

# Self-referencing and consumer evaluations of larger-sized female models: A weight locus of control perspective

Brett A. S. Martin · Ekant Veer · Simon J. Pervan

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**Abstract** In two experiments, we show that the beliefs women have about the controllability of their weight (i.e., weight locus of control) influences their responses to advertisements featuring a larger-sized female model or a slim female model. Further, we examine self-referencing as a mechanism for these effects. Specifically, people who believe they can control their weight (“internals”), respond most favorably to slim models in advertising, and this favorable response is mediated by self-referencing. In contrast, people who feel powerless about their weight (“externals”), self-reference larger-sized models, but only prefer larger-sized models when the advertisement is for a non-fattening product. For fattening products, they exhibit a similar preference for larger-sized models and slim models. Together, these experiments shed light on the effect of model body size and the role of weight locus of control in influencing consumer attitudes.

**Keywords** Larger-sized models · Self-referencing · Weight locus of control · Brand and advertising attitudes

## 1 Introduction

A common advertising tactic is to use slim female models in advertisements. Yet in recent times, companies, such as Dove and The Body Shop have used larger-sized female models (LMs). Model body size is important given the changing shape of many consumers in today’s society. For example, 64% of adults in America are overweight or obese, an increase of over 36% since 1980 (National Center for Health Statistics 2005). However, despite research on models as idealized images (e.g., Richins 1991), the systematic examination of LM effects in a marketing context is

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B. A. S. Martin (✉) · E. Veer · S. J. Pervan

Marketing Group, School of Management, University of Bath, Bath BA2 7AY, UK

e-mail: B.A.S.Martin@bath.ac.uk

under researched. An exception is Peck and Loken (2004) who suggest that female consumers respond positively to LMs in advertising, and that they self-reference LMs when viewing them in advertisements. This highlights the need to study whether the pervasive use of slim female models (SMs) in advertising is the only alternative for marketers.

The purpose of this article is to investigate how female consumers react to print advertising featuring SMs and LMs. Specifically, our research addresses two key questions. First, as suggested by Peck and Loken (2004), do all female consumers wish to see LMs in advertising? Second, what cognitive process underlies a female consumer's attitude towards SMs and LMs in advertising? We suggest that while some female consumers respond positively to LMs, this view should not be generalized to all female consumers. Specifically, we contribute by showing that the responses of female consumers to model body size is moderated by their individual beliefs regarding their ability to control their own weight (i.e., weight locus of control, WLOC). WLOC (Saltzer 1982) has provided a useful basis for studying how people differ in their perceptions of what constitutes an ideal female body shape (Furnham and Nordling 1998; Saltzer 1982). In addition, we contribute by showing how the cognitive process of self-referencing (Martin et al. 2004) acts as a mediating variable between model body size and attitudes. Our results build on the research of Peck and Loken (2004) by showing that the extent of self-referencing that female consumers engage in when viewing a SM or LM depends upon their weight locus of control beliefs.

## 2 Background and hypotheses

### 2.1 Model body size effects

Research suggests that viewing SMs may have negative effects on female consumers. Richins (1991) found that exposure to highly attractive models in ads resulted in female college students reporting lower satisfaction with their own appearance. Similarly, a meta-analysis of experimental studies shows that young women report more negative body satisfaction after exposure to SMs than other types of models (Groesz et al. 2002). Women are particularly relevant as a consumer group as research shows that weight is regarded by many women as a defining aspect of their value (Grover et al. 2003). Yet Western society has progressively moved towards the use of ever thinner depictions of women as physically attractive (Furnham and Nordling 1998; Weeden and Sabini 2005).

Owing to these concerns, Peck and Loken (2004) examined more realistic model body sizes. They found that exposure to LMs in a context that primed non-traditional stereotypes (i.e., a non-traditional women's magazine with LMs), resulted in higher ratings of LM attractiveness, than exposure to LMs in a traditional context (i.e., a traditional women's magazine). Women rather than men also engaged in more positive thoughts when exposed to LMs, and more negative self-relevant thoughts when exposed to SMs, than did men. This research shows that LMs can result in positive effects in advertising. Importantly, LMs were large (sizes 16 to 18) but not

obese. Likewise, we study LMs who are heavier than a SM, but who are not obese.<sup>1</sup> Instead, the emphasis is on a realistic portrayal of body size.

However, exposure to LMs does not always result in positive effects. In psychology, Mills, Polivy, Herman, and Tiggemann (2002) found that exposure to SMs resulted in dieters reporting a thinner current body size than exposure to LMs. This self-enhancement effect did not extend to non-dieters, but it does suggest that individual differences in weight-related beliefs may offer useful insights to research in this area. More recently, Smeesters and Mandel (2006) found that consumer self-evaluations are enhanced after exposure to moderately slim (but not extremely slim) models, when a free-response measure of self-esteem is used. Yet interestingly, they show that when a rating scale (e.g., a 7-point item) is used to measure self-esteem, consumers provide lower ratings after exposure to SMs. Drawing upon social comparison research (Mussweiler 2003), they suggest that this contrast effect is the result of the ad model being used as a reference point to anchor the scale. Thus, a SM results in females contrasting away from the slim standard and reporting lower subjective ratings of self-esteem. They also recommend that future research into model body size effects examines consumer-oriented variables, such as purchase intention. In this research, we answer this call by studying model size effects in relation to attitudinal variables. In addition, given the importance of weight to assessments of female attractiveness (Weeden and Sabini 2005), we study individual differences in perceptions of weight by examining weight locus of control.

## 2.2 Weight locus of control

Locus of control (LOC, Rotter 1966) refers to the degree to which a person believes in self-determination, and being able to influence events in their lives through their own actions, such as success through planning (internal LOC), as opposed to their lives being influenced by chance, fate and external influences (external LOC). Research in marketing and psychology has examined the influence of LOC, yet findings for body size-related issues, such as weight management, have been mixed. Consequently, researchers have advocated the use of domain-specific LOC measures, rather than using a general measure (e.g., Holt et al. 2001). A variety of domain-specific measures exist, ranging from parenting LOC, work LOC, to the measure pertinent to this research—weight LOC.

Weight locus of control (WLOC) relates to LOC expectancies regarding an individual's personal weight (Saltzer 1982). Internals believe their weight is influenced by their own actions, whereas externals believe a person's body weight is more matter of fate and outside a person's control. WLOC has provided useful insights regarding actual weight loss. For instance, Saltzer (1982) demonstrated that WLOC was associated with completion of a medical weight loss program. Internals

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<sup>1</sup> Obesity is frequently defined using the body mass index (BMI) which is body weight in kilograms divided by the square of a person's height in meters. BMIs below 18.5 are typically regarded as underweight, BMIs from 18.5 to 24.9 are typically considered normal weight, BMIs from 25 to 30 are typically considered overweight, and BMIs over 30 are typically considered obese (National Heart, Lung, and Blood Institute 1998).

were more likely to succeed with their weight loss goals than externals. In addition to weight loss behavior, WLOC has also shed light on attitudinal responses. Holt et al. (2001) studied attitudes towards health education materials advocating weight management. They found that internals viewed the materials as more informative. Externals tended to believe people are overweight owing to genetics, and from a lack of support from family and friends.

Importantly, internals and externals differ in how they view people of different body sizes. Internals place a high emphasis on body shape (Saltzer 1982) and believe that weight is controllable, owing to the effect of a person's diet and their physical activity (Holt et al. 2001). Thus, internals should prefer SMs, who are a body size which they feel is desirable and achievable. Internals should also have a more negative attitude toward a LM, relative to the SM, given their greater preoccupation with physical appearance and their view that being overweight reflects a lack of effort by an individual (Holt et al. 2001; Tiggemann and Anesbury 2000). Research indicates internals have negative attitudes towards overweight people, since they view body weight as a controllable condition (e.g., Tiggemann and Rothblum 1997). Thus, we expect internals to react more favorably towards the SM.

On the other hand, externals believe that there is nothing they can do to alter their body shape, which they feel is influenced by chance or genetics (Holt et al. 2001). Externals also tend to experience greater body dissatisfaction and feel discriminated against by others regarding their weight (Holt et al. 2001). This dissatisfied, powerless view towards weight, and given the salience of weight to females in society (Grover et al. 2003), and that exposure to slim, attractive models can result in negative feelings towards the self (Richins 1991), suggests that externals may react more favorably to the LM. Indeed, in a study of different ideal body sizes, Furnham and Nordling (1998) found that whereas female internals preferred a slim, buxom figure (i.e., large breasts–small waist–small hips female body shape), female externals preferred a more overweight figure (i.e., the medium breasts–large waist–small hips combination). Therefore, we suggest that externals will evaluate a LM more favorably than a SM.

*H1* Weight locus of control and model size will interact to affect attitudes and purchase intent. Specifically, for internals, the use of a slim model leads to a more favorable attitude toward the ad ( $A_{ad}$ ), brand attitudes ( $A_b$ ), and purchase intent (PI) than using a larger-sized model. For externals, the use of a larger-sized model leads to a more favorable  $A_{ad}$ ,  $A_b$  and PI than using a slim model.

### 2.3 Self-referencing as a mediator of attitudes

We expect the findings based on attitudes to show that WLOC moderates model body size effects (H1). Yet such results do not provide insight into the psychological mechanism underlying these effects. We contend that self-referencing offers such a mechanism that provides useful insights into these effects. Self-referencing is defined as a cognitive processing strategy where a consumer relates message information to his or her self structure (Burnkrant and Unnava 1995). From this

perspective, the self represents a frequently-used construct in memory that aids the elaboration of encoded information. Hence, self-referenced information is more easily associated with previously stored information.

In marketing, self-referencing has been successfully induced by exposure to pictures of female models. For example, Martin et al. (2004) showed that Asian consumers exhibit greater levels of self-referencing when exposed to print ads featuring an Asian model, as compared to ads featuring a White model. Thus, featuring a self-relevant model in an advertisement can result in consumers spontaneously self-referencing the degree to which they relate to the model in the ad. The affect associated with the self is then transferred to the ad, resulting in positive attitudes (Martin et al. 2004). In addition, self-referencing has been shown to mediate attitudes in response to ads featuring a single model (Martin et al. 2004). We predict that self-referencing will be convergent with the persuasive advantage in H1. Specifically, we expect internals to engage in self-referencing in response to the SM. Externals, with their preference for larger body sizes, should exhibit more self-referencing in response to the LM.

The mediation of WLOC on model size effects by self-referencing is studied using path analysis (Baron and Kenny 1986). Specifically, internals are expected to engage in greater levels of self-referencing when viewing the SM, resulting in a negative association between model body size (dummy variable: SM=0, LM=1), and levels of self-referencing. Since externals should self-reference the LM, they should exhibit a positive model body size-self-referencing association.

*H2a* For internals, self-referencing acts as a mediator between the effect of the body size of the model on  $A_{ad}$ ,  $A_b$ , and PI. Specifically, model size should be negatively associated with self-referencing, which in turn should be positively associated with  $A_{ad}$ ,  $A_b$  and PI.

*H2b* For externals, model size should be positively associated with self-referencing, which in turn should be positively associated with  $A_{ad}$ ,  $A_b$  and PI.

### 3 Study 1

#### 3.1 Pretests

A pretest ( $n=61$  undergraduates) rated model attractiveness and body size of three SMs or three LMs, which were tested in independent groups (30 and 31 participants, respectively) to avoid body size assimilation-contrast effects. Attractiveness was rated on five 7-point items (Ohanian 1990) and body size on the Pictorial Body Image Scale adapted from Stunkard et al. (1983) which displays thin to large female body shapes (1=slim, 9=large). The selected SM and LM did not differ on attractiveness ( $p=0.07$ ). Yet, the SM was seen as significantly slimmer than the LM ( $M_{slim}=3.81$ ,  $M_{large}=6.23$ ,  $F_{1,59}=109.90$ ,  $p<0.001$ ,  $\omega^2=0.64$ ). No gender differences were present ( $p>0.22$ ). Based on the findings of a separate pretest ( $n=28$ ) showing that hamburgers were familiar and related to putting on weight, burgers were chosen for the main study.

## 3.2 Method

### 3.2.1 Participants, design and procedure

One-hundred and fifty eight female undergraduate business students were randomly assigned to the cells of a 2 (model: large, slim) between subjects design with WLOC (internal, external) used as a measured independent variable, following a median split (Median=4.75, 7-point scale).<sup>2</sup> Participants were informed that a study was being conducted on print advertisements. Next, they read a booklet containing an ad and the questionnaire. Participants were asked to read the ad as they would normally do so if reading a magazine. The entire procedure took 15 min to complete. At the conclusion of the data collection, participants were debriefed.

### 3.2.2 Measures

All measures used 7-point scales.  $A_{ad}$  used three items (e.g., good–bad,  $\alpha=0.87$ ).  $A_b$  used three items (e.g., like–dislike,  $\alpha=0.94$ ). Likewise, PI used three items (e.g., likely–unlikely,  $\alpha=0.97$ ). WLOC was measured using the four item scale of Saltzer (1982) which included statements such as, “Whether I gain, lose, or maintain my weight is entirely up to me,” ( $\alpha=0.68$ ).<sup>3</sup> Self-referencing was assessed on seven items (e.g., “I can easily relate myself to the advertising model,”  $\alpha=0.91$ ) anchored by strongly disagree–strongly agree. For all multi-item measures, mean scores were calculated and were used in subsequent analyses. Finally, measures were included for fear of fat, dislike of fat people, and willpower (Crandall 1994), as well as measures for attractiveness, expertise, trustworthiness (Ohanian 1990), and pressures to be thin (Netemeyer 1997). However, since they yielded almost no relevant insights they are not discussed any further.

## 3.3 Results

### 3.3.1 Manipulation check

Participants rated the ad model’s perceived body size on the Pictorial Body Image Scale. LMs were rated significantly larger ( $M=6.55$ ) than SMs ( $M=3.40$ ,  $F_{1,155}=488.09$ ,  $p<0.001$ ,  $\omega^2=0.76$ ). No significant main effect or WLOC X Model size interaction were evident ( $F_s<1$ ).

<sup>2</sup> Average age was 21.97 years and mean body mass index (BMI) was 21.38 kg/m<sup>2</sup>. The sample can be classified as 16.7% underweight (i.e., 26 participants with a BMI less than 18.5), 67.3% normal weight (105 participants, BMI 18.5 to 24.9), 14.7% overweight (25, BMI 25 to 30) and 1.3% obese (2, BMI over 30).

<sup>3</sup> While widely used by researchers, the WLOC scale has reported instances of low reliability (e.g., 0.49 to 0.58 Holt et al. 2001; Saltzer 1982). Thus, we included a related scale on weight control beliefs which used four 7-point items (e.g., “People have control over their weight,” strongly disagree–strongly agree,  $\alpha=0.75$ ), adapted from Tiggemann and Anesbury (2000). Analysis indicated that WLOC was positively correlated with weight control beliefs ( $r=0.55$ ,  $p<0.001$ ) as well as with the willpower dimension of the Crandall antifat scale ( $r=0.28$ ,  $p<0.01$ ). Study 2 replicated these results (i.e., WLOC—weight control beliefs,  $r=0.38$ ,  $p<0.01$ ; WLOC—willpower,  $r=0.31$ ,  $p<0.01$ ).

### 3.3.2 Tests of effects of weight locus of control and model size on attitudes (H1)

A MANOVA revealed a significant WLOC X Model size interaction for  $A_{ad}$  ( $F_{1,137}=4.84, p<0.05, \omega^2=0.02$ ),  $A_b$  ( $F_{1,137}=3.97, p<0.05, \omega^2=0.02$ ) and PI ( $F_{1,137}=8.56, p<0.01, \omega^2=0.05$ ). Planned contrasts revealed that internals preferred SMs over LMs ( $A_{ad}$ : Ms=3.71 versus 3.00,  $p=0.01$ ;  $A_b$ : Ms=4.08 versus 3.38,  $p=0.01$ ; PI: Ms=3.83 versus 2.58,  $p<0.001$ ). In contrast, externals exhibited equal preference for LMs and SMs. ( $A_{ad}$ : Ms=3.34 versus 3.18;  $A_b$ : Ms=3.51 versus 3.44; PI: Ms=3.28 versus 3.15,  $F_s<1$  for all). The results for internals are consistent with H1, which suggests that they will respond more favorably to SMs, yet the results for externals do not support H1, as they show no specific model body size preference. Thus, there is partial support for H1 (for a summary see Table 1).

### 3.3.3 Tests of mediation (H2a and H2b)

To test the mediating effect of self-referencing, we conducted regression analyses for internals and externals (Baron and Kenny 1986). First, we regressed  $A_{ad}$  on model size. Second, we regressed self-referencing on model size. Third, we regressed  $A_{ad}$  on model size and self-referencing. Overall, the results are consistent with H2a and partially consistent with H2b. For internals (H2a), a significant effect for model body size was evident for  $A_{ad}$  ( $b=-0.31, p<0.01$ ),  $A_b$  ( $b=-0.35, p<0.01$ ) and PI ( $b=-0.47, p<0.001$ ). Model size also had a significant effect on self-referencing for internals ( $b=-0.45, p<0.001$ ). Importantly, the effect of model size was reduced or eliminated when self-referencing was included in the model for  $A_{ad}$  ( $b=-0.20$ , NS),  $A_b$  ( $b=-0.25$ , NS) and PI ( $b=-0.29, p<0.05$ ). These results are consistent with H2a. For externals, the effect for model size was not significant ( $A_{ad}$ :  $b=0.06$ , NS,  $A_b$ :  $b=0.03$ , NS, and PI:  $b=0.04$ , NS). Yet model size resulted in a positive association with self-referencing ( $b=0.23, p<0.05$ ). Model size had no significant effect when self-referencing was included in the model. These findings offer partial support for H2b.

**Table 1** Studies 1 and 2: Means (standard deviations) as a function of weight locus of control and model body size

	Weight locus of control			
	Internals		Externals	
	Slim model	Larger-sized model	Slim model	Larger-sized model
<b>Study 1</b>				
Attitude toward the ad	3.71 (1.13)	3.00 (1.04)	3.18 (1.26)	3.34 (1.38)
Brand attitude	4.08 (.87)	3.38 (1.05)	3.44 (1.14)	3.51 (1.45)
Purchase intent	3.83 (1.21)	2.58 (1.21)	3.15 (1.34)	3.28 (1.73)
<b>Study 2</b>				
Attitude toward the ad	4.41 (.97)	2.91 (1.15)	3.54 (1.02)	4.29 (.86)
Brand attitude	4.11 (.57)	3.49 (1.28)	3.70 (.82)	4.21 (1.08)
Purchase intent	4.15 (1.00)	2.82 (1.14)	3.36 (1.16)	4.27 (1.46)

### 3.4 Discussion

The findings show how model evaluations are influenced by a consumer's WLOC. Internals respond most favorably to SMs, an effect which is mediated by self-referencing. In contrast, externals exhibit a similar preference for LMs and SMs, as well as self-referencing in response to the LMs. However, there is an issue that merits further attention. It is possible that the findings are driven by differences in physical weight rather than WLOC. Internals may weigh less than externals, and may prefer slim models who are a similar weight to them. Yet an ANOVA showed that internals and externals did not differ in self-reported weight ( $p=0.52$ ) or BMI ( $p>0.94$ ). Further, when classified as an independent variable by median split (i.e., weight: heavy, slim), no significant Weight X Model size interaction was evident ( $A_{ad}$ :  $F_{1,126}=1.19$ ,  $p>0.27$ ,  $A_b$ :  $F_{1,126}=1.66$ ,  $p=0.20$ ,  $PI$ :  $F_{1,126}=3.27$ ,  $p>0.07$ ), nor did weight interact with WLOC ( $A_{ad}$ :  $F_{1,126}=0.41$ ,  $p>0.52$ ,  $A_b$ :  $F_{1,126}=0.03$ ,  $p>0.86$ ,  $PI$ :  $F_{1,126}=0.40$ ,  $p>0.53$ ). These results suggest that differences in physical weight do not represent an alternative explanation for the findings.

While the hypotheses were generally supported, two questions arise: first, are the results generalizable to non-fattening products; and second, does self-referencing merely reflect perceived similarity to the model? For the first question, it could be that internals judge LMs harshly when they are used to advertise a fattening product. In Study 2 we explore product type as a boundary condition to the generalizability of the results of Study 1. With regards to the latter question, in Study 2 we measure perceived similarity and test its overlap with self-referencing. Given that participants may contrast self-evaluations away from a model (Smeesters and Mandel 2006), we also measure appearance self-esteem and normalcy of the model (Bower and Landreth 2001) to provide additional insights.

## 4 Study 2

Study 2 tests the generalizability of the results found in Study 1 using a non-fattening product. We also measure perceived similarity, appearance self-esteem and perceived normalcy of the model.

### 4.1 Method

#### 4.1.1 Participants, design, procedure and measures

Eighty seven female undergraduates participated in the study.<sup>4</sup> The design, procedure and measures were identical to Study 1. For perceived similarity, participants rated their own body shape on the Stunkard et al. (1983) scale (i.e., "The figure that reflects the way you think you look"). This score was subtracted from the model rating manipulation check. Scores were then reversed and converted

<sup>4</sup> Mills et al. (2002) highlight that demand characteristics can result in people feeling worse after exposure to ads featuring SMs. Consequently, in addition to the between-subjects design and deceptive experiment purpose (Sawyer 1975), we included a final question asking participants the purpose of the study. Seven participants were removed, resulting in a final sample of 80 participants.



to an absolute value (1=low similarity, 9=high similarity). We measured appearance self-esteem on a 7-point scale (Heatherton and Polivy 1991,  $\alpha=0.81$ ). Perceived normalcy was measured on one 7-point item (“I would consider this model to be normal-looking,” strongly agree–strongly disagree) adapted from Bower and Landreth (2001).

## 4.2 Results

### 4.2.1 Manipulation check

As intended, LMs were rated as significantly larger in body size ( $M=6.03$ ) than SMs on the Pictorial Body Image Scale ( $M=4.09$ ,  $F_{1,77}=35.17$ ,  $p<0.001$ ,  $\omega^2=0.30$ ).

### 4.2.2 Weight locus of control and model size on attitudes (H1)

A significant WLOC X Model size interaction was again evident for  $A_{ad}$  ( $F_{1,62}=20.42$ ,  $p=0.001$ ,  $\omega^2=0.23$ ),  $A_b$  ( $F_{1,62}=5.30$ ,  $p<0.05$ ,  $\omega^2=0.06$ ) and PI ( $F_{1,62}=12.89$ ,  $p=0.001$ ,  $\omega^2=0.15$ ). Planned contrasts revealed that internals preferred SMs over LMs ( $A_{ad}$ :  $M_s=4.41$  versus 2.91,  $p=0.001$ ;  $A_b$ :  $M_s=4.11$  versus 3.49, NS; PI:  $M_s=4.15$  versus 2.82,  $p<0.01$ ). Importantly, in contrast to Study 1, externals preferred LMs to SMs for ads featuring a non-fattening product ( $A_{ad}$ :  $M_s=4.29$  versus 3.54,  $p<0.03$ ;  $A_b$ :  $M_s=4.21$  versus 3.70, NS; PI:  $M_s=4.27$  versus 3.36,  $p<0.05$ ). Thus, the results for Study 2 support H1 (see Table 1).

### 4.2.3 Tests of mediation (H2a and H2b)

For internals (H2a), a significant effect for model body size was evident for  $A_{ad}$  ( $b=-0.59$ ,  $p<0.001$ ) and PI ( $b=-0.54$ ,  $p<0.01$ ), but not for  $A_b$  ( $b=-0.30$ , NS). Model size also had a significant effect on self-referencing for internals ( $b=-0.53$ ,  $p<0.01$ ). The effect of model size was reduced or eliminated when self-referencing was included in the model for  $A_{ad}$  ( $b=-0.41$ ,  $p<0.05$ ),  $A_b$  ( $b=-0.25$ , NS) and PI ( $b=-0.31$ , NS). These findings are consistent with H2a (see Table 2). For externals (H2b), the effect for model body size was generally significant ( $A_{ad}$ :  $b=0.37$ ,  $p<0.05$ ,  $A_b$ :  $b=0.27$ , NS, and PI:  $b=0.34$ ,  $p<0.05$ ). Further, while model size had a significant positive association with self-referencing ( $b<0.31$ ,  $p<0.05$ ), this effect was eliminated when self-referencing was included in the model ( $A_{ad}$ :  $b=0.29$ , NS;  $A_b$ :  $b=0.20$ , NS; PI:  $b=0.22$ , NS). These findings support H2b.

### 4.2.4 Secondary analysis

Consistent with Study 1, no differences in weight ( $p>0.51$ ) and BMI ( $p=0.71$ ) were evident between internals and externals. Further, when weight was used as an independent variable, no significant main effect ( $ps>0.69$ ) or interactions with Model size or WLOC were present ( $ps>0.08$ ), again suggesting that weight does not drive model size effects. Perceived similarity (PS) was associated with self-referencing ( $b=0.23$ ,  $p<0.05$ ). Further, we repeated the mediation analysis using

**Table 2** Studies 1 and 2: The mediating effect of self-referencing on attitudes and purchase intent

	Study 1		Study 2	
	Internal WLOC	External WLOC	Internal WLOC	External WLOC
<b>Attitude toward the ad</b>				
Model body size → $A_{ad}$	-0.31**	n.s.	-0.59***	0.37*
Model body size → self-referencing	-0.45***	0.23*	-0.53**	0.31
Self-referencing → $A_{ad}$	0.25*	0.67***	0.57**	0.36*
Model body size → $A_{ad}$ (with self-referencing)	n.s.	n.s.	-0.41*	n.s.
<b>Brand attitude</b>				
Model body size → $A_b$	-0.35**	n.s.	n.s.	n.s.
Model body size → self-referencing	-0.45***	0.23*	-0.53**	0.31*
Self-referencing → $A_b$	n.s.	0.56***	0.58**	n.s.
Model body size → $A_b$ (with self-referencing)	n.s.	n.s.	n.s.	n.s.
<b>Purchase intent</b>				
Model body size → PI	-0.47***	n.s.	-0.54**	0.34*
Model body size → self-referencing	-0.45***	0.23*	-0.53**	0.31*
Self-referencing → PI	0.38**	0.50***	0.64***	0.48**
Model body size → PI (with self-referencing)	-0.29*	n.s.	n.s.	n.s.

Values shown are standardized coefficients.

WLOC Weight locus of control

n.s. Not significant ( $p > 0.05$ )

\* $p < 0.05$

\*\* $p < 0.01$

\*\*\* $p < 0.001$

PS as a mediator rather than self-referencing. This indicated for internals that PS was associated with  $A_{ad}$  ( $b = -0.52$ ,  $p < 0.01$ ),  $A_b$  ( $b = -0.58$ ,  $p < 0.05$ ) and PI ( $b = -0.59$ ,  $p < 0.05$ ), and that PS generally reduced the effect of model body size when included as a mediator ( $A_{ad}$ :  $b = -0.44$ ,  $p < 0.05$ ,  $A_b$ :  $b = -0.05$ , NS, and PI:  $b = -0.35$ ,  $p < 0.05$ ). Yet the results for externals for all paths involving PS were nonsignificant ( $ps > 0.48$ , results available by request from the authors) suggesting PS does not act as a mediator for externals.

Consistent with Smeesters and Mandel (2006), a significant main effect was evident for model size on appearance self-esteem (ASE) with participants reporting a lower ASE after viewing a SM ( $M = 3.99$ ) than after viewing a LM ( $M = 4.75$ ,  $F_{1,63} = 8.67$ ,  $p < 0.01$ ,  $\omega^2 = 0.10$ ). Interestingly, a WLOC X Model size interaction was also present for ASE ( $F_{1,63} = 4.57$ ,  $p < 0.05$ ,  $\omega^2 = 0.05$ ). Planned contrasts revealed that internals reported a lower ASE after viewing the SM ( $M = 3.83$ ) than the LM ( $M = 5.13$ ,  $p < 0.01$ ). No such effect was evident for externals ( $M_{SM} = 4.15$ ,  $M_{LM} = 4.36$ , NS). A WLOC X Model size interaction was also present for perceived normalcy ( $F_{1,63} = 10.17$ ,  $p < 0.01$ ,  $\omega^2 = 0.11$ ). Planned contrasts showed that internals view the SM ( $M = 5.46$ ) as more normal looking than the LM ( $M = 3.00$ ,  $p = 0.001$ ). Externals view LMs and SMs as equally normal ( $M_{LM} = 3.75$ ,  $M_{SM} = 3.70$ , NS).

### 4.3 Discussion

Study 2 replicates Study 1 using a non-fattening product with two additions. First, the WLOC X Model size interaction involved stronger effect sizes than Study 1 ( $A_{ad}$ :  $\omega^2=0.23$  versus 0.02,  $A_b$ :  $\omega^2=0.06$  versus 0.02, PI:  $\omega^2=0.15$  versus 0.05). Second, externals preferred LMs over SMs for  $A_{ad}$  and PI. Self-referencing again had a mediating effect for internals, and this time also for externals (Table 2) Consistent with Study 1, differences in the weight of participants was not an influential variable. Perceived similarity did correlate with self-referencing and did reflect similar results for internals, yet this variable did not provide insight for externals. SMs did negatively influence ASE (Smeesters and Mandel 2006). However only internals demonstrate this negative effect. Externals appear unaffected. Further, internals regard SMs as normal looking, not LMs, whereas externals make no such distinction.

## 5 General discussion

The present research shows that considering a female consumer's weight locus of control, and the extent to which they engage in self-referencing, offers insights into their model body size evaluations. Study 1 showed that internals prefer SMs advertising a fattening product, an effect mediated by self-referencing. In contrast, externals self-referenced LMs but exhibited a similar preference for SMs and LMs. Study 2 showed that these effects generalize to a non-fattening product with stronger effect sizes evident for internals. Externals again self-referenced LMs, but this time preferred LMs over SMs.

This research contributes to LM research in marketing by showing that the persuasive advantage of LMs (Peck and Loken 2004) is not generalizable to all female consumers. Whereas Peck and Loken (2004) document that the priming non-traditional beliefs about women can influence perceptions of attractiveness, our research shows that positive evaluations of LMs can occur without the need for such priming. However, positive evaluations of LMs are restricted to externals who view ads for a non-fattening product. Moreover, in contrast to Peck and Loken, who found females to engage in more self-referencing of LMs than males, we found that the extent of self-referencing engaged in by females depends on their WLOC beliefs. Externals self-reference LMs, internals self-reference SMs.

Indeed, internals judge LMs harshly for both fattening and non-fattening products. Internals believe they can control their own weight, do not regard LMs as normal looking, and yet suffer a decrease in their own appearance self-esteem (ASE) when exposed to a SM. In contrast, externals, who believe a person's weight is due to fate, appear more accepting of body size and are unaffected in terms of their ASE when exposed to models. This difference in ASE and perceived normalcy of the models represents an intriguing avenue for future research. Indeed, if we assume internals are more likely to be chronic dieters (i.e., unlike externals who do not believe in the efficacy of diets), our findings in this regard contradict Mills et al. (2002) who found that female dieters display self-enhancement after exposure to SMs. Instead, our main effect for model size on ASE confirms the results of

Smeesters and Mandel (2006), yet we add to this work by showing a WLOC X Model size interaction on ASE. We speculate that the decrease in ASE for internals after viewing a SM could result from internals seeking to achieve the slimness of the SM through their own efforts. Thus, internals could be motivated by the ad, resulting in favorable ad attitudes, and yet be disappointed that they are not as slim as the SM themselves, thereby resulting in lowered ASE. This interpretation could be explored in future research.

Regarding alternative explanations, our findings are not explained by differences in participant weight, and perceived similarity only offers complementary insights for internals. The positive correlation between self-referencing and perceived similarity concurs with Martin et al. (2004, p. 28) who suggest that self-referencing represents a cognitive process, which can result in a judgment of perceived similarity. However, why did externals prefer LMs advertising salads, but not burgers? Gender research suggests that a female's visible choice of diet is used in judgment formation. Specifically, females form more favorable impressions of other females who eat non-fattening foods, such as salads (e.g., Mooney and Lorenz 1997). We speculate that this may have influenced evaluations in Study 2, resulting in a persuasive advantage that was not present for externals in Study 1.

A limitation of this research relates to waist-to-hip ratio (WHR) which has been identified as a key influence on perceptions of female attractiveness (Weeden and Sabini 2005). Specifically, the Pictorial Body Image Scale we used conflates WHR with BMI. Further, our LM (WHR=0.83) had a higher WHR than the SM (WHR=0.72), although both are within the typical range of 0.70 to 0.90 for young adult women (Weeden and Sabini 2005). Future research should consider using SMs and LMs that have identical WHRs and explore how different levels of model attractiveness influence consumer responses to SMs and LMs. Another area for future exploration involves examining the antecedents of WLOC beliefs which would offer useful insights to this line of research.

In terms of managerial implications, the current results contradict the view that all female consumers want to see larger-sized models in advertising. Our findings suggest that LMs are only preferred over SMs when advertising non-fattening products to externals. In contrast, where internals are the target market, slim models are more effective, irrespective of product type. Marketers seeking to determine WLOC could use questionnaires or an assessment of the media vehicle's audience. For example, a fitness magazine being considered for advertising would presumably be read by internals.

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## References

- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.
- Bower, A. B., & Landreth, S. (2001). Is beauty best? Highly versus normally attractive models in advertising. *Journal of Advertising*, 30(1), 1–12.

- Burnkrant R. E., & Unnava H. R. (1995). Effects of self-referencing on persuasion. *Journal of Consumer Research*, 22(June), 17–26.
- Crandall, C. S. (1994). Prejudice against fat people: Ideology and self-interest. *Journal of Personality and Social Psychology*, 66(5), 882–894.
- Furnham, A., & Nordling, R. (1998). Cross-cultural differences in preferences for specific male and female body shapes. *Personality and Individual Differences*, 25(4), 635–648.
- Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body dissatisfaction: A meta-analytic review. *International Journal of Eating Disorders*, 31(1), 1–16.
- Grover, V. P., Keel, P. K., & Mitchell, J. P. (2003). Gender differences in implicit weight identity. *International Journal of Eating Disorders*, 34(1), 125–135.
- Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology*, 60(June), 895–910.
- Holt, C. L., Clark, E. M., & Kreuter, M. W. (2001). Weight locus of control and weight-related attitudes and behaviors in an overweight population. *Addictive Behaviors*, 26(3), 329–340.
- Martin, B. A. S., Lee, C. K.-C., & Yang, F. (2004). The influence of ad model ethnicity and self-referencing upon attitudes: Evidence from New Zealand. *Journal of Advertising*, 33(4), 27–37.
- Mills, J. S., Polivy, J., Herman, C. P., & Tiggemann, M. (2002). Effects of exposure to thin media images: Evidence of self-enhancement among restrained eaters. *Personality and Social Psychology Bulletin*, 28(12), 1687–1699.
- Mooney, K. M., & Lorenz, E. (1997). The effects of food and gender on interpersonal perceptions. *Sex Roles*, 36(9/10), 639–653.
- Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Bulletin*, 110(3), 472–489.
- National Center for Health Statistics. (2005). Prevalence of overweight and obesity among adults: United States, 1999–2000. <http://www.cdc.gov/>.
- National Heart, Lung, and Blood Institute (1998). *Clinical guidelines on the identification, evaluation and treatment of overweight and obesity in adults: The evidence report*. (NIH Publication No. 98-4083). Bethesda, MD: National Institute of Health.
- Netemeyer, R. G. (1997). Personal correspondence cited in William O. Bearden and Richard G. Netemeyer (eds.), *Handbook of Marketing Scales: Multi-item Measures for Marketing and Consumer Behavior* (425). Thousand Oaks, CA: Sage.
- Ohanian, R. (1990). Construction and validation of a scale to measure celebrity endorsers' perceived expertise, trustworthiness, and attractive. *Journal of Advertising*, 19(3), 39–52.
- Peck, J., & Loken, B. (2004). When will larger-sized female models in advertisements be viewed positively? The moderating effects of instructional frame, gender, and need for cognition. *Psychology & Marketing*, 21(6), 425–442.
- Richins, M. L. (1991). Social comparison and the idealized images of advertising. *Journal of Consumer Research*, 18(June), 71–83.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80(1), 1–28.
- Saltzer, E. B. (1982). The weight locus of control (WLOC) scale: a specific measure for obesity research. *Journal of Personality Assessment*, 46(6), 620–628.
- Sawyer, A. G. (1975). Demand artifacts in laboratory experiments in consumer research. *Journal of Consumer Research*, 1(March), 20–30.
- Smeesters, D., & Mandel, N. (2006). Positive and negative media image effects on the self. *Journal of Consumer Research*, 32(March), 576–582.
- Stunkard, A. J., Sorensen, T., & Schulsinger, F. (1983). Use of the Danish adoption register for the study of obesity and thinness. In S. S. Kety, L. P. Rowland, R. L. Sidman, & S. W. Matthysse (Eds.), *Genetics of neurological and psychiatric disorders*, (115–120) New York: Raven.
- Tiggemann, M., & Anesbury, T. (2000). Negative stereotyping of obesity in children: The role of controllability beliefs. *Journal of Applied Social Psychology*, 30(9), 1977–1993.
- Tiggemann, M., & Rothblum, E. D. (1997). Gender differences in internal beliefs about weight and negative attitudes towards self and others. *Psychology of Women Quarterly*, 21(4), 581–593.
- Weeden, J., & Sabini, J. (2005). Physical attractiveness and health in western societies: A review. *Psychological Bulletin*, 131(5), 635–653.