived themselves as being similar to the slim and plus size model in general, we tested the effect of dietary restraint on perceived similarity. This analysis revealed no significant main effect of dietary restraint, $F(1, 50) = 2.46$, $p = .12$, $\eta_p^2 = .05$.

As our main analyses of interest, we then tested the effects of model condition (i.e., slim model vs. plus-size model), dietary restraint, and perceived similarity as well as their interactions on self-evaluation scores. These analyses revealed a significant main effect of dietary restraint, $F(1, 43) = 11.18$, $p = .002$, $\eta_p^2 = .21$, such that unrestrained eaters had more positive self-evaluations ($M = 26.16$, $SD = 0.95$) than restrained eaters ($M = 21.62$, $SD = 1.06$). There were no other main effects (all $F < 0.14$, all $p > .72$). There was no significant two-way interaction of dietary restraint and

Table 1
Descriptive statistics of Study 1, in the slim-model and plus-size model conditions.

Variable	Slim model		Plus size model	
	Mean	Standard deviation	Mean	Standard deviation
Dietary restraint	10.16	2.34	11.67	2.76
Self-evaluation	24.60	5.21	23.58	5.63
BMI	21.42	2.90	21.97	2.77
Perceived similarity	3.04	1.37	2.70	1.96

² Both studies were in line with the ethics guidelines for Psychological Research of Utrecht University, and were approved by the Research Committee of the Psychology Department.

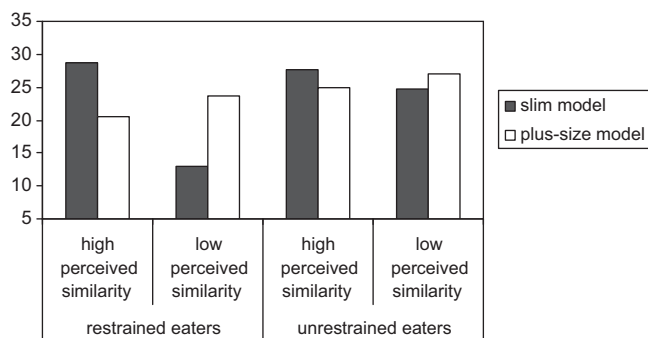


Figure 2. Mean self-evaluation scores as a function of model condition, for relatively restrained vs. unrestrained eaters with relatively high vs. low levels of perceived similarity (Study 1). Higher scores indicate a more positive self-evaluation.

model condition on self-evaluation, $F(1, 43) = 0.24, p = .63, \eta_p^2 = .01$, indicating that restrained and unrestrained eaters did not respond differently to slim and plus-size models without taking perceived similarity into account. There was a significant two-way interaction of perceived similarity and model condition, $F(1, 43) = 11.17, p = .002, \eta_p^2 = .21$, which was qualified by the predicted three-way interaction of dietary restraint, perceived similarity, and model condition, $F(1, 43) = 4.46, p = .04, \eta_p^2 = .09$ (see Figure 2).

In order to further examine this interaction and test our specific hypotheses, we computed the simple main effects of model condition at one standard deviation above and one standard deviation below the mean of both the restraint and the perceived similarity scales (see Aiken & West, 1991, for this procedure). These analyses showed that at one standard deviation above the mean of the restraint scale (i.e., for relatively restrained eaters) and at one SD above the mean of the perceived similarity scale (i.e., at a high perceived similarity to the model), there was a significant effect of model condition, such that participants had significantly more positive self-evaluations when they were shown an advertisement featuring a slim model ($M = 28.62, SD = 3.43$), compared to a plus-size model ($M = 20.51, SD = 1.20$), $F(1, 43) = 4.99, p = .03, \eta_p^2 = .10$. On the other hand, relatively restrained eaters with low perceived similarity to the model (i.e., one SD below the mean) had significantly more negative self-evaluations when they were shown an advertisement featuring a slim model ($M = 13.07, SD = 2.82$) compared to a plus-size model ($M = 23.61, SD = 2.07$), $F(1, 43) = 9.07, p = .004, \eta_p^2 = .17$. As expected, there were no significant effects at one standard deviation below the mean of the restraint scale (i.e., for relatively unrestrained eaters; all $F < 1.07$, all $p > .30$).³

In order to explore the effect of actual similarity to the slim and plus-size models, we also considered the effects of participants' BMI. BMI was indeed related to perceived similarity in both the slim model condition, $r = -.43, p = .03$, as well as in the plus-size model condition, $r = .53, p = .005$. However, when controlling for BMI in our analysis, the interaction of dietary restraint, model condition, and perceived similarity remained essentially unchanged, $F(1, 42) = 5.56, p = .02, \eta_p^2 = .12$. In addition, we analyzed the effects of model condition (i.e., slim model vs. plus-size model), dietary restraint, and BMI as well as their interactions on self-evaluation scores. The analyses only revealed a significant main effect of BMI, $F(1, 43) = 4.47, p = .04, \eta_p^2 = .09$, such that participants with a lower BMI had more positive self-evaluations ($M = 37.44, SD = 6.47$) than

³ In order to rule out that perceived similarity and self-evaluation actually assess the same psychological construct, we also conducted the reverse analysis, testing the interaction of restraint, model condition, and self-evaluation on perceived similarity. However, this interaction was not significant, $F(1, 43) = 0.001, p = .98$, suggesting that participants' self-evaluation did not impact their assessments of similarity with the presented models.

participants with a higher BMI ($M = 36.28, SD = 5.91$). Next to the effect of restraint reported above, there were no other main effects or interactions (all $F < 2.39$, all $p > .13$). Thus, it appears that the effects of perceived similarity cannot be explained by participants' actual similarity to the model in terms of body weight.

Discussion

Study 1 showed that restrained eaters had more negative body- and weight-related self-evaluations than unrestrained eaters in general, which is in line with earlier findings demonstrating their higher body dissatisfaction and their often fruitless efforts to reduce their weight by dieting (e.g., Gerner & Wilson, 2005; Herman & Polivy, 1980; Johnson & Wardle, 2005). For restrained eaters, therefore, the domain of social comparison with the model, which is very salient in a full-body picture of a model in lingerie, is highly relevant, while this is much less the case for unrestrained eaters, who are therefore less likely to compare themselves with others on this domain (e.g., Brewer & Gardner, 1996; Lockwood & Kunda, 1997; Major et al., 1993). In line with this, we found that unrestrained eaters' self-evaluation was unaffected by the models they viewed.

Restrained eaters, however, seemed to spontaneously compare themselves to the models they viewed. In line with our predictions based on the selective accessibility model (Mussweiler, 2003), restrained eaters felt better about themselves if they felt similar to a slim model than if they felt similar to a plus-size model, but they felt better about themselves if they felt dissimilar to a plus-size model than if they felt dissimilar to a slim model. This suggests that they assimilated to the model if they spontaneously perceived themselves to be rather similar, and contrasted away if they perceived themselves to be rather different from the model. Interestingly, while perceived similarity was meaningfully related to actual BMI, these differences in body weight did not explain these effects or show the same effects as perceived similarity.

Study 2

The results of Study 1 suggested that for restrained eaters, the effects of slim and plus-size body images depend on how they spontaneously assess their similarity to the model. However, in this study, perceived similarity was merely assessed by a self-report measure. In Study 2 we therefore investigated whether the effects of slim and plus-size models on self-evaluation could also be affected by an experimental manipulation of one's tendency to perceive the model as rather similar to or as rather different from oneself. Such an effect would offer considerable potential for interventions to protect against the potentially detrimental effects of media images on weight-concerned individuals (see also Lockwood & Kunda, 1997). Thus, Study 2 served two main goals. Firstly, it was designed to replicate the results of Study 1 and confirm their strength in a laboratory setting. Secondly, it was designed to test the hypothesis that it is possible to influence restrained eaters' self-evaluation after exposure to media images of slim models by manipulating their mindset to search for either similarities or differences.

Again, self-evaluation and perceived similarity of participants exposed to an advertisement featuring either a slim model or a plus-size model were measured. However, before they were shown the advertisement, participants had to perform a procedural priming task designed to bring them either in the mindset of looking for similarities or differences. We expected that this procedural priming would carry over to viewing the advertisement, such that restrained eaters who had been instructed to search for similarities in an unrelated task would then assimilate to the model and thus feel better about themselves if they viewed a slim model than if they

viewed a plus-size model. On the other hand, restrained eaters who had been instructed to search for differences should show contrast effects and thus feel better about themselves if they were shown a plus-size model than if they were shown a slim model. Again, we expected the self-evaluation of unrestrained eaters to be unaffected by our manipulations.

Another important addition in Study 2 concerns the fact that participants in this study consisted of both men and women. Prior research on the effects of media images has mainly focused on women, because women show higher levels of dietary restraint and body dissatisfaction, and are more sensitive to comparisons concerning weight and appearance (Brodie, Slade, & Riley, 1991; Jeffrey, Adlis, & Forster, 1991; Ogden & Mundry, 1996; Rozin & Fallon, 1988). However, men are also exposed to (mostly female) media images of slim bodies on a daily basis. Meta-analyses conducted to determine the impact of the media on body satisfaction, body esteem, and self-esteem on men, revealed that perceived pressure from the mass media was related to body dissatisfaction, body esteem, self-esteem, psychological disorders (e.g., depression), and behavioral outcomes (e.g., excessive exercising) among men (Barlett, Vowels, & Saucier, 2008). It is therefore important to find out whether male restrained eaters show the same effects as female restrained eaters when they are exposed to these kinds of images. Therefore, we included male as well as female participants.

Method

Participants and design. One hundred and four students of Utrecht University (45 men, 59 women) participated in the study in exchange for €3 or course credit. Data from five participants were excluded: one participant did not perform the procedural priming task correctly, by filling in differences while instructed to search for similarities. Four participants had an extremely high restraint score (>18). The final sample consisted of 99 participants (43 men, 56 women) with a mean age of 21.16 ($SD=2.45$) ranging from 18 to 31. The mean BMI was $M=21.65$ ($SD=2.16$) with a range from 17 to 27, and the mean score on dietary restraint was $M=11.25$ ($SD=2.93$) with a range from 6 to 18. Participants of Study 1 and Study 2 did not differ significantly in terms of age, BMI, or dietary restraint (all $p > .45$). Educational level on the other hand did differ, as we anticipated, because participants in Study 2 were all university students (see footnote 1 for the educational level in Study 1). Men and women did not differ significantly in BMI ($p = .59$), but did differ significantly in dietary restraint scores, $F(1, 97) = 12.97$, $p = .001$, $\eta_p^2 = .12$, such that women had higher restraint scores ($M = 12.14$, $SD = 3.02$) than men ($M = 10.12$, $SD = 2.41$).

The study used a between-subjects design with advertisement (slim model vs. plus-size model) and procedural prime (searching for similarities vs. differences) as conditions, and with dietary restraint and perceived similarity as continuous predictors. Analyses of variance revealed that participants in the four conditions (i.e., slim model vs. plus-size model; similarities prime vs. differences prime) did not differ significantly in terms of age, BMI, dietary restraint, or educational level (all $p > .17$).

Procedural priming task. The procedural priming task was designed to induce in participants a mindset of searching for either similarities or differences. The task 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 (same sketches and procedure as used by Mussweiler, 2001). Participants in the similarities prime condition were asked to fill in as many similarities between the two sketches

Table 2
Descriptive statistics of Study 2, in the slim-model and plus-size model conditions.

Variable	Slim model		Plus size model	
	Mean	Standard deviation	Mean	Standard deviation
Dietary restraint	11.06	3.10	11.45	2.76
Self-evaluation	26.06	5.24	25.27	5.79
BMI	21.86	2.25	21.42	2.06
Perceived similarity	5.92	2.97	4.44	2.69

as possible, while participants in the differences prime condition were asked to fill in as many differences as possible. Participants were given as much time as they needed to perform the task, and they could only continue if they filled in at least one similarity or difference.

The advertisements used were the same as in Study 1.

Procedure. Upon arrival at the laboratory, after obtaining informed consent, participants were seated in individual cubicles containing a desktop computer and randomly assigned to one of the four conditions. All materials and instructions were presented on the computer. Participants first performed the procedural priming task. After this, they were shown one of the two advertisement for one minute, and were then asked to evaluate it on a number of items (e.g., is the advertisement original/convincing/informative?). Again, as in Study 1, participants were then asked to fill in other questionnaires. After an unrelated filler questionnaire, participants' self-evaluation, dietary restraint (Cronbach's $\alpha = .68$), self-reported body weight and height, perceived slimness and beauty of the model, and perceived similarity were assessed. After answering some demographic questions, participants were thanked, debriefed and paid. No participants revealed suspicion of the true purpose of the study.

Results

Descriptive statistics of dietary restraint, self-evaluation, BMI, and perceived similarity are presented in Table 2. As in Study 1, we conducted our analyses in the General Linear Model, and continuous variables were transformed to standardized scores.

Manipulation checks. Participants' ratings of the slimness and beauty of the models were analyzed in t -tests for independent samples. As was expected, the plus-size model was perceived as less slim ($M = 2.59$, $SD = 0.89$) than the slim model ($M = 6.04$, $SD = 0.77$), $t(99) = 429.54$, $p < .001$. Furthermore, the plus-size model was perceived as less beautiful ($M = 3.96$, $SD = 1.40$) than the slim model ($M = 5.24$, $SD = 1.44$), $t(99) = 20.34$, $p < .001$.

We also checked whether participants in the two procedural priming conditions were equally motivated to perform the search task, by analyzing the number of differences or similarities they filled in during the procedural priming task, using t -tests for independent samples. No differences were found between the similarities ($M = 6.79$, $SD = 3.13$) and differences ($M = 6.75$, $SD = 3.04$) conditions regarding the number of features (differences or similarities) that were reported during the procedural priming task, $t(103) = 0.01$, $p = .94$. The mean number of differences or similarities, ranging from 3 to 18, was $M = 6.85$ ($SD = 3.11$). There was no correlation between the number of differences or similarities and perceived similarity to the model in the similarities condition or the differences condition (both $p > .23$). The mean amount of time (in s) that participants spent on the procedural priming task, ranging from 28 to 124 was $M = 62.60$ ($SD = 17.19$). There was also no correlation between the amount of time spent

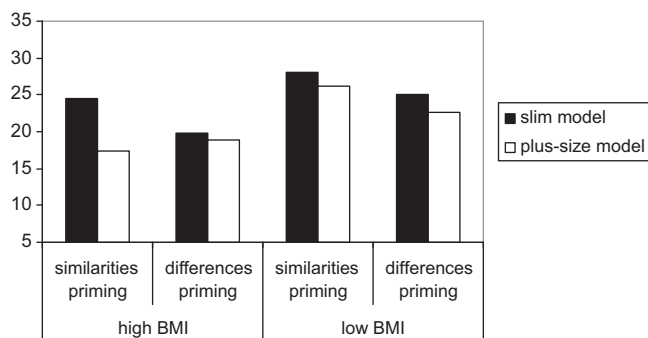


Figure 3. Mean self-evaluation scores of restrained eaters with a relatively low vs. high BMI, as a function of model condition and procedural priming condition (Study 2). Higher scores indicate a more positive self-evaluation.

and perceived similarity to the model in the similarities or the differences condition (both $p > .66$).

In order to check whether there were any differences between restrained and unrestrained eaters in the extent to which they perceived themselves as being similar to the slim and plus size model in general, we tested the effect of dietary restraint on perceived similarity. As in Study 1, this analysis revealed no significant main effect of dietary restraint, $F(1, 98) = 1.61$, $p = .33$, $\eta_p^2 = .02$.

The effect of procedural priming on self-evaluation. We tested the hypothesis that restrained, but not unrestrained eaters, would show different levels of self-evaluation after viewing slim or plus-size models, depending on whether they were in a similarities or differences mindset. Our analysis including model condition, procedural priming condition, dietary restraint, and their interactions revealed a significant main effect of restraint on self-evaluation, $F(1, 92) = 29.74$, $p < .001$, $\eta_p^2 = .24$, such that unrestrained eaters had more positive self-evaluations ($M = 28.38$, $SD = 0.71$) than restrained eaters ($M = 22.26$, $SD = 0.78$), as in Study 1. This was qualified by a two-way interaction with priming condition, $F(1, 92) = 5.71$, $p = .02$, $\eta_p^2 = .06$, such that restrained eaters felt better about themselves in the similarities compared to the differences condition, $F(1, 92) = 4.41$, $p = .04$, $\eta_p^2 = .05$, whereas unrestrained eaters were unaffected, $p = .14$. However, contrary to what was expected, the interaction of procedural priming condition with model condition and restraint was not significant, $p = .72$.

However, in an additional exploratory analysis, we added participants' standardized BMI scores as a continuous predictor to this analysis. We reasoned that the effect of viewing media images could be more pronounced for restrained eaters with a high, rather than a low BMI, as these participants may be especially concerned with their weight and appearance. Indeed, this analysis revealed a main effect of BMI on self-evaluation, $F(1, 82) = 8.45$, $p = .005$, $\eta_p^2 = .09$, suggesting that a high BMI is associated with less a positive self-evaluation. There was also a main effect of restraint, $F(1, 82) = 19.17$, $p < .001$, $\eta_p^2 = .19$, and an interaction of BMI and restraint, $F(1, 82) = 4.23$, $p = .04$, $\eta_p^2 = .05$. Most importantly, however, this effect was qualified by a significant four-way interaction with model condition and procedural priming condition, $F(1, 82) = 4.15$, $p = .045$, $\eta_p^2 = .05$. As displayed in Figure 3, for restrained eaters with a relatively high BMI (i.e., at one SD above the means of restraint and BMI; see Aiken & West, 1991), when in the similarities priming condition, self-evaluation scores after exposure to a slim model were higher than after exposure to a plus-size model, $F(1, 82) = 4.89$, $p = .02$, $\eta_p^2 = .06$. There was no effect of model in the differences condition, $F(1, 82) = 0.14$, $p = .71$. Restrained eaters with a low BMI and unrestrained eaters were not affected by model condition and procedural priming condition (all $p > .05$).

This four-way interaction was not qualified by an interaction with participant gender ($p > .73$).

Although exploratory, these findings suggests that our procedural priming manipulation modulated the effect of viewing slim and plus-size models, but only among restrained eaters with a relatively high body weight. For these participants, procedural priming of searching for similarities led them to assimilate to either the slim or the plus-size model, which then affected their self-evaluations. However, we found no effects of the differences priming manipulation, and no effect for restrained eaters with a lower BMI, which should lead us to interpret these findings cautiously. Nonetheless, our priming manipulation seems to have protected highly weight-concerned individuals from the negative effects of viewing a slim model.

The effect of perceived similarity on self-evaluation. Replicating the effects of perceived similarity in Study 1, analysis of self-evaluation as a function of model condition, dietary restraint, perceived similarity, and their interactions revealed a significant main effect of dietary restraint, $F(1, 91) = 40.36$, $p < .001$, $\eta_p^2 = .31$, a two-way interaction of model condition and perceived similarity on self-evaluation, $F(1, 91) = 11.78$, $p = .001$, $\eta_p^2 = .12$, and again the predicted three-way interaction of dietary restraint, perceived similarity, and model condition on self-evaluation, $F(1, 91) = 12.03$, $p = .001$, $\eta_p^2 = .12$. As in Study 1, simple slope analyses confirmed that restrained eaters with a relatively high perceived similarity to the model had significantly more positive self-evaluations after viewing a slim ($M = 27.84$, $SD = 1.39$) compared to a plus-size model ($M = 19.20$, $SD = 1.72$), $F(1, 91) = 15.28$, $p < .001$, $\eta_p^2 = .14$. Again, restrained eaters with low perceived similarity to the model had significantly more negative self-evaluations when they were shown an advertisement featuring a slim model ($M = 16.31$, $SD = 1.70$) compared to a plus-size model ($M = 23.08$, $SD = 1.62$), $F(1, 91) = 8.30$, $p = .01$, $\eta_p^2 = .08$. Again, there were no effects for unrestrained eaters (all $p > .64$). This effect was not qualified by participants' BMI ($p > .73$), or gender ($p > .13$).

Discussion

The results of Study 2 offer additional support for our hypothesis that spontaneous assessments of perceived similarity to a model in the media can modulate the direction of social comparison in restrained eaters. Replicating exactly the findings of Study 1, we showed again that restrained eaters who report to feel highly similar to the presented model feel better when this is a slim model compared to a plus-size model, while the reverse effects appear for restrained eaters reporting low perceptions of similarity.

Importantly, however, this study also offered evidence that inducing a mindset of searching for similarities by procedural priming can modulate the effects of perceiving media images. Restrained eaters with a relatively high BMI who had been primed to search for similarities in an unrelated task subsequently felt better about themselves when they viewed an advertisement depicting a slim model compared to a plus-size model. This suggests that these restrained eaters indeed engaged in similarities testing (Mussweiler, 2001, 2003) and therefore assimilated to the presented model, which in turn enhanced or reduced their self-evaluations, respectively. Although we did not find an effect of the differences priming manipulation, and not for lower-weight restrained eaters, this finding supports the reported effects of measured similarity perceptions by an experimental manipulation. In addition, this finding is in line with research by Häfner (2004), where conceptually similar effects were induced by procedural priming cues integrated into the advertisement (i.e., 'same body-same feeling' or 'feel the difference' in the headlines of the advertisements), rather than in a separate task, as was done here.

Future research should attempt to replicate this finding and also induce a mindset of searching for differences, to protect against the potential influences of plus-size models. Possibly, the differences manipulation in the current study did not work because the time span between the manipulation and the measure of self-evaluation was too long. In previous research, self-evaluation was measured directly after the procedural priming task and exposure to the standard. However, in the present study, to avoid demand characteristics, self-evaluation was not measured immediately after the advertisement, which may inadvertently have caused the effect of the manipulation to dissipate or to be overruled by thinking about the advertisement. In addition, recent research has suggested that some people may be generally more likely to search for similarities when they are confronted with relevant others, which leads to a natural tendency to assimilate one's self-perceptions (Bosch et al., 2010; see also van den Berg & Thompson, 2007) and may make a differences mindset more difficult to induce.

General discussion

The present research investigated the effect of viewing images of slim and plus-size models on the self-evaluation of restrained and unrestrained eaters. In line with earlier work in the domain of social comparison research as well as body image research more specifically (e.g., Groesz et al., 2002; Lockwood & Kunda, 1997; Mills et al., 2002; Posavac et al., 1998; Trampe et al., 2007), we found that the images of models only affected the restrained eaters, but not unrestrained eaters. Since unrestrained eaters are much less dissatisfied with their bodies and much less concerned with their body image than restrained eaters (e.g., Gerner & Wilson, 2005; Johnson & Wardle, 2005), body shape as a domain of social comparison is much less relevant for them.

However, previous research had also revealed inconsistencies regarding how exactly such images affect restrained eaters (e.g., Joshi et al., 2004; Mills et al., 2002; Trottier et al., 2007), and the present research suggests that spontaneous assessments of one's similarity to the presented models can affect the outcome of restrained eaters' social comparisons. In line with our predictions based on the selective accessibility model (Mussweiler, 2003), we found in two studies that restrained eaters reporting high perceived similarity felt better about themselves if they had viewed a slim model compared to a plus-size model, but when they reported low perceived similarity, they felt better about themselves if they had been exposed to a plus-size model, compared to a slim model. This suggests that restrained eaters assimilate to a model when they spontaneously feel rather similar, and contrast away when they feel rather different from the model.

In addition, Study 2 also showed that a procedural priming to look for similarities can induce the same effect as participants' spontaneous assessments of perceived similarity, albeit only among restrained eaters with a relatively high BMI: among these participants, a similarities mindset enhanced self-evaluations when they viewed a slim model, and decreased self-evaluations when they viewed a plus-size model. This suggests that for these particularly weight-conscious individuals, a similarities mindset did impact social comparison by leading to assimilation with the perceived standard, in a similar fashion as perceived similarity did for restrained eaters more generally. Although this is exploratory evidence which should be interpreted with caution, this finding does provide some experimental evidence for the crucial role of perceived similarity in the effects of media images on restrained eaters, which is a consistent and valuable addition to the findings obtained with measured similarity (see also Häfner, 2004).

A number of earlier studies have shown that women in general are affected by idealized bodies in the media, with more

pronounced effects for body-dissatisfied women (e.g., Grabe et al., 2008; Groesz et al., 2002). In line with this, our findings suggest that effects of viewing models are also more likely to occur among restrained compared to unrestrained eaters, and may also be more pronounced for those restrained eaters with a higher body weight. In contrast to earlier studies, however, our experiments included both slim and plus-size models, but no control condition in which no model was present. In addition, both the effects of slim and of plus-size models depended on participants' perceived similarity to the model. Thus, we cannot directly compare our findings to earlier findings which often showed that participants confronted with slim models were less satisfied with their bodies compared to participants in a no-model control condition, without assessing perceived similarity. Future studies should attempt to integrate all three types of conditions to further disentangle these effects. Earlier research has also shown that negative media image effects are particularly likely to occur among women who strongly internalize the thin ideal portrayed in the media (Dittmar & Howard, 2004). However, no measure of thin-ideal internalization was included in the present studies, and future work should examine whether women who strongly internalize the thin ideal are more susceptible to the effects found here.

Overall, the results of these two studies provide consistent evidence for the role of perceived similarity in determining how restrained eaters respond to images of models in advertisements. The results suggest, in line with other research, that the effects of different types of images can depend on the appraisals and mindset of the perceiver (Häfner, 2004). These seem to occur spontaneously, but can also to some degree be influenced by subtle cues (Häfner, 2004) or mindsets. Whereas other studies found that it is participants' BMI and thus their actual similarity to the model which determines the effects of images of models (Smeesters et al., 2010), in our work, social comparison effects were driven more by perceived, rather than actual similarity. This was indicated by the fact that although perceived similarity was correlated with BMI, controlling for BMI did not change the effects of perceived similarity on restrained eaters' self-evaluation. In addition, performing the analysis with BMI instead of perceived similarity did not show the same effects as perceived similarity on restrained eaters' self-evaluation. However, this finding is limited by the fact that we only obtained a self-report measure of BMI. In addition, we admit that it remains unclear what specific features did determine restrained eaters' spontaneous assessment of similarity to the model. Participants' BMI did, however, moderate the effect of model and priming condition such that only restrained eaters with a relatively high BMI were affected by our procedural priming manipulation in the predicted way. This may be the case because for these restrained eaters, weight concerns are especially pronounced, as was indicated also by their lower overall self-evaluation. Possibly, this makes them particularly susceptible to external cues of social comparison and influencing whether they engage in similarities or dissimilarities testing, whereas restrained eaters with a lower BMI are less easily swayed. Future studies should further examine this.

An additional interesting result of the present research is that we found no moderating effects of gender, indicating that the effects of slim and plus-size body images on self-evaluation may not be limited to women. Prior research in this area has mainly focused on women, because concerns about body weight and shape are traditionally associated with women. Research indicates that women show higher levels of dietary restraint and body dissatisfaction, and are more sensitive to comparisons concerning weight and appearance than men (Brodie et al., 1991; Jeffrey et al., 1991; Ogden & Munday, 1996; Rozin & Fallon, 1988). However, our research suggests that the self-evaluation of male restrained eaters is also influenced by exposure to media images of slim models. More research is needed to investigate the effects of these images on

men. Since the self-evaluation of male participants was affected by the images of female models used here, for male restrained eaters, the relevance of the comparison domain of weight and body shape may be so important that it overruled the difference in gender of the model perceived. However, it would be highly relevant for future research to include images of male bodies as well.

A limitation of our studies is that participants' perceived similarity to the model was assessed by only one question directly measuring the construct at interest. Although this measure merely relies on face validity, the consistent findings across two studies suggest that perceived similarity can indeed be measured effectively this way. In addition, its effects were partially supported by the similarities priming manipulation in Study 2, albeit only for relatively high-BMI restrained eaters. Nevertheless, for future studies relying on measured, rather than manipulated, similarity to media images, a more comprehensive and validated measure may be recommendable.

It is important to note that the sample differed in Study 1 (i.e., young women recruited in a train) and Study 2 (i.e., male and female university students), which may have influenced the results. Although participants of Study 1 and Study 2 did not differ significantly in terms of age, BMI, or dietary restraint, there was a difference in educational level. This difference in sample can be seen as a strength of the study, since it suggests that our main finding of the role of perceived similarity can be replicated in different kinds of samples. However, it could also provide a possible explanation for the differences between the findings of the two studies. For instance, in Study 1 both models were perceived as equally beautiful. However, in Study 2, the plus-size model was perceived as less beautiful than the slim model, although it was not seen as less beautiful than the same model in Study 1. Indeed, this finding may be related to the fact that in Study 2, there was no correlation between BMI and perceived similarity in the plus-size model condition, whereas there was a correlation in Study 1.⁴ In addition, it may also be related to the fact that in Study 2, participants felt more similar to the slim model compared to the plus-size model.

It seems promising that by changing the mindsets of perceivers, we could indeed focus them on similarities with a slim model and thus protect them against the possibly detrimental effects of advertising on their self-evaluation (see Häfner, 2004; Mussweiler, 2001). Although the same manipulation did not work to induce a differences mindset, further research may build on this to develop new techniques to induce a differences or similarities focus in response to different types of models. One potential strategy to induce differential responses to idealized or negative media images could be to use implementation intentions (Gollwitzer, 1996). Implementation intentions are specific plans using an if-then format to link an anticipated future situation to a goal-directed behavior. Perceivers could, for instance, form an implementation intention such as 'Whenever I see an idealized (overweight) media image, I will look for similarities (differences) between myself and the model'. Implementation intentions have been proven useful for a variety of behavior change issues (see Gollwitzer & Sheeran, 2006, for an overview), and they have also been applied to overrule automatic patterns of thought, such as stereotyping (Stewart & Payne, 2008). Possibly, this kind of planning could induce participants to automatically look for similarities when they perceive a slim model or for differences when they perceive a plus-size model, which could be beneficial for their well-being.

Conclusion

All in all, despite the limitations noted, the present research contributes to our knowledge on the effects of media images on restrained eaters by offering a potential, theory-based explanation for previous inconsistent findings. This facilitates a better understanding of social comparison processes in restrained eaters and more generally, and provides possibilities for the development of effective theory-based interventions for maintaining a healthy self-regard.

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