Preattentive exposure to the thin female beauty ideal does not affect women's mood, selfesteem and eating behaviour

Citation for published version (APA):

Jansen, A. T. M., & de Vries, M. W. (2002). Preattentive exposure to the thin female beauty ideal does not affect women's mood, selfesteem and eating behaviour. *European Eating Disorders Review*, 10, 208-217. <https://doi.org/10.1002/erv.430>

Document status and date:

Published: 01/01/2002

DOI:

[10.1002/erv.430](https://doi.org/10.1002/erv.430)

Document Version:

Publisher's PDF, also known as Version of record

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Paper

Pre-attentive Exposure to the Thin Female Beauty Ideal Does Not Affect Women's Mood, Self-esteem and Eating Behaviour

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Exposure to the thin beauty ideal has been found to decrease women's mood and self-esteem as well as to increase self-reported eating pathology. In the present study, it was tested whether the changes in mood, self-esteem and eating behaviour could be activated outside of conscious attention by ultrashort exposure to either slides of thin media models, obese models or neutral slides. The subliminal exposure did not affect women's mood and self-esteem in the expected way and the eating behaviour of restrained and unrestrained subjects was unaffected by the manipulation. It is concluded that pre-attentive exposure to the thin beauty ideal had no devastating effect on the well-being of women. Note that data from supraliminal studies may be seriously confounded by demand characteristics like answering in a socially desirable way. Copyright © 2001 John Wiley & Sons, Ltd and Eating Disorders Association.

Keywords: eating disorders; restraint; cognition; self-esteem; exposure

INTRODUCTION

Eating disorders are far more common among women than men and their prevalence is higher in cultures in which a thin female beauty ideal prevails than in cultures without this ideal (e.g. Striegel-Moore, 1995).

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These findings of greater exposure to the thin female beauty ideal being associated with greater levels of disordered eating, led to the widespread idea that the 'perfect figure' culture is the key determinant of body dissatisfaction and eating disorders in women. Although it is hard to demonstrate directly that increasing exposure to the thin ideal figure is related to an increase in the prevalence of eating disorders, there is experimental evidence showing that exposure to thin media models and eating disorder-related symptoms are positively associated with each other (see e.g. Irving, 1990; Stice *et al.*, 1994; Tiggeman and Pickering, 1996; Pinhas *et al.*, 1999).

Until now, the experimental studies on the influence of thin models on the well-being of women used supraliminal exposure to the thinness-ideal, meaning that the stimulus materials were consciously noticed and thus favouring controlled or strategic processing of the material. A major problem with these methods and the reliance on self-reports is that they are easily biased by demand characteristics. Moreover, the self-reports probably are not about processes and representations that exist outside awareness. A large series of elegant studies on pre-conscious processes has shown that, although unnoticed, implicit information is able to influence emotions, cognitions and behaviour (Greenwald and Banaji, 1995; Bargh and Chartrand, 1999). Even constructs such as stereotypes, attitudes and self-esteem are found to be—at least partly—pre-attentive, meaning that they can be activated outside of conscious attention, for example by subliminal stimulation (Greenwald and Banaji, 1995).

To study these pre-conscious influences and to avoid demand characteristics, female students participating in the present study were given ultra-short exposure to the thin female beauty ideal. In line with earlier findings, it was hypothesized that the pre-attentive exposure is related to a decrease in self-reported mood and self-esteem as well as an increase in eating disorder symptoms. Furthermore it is expected that the subliminal presentation of fat models has a contrast effect and increases women's mood and state self-esteem. Also a significant relationship between restraintness on the one hand and eating disorders-related symptoms after subliminal exposure on the other is expected to be found. Although Ogden and Munday (1996) did not find a relationship between levels of restrained eating and body dissatisfaction after exposure to thin and fat models, others found that heavier women and women at risk for body image disturbance report more negative self-evaluations after exposure to thin ideal images than normal weight women and women without risk (Henderson-King and Henderson-King, 1997). More specifically, it is predicted that highly restrained eaters are more depressed and show

lower self-esteem after subliminal presentation of thin models than low restrained eaters.

Finally, although it is widely argued that there is a relationship between media exposure to thin models and eating disorders, the direct influence of thin-ideal exposure on eating behaviour has never been tested. In the present study, subjects participated in a bogus taste test after being exposed to the models. Because the thin ideal exposure is supposed to decrease mood, and a decrease in mood is related to overeating in highly restrained subjects (e.g. Polivy and Herman, 1993), it was hypothesized that exposure to thin models is related to an overeat response of the highly restrained eaters in the laboratory.

METHOD

Design

Female students ($n = 59$) were subliminally exposed to either slides of thin media models, obese models or neutral slides. All subjects were run individually. State mood and state self-esteem were measured before and after the slide series. Following the presentation of slides, the subject participated in a bogus taste test and her caloric intake was determined.

Subjects

Fifty-nine healthy female students volunteered to participate in what they believed to be a perception study on the relationship between visual advertising and taste evaluation of a product.

Measurements

State self-esteem and state mood

These were measured on 100-mm Visual Analogue Scales (VASs). Subjects were asked how they felt at the moment, from 0 (very depressed) to 100 (not depressed at all) and from 0 (very self-dissatisfied) to 100 (very self-satisfied).

Food intake

The amount of calories eaten during the taste test was determined.

Restraint

The Restraint Scale (RS; Herman and Polivy, 1980), a 10-item self-report scale measuring attempts to restrain food intake and the loss of control over eating behaviour was used.

Body satisfaction

Subjects were asked to give a mark between 0 (very negative) and 10 (very positive) for their own physical appearance.

Materials

Four types of slides were used (thin models, fat models, neutral slides and practice slides), each category containing eight slides. The experimental 'thin' condition consisted of exposure to eight pictures of thin female beauty ideals, i.e. models selected from women's magazines (*Elle* and *Marie-Claire*). The models were rated by four independent observers as very representative of the thin female beauty ideal. The 'fat' condition consisted of exposure to eight pictures of extremely fat women, each above 180 kg. The neutral condition was achieved by exposure to neutral stimuli consisting of office equipment such as a stapler, pencil, telephone and so on. The practice set comprised eight slides of fungi which were validated as neutral by the International Affective Picture System (Lang *et al.*, 1995). The practice slides were also used as fillers in the awareness check. A panther print mask was shown directly after each slide to prevent the occurrence of after-images. The slides were projected by two Kodak monitors and the size of the picture on the wall was 115 × 76 cm.

Procedure

Subjects were instructed to eat a small meal 2 h before participation and to refrain from further eating until the experiment. They were all run individually between 11.00 and 17.30 hours and each subject was randomly assigned to one of the conditions.

After entering the laboratory, the procedure was practiced by using the neutral slides. After the subject completed the VASs (mood and self-esteem), she was presented with a slide set (thin, fat or neutral). The eight slides were presented in eight blocks, meaning that $8 \times 8 = 64$ slides were presented to each subject. Each slide was shown for 15 ms and the mask was presented for 100 ms. Between slide and mask there was a 15-ms gap.

After the slide presentation, mood and self-esteem were rated again and an awareness check (forced choice recognition task) was carried out. The subject was presented with 16 masked slides and she was requested to say what she saw (office equipment, a human being or a fungus). In case she did not know, she was invited to guess.

After the awareness check, the taste test started. The subject was presented with four plates richly laden with food she preferred

(high-calorie food, individually chosen) and a cup of water. She was told that two plates were loaded with popular products and that two other plates contained similar products with subtle taste differences. She was instructed to find and rate the subtle taste differences and to eat as much as she liked. Actually, there were no differences between the pairs of food.

The subject was left alone with the food for 15 min. After the experimenter returned, she rated her physical appearance and completed the RS and the knowledge check. Then, her weight and height were measured and she was paid for her participation.

RESULTS

Awareness check

The Kolmogorov–Smirnov Goodness of Fit test revealed that the average of 6.4 (SD = 2.3) correct answers for 16 slides in the forced choice recognition task, was not statistically significant above chance level ($z = 0.9$, n.s.). Thus, for most but not all of the 59 subjects the slides were presented below detection threshold. The data of the five subjects scoring in the highest percentile of correct answers (i.e. 10 and 11 correct answers) were not analysed. A one-way ANOVA showed that there were no differences between the conditions in the numbers of correct answers.

Knowledge check

After the experiment, subjects were asked to give their ideas on the purpose of the study. Three subjects saw through the goal of the experiment and were excluded from the data analysis. Thus, after the manipulation check and knowledge check, 51 subjects remained for analysis.

Subject characteristics

Mean characteristics of the 51 subjects were: age 19.8 years (range 17–24, SD = 1.6 years); Body Mass Index¹ 23.01 (range 18.7–36.1, SD = 3.1), restraint score 13.2 (range 3–32, SD = 7.3) and body satisfaction 6.7 (range 4–8.5, SD = 0.9).

Hypothesis 1: the subliminal presentation of thin media models decreases the mood and self-esteem of women, whereas the subliminal presentation of fat models increases their mood and self-esteem.

¹Body Mass Index = BMI = weight in kg/(height in meters).²

Table 1. Change in mood and self-esteem in all subjects after subliminal exposure to thin models, fat models and neutral slides

	Thin models	Fat models	Neutral slides
Change in mood	3.8 (10.7) <i>n</i> = 19	− 1.2 (8.6) <i>n</i> = 13	3.4 (17.1) <i>n</i> = 17
Change in self-esteem	− 3 (11.6) <i>n</i> = 19	− 7.1 (14.3) <i>n</i> = 15	− 3.8 (15.1) <i>n</i> = 16

The results are given in Table 1.

First, it was examined whether the subliminal exposure changed mood and self-esteem independent of the condition. For three subjects data on mood or self-esteem were missing. *t*-Test for paired samples showed no mood change ($t(48) = 1.3$, n.s.) but self-esteem decreased significantly through the manipulation ($t(49) = 2.4$, $p < 0.03$). Contrary to the expectation, however, *t*-tests for paired samples showed that it was not the thin condition which showed a decrease in self-esteem ($t(18) = 0.1$, n.s.). A marginal decrease in the self-esteem of subjects in the fat condition was found ($t(14) = 1.9$, $p = 0.07$). The self-esteem of subjects in the neutral condition did not change ($t(15) = 1.0$, n.s.). It is thus concluded that exposure to thin models did not influence women's mood and self-esteem, whereas exposure to fat models tended to lower their self-esteem but not their mood.

Hypothesis 2: highly restrained eaters are more depressed and show lower self-esteem after subliminal presentation of thin models than low restrained eaters.

The results are given in Table 2.

Table 2. Change in mood and self-esteem in highly restrained and low restrained eaters after subliminal exposure to thin models, fat models and neutral slides

	Highly restrained subjects (<i>n</i> = 26)		Low restrained subjects (<i>n</i> = 25)	
	Mood	Self-esteem	Mood	Self-esteem
Thin models	5.3 (12.7) <i>n</i> = 10	− 4.8 (13.3) <i>n</i> = 10	2.1 (8.5) <i>n</i> = 9	− 1 (9.8) <i>n</i> = 9
Fat models	0.2 (5.4) <i>n</i> = 9	− 3.9 (14.8) <i>n</i> = 9	− 4.3 (14.2) <i>n</i> = 4	− 12 (13.1) <i>n</i> = 6
Neutral objects	4.4 (23.6) <i>n</i> = 7	− 1.7 (19.6) <i>n</i> = 7	2.6 (12.1) <i>n</i> = 10	− 5 (11.6) <i>n</i> = 9

The median restraint score was 14. No subjects scored between 11 and 14, therefore subjects scoring 11 or lower were considered to be low restrained eaters ($n=24$), whereas subjects scoring 14 or higher were classified as highly restrained eaters ($n=26$). A 2×3 ANCOVA was carried out on the mood and self-esteem post-measures with mood and self-esteem pre-measures as covariates. The main factors were Group (high versus low restraint) and Condition (thin versus fat versus neutral slides). Considering mood, there emerged neither main effects (for Group: $F(1, 48)=0.2$, n.s.; for Condition: $F(2, 48)=0.7$, n.s.) nor an interaction effect ($F(2, 48)=0.8$, n.s.). Again, however, there was a marginal effect on self-esteem. Although there was no main effect for Group ($F(1, 49)=1.9$, n.s.) and Condition ($F(2, 49)=0.7$, n.s.), the interaction between both was marginally significant ($F(2, 49)=2.6$, $p=0.08$). Whereas the self-esteem of all subjects increased in the thin condition, the low restrained subjects showed a decrease in self-esteem after being exposed to fat models. Thus, it was found that subliminal presentation of fat models tended to lower the self-esteem of the low restrained eaters in particular, whereas the self-esteem of highly restrained eaters was not influenced by the exposure.

Hypothesis 3: exposure to thin models induces an overeat response in highly restrained eaters.

The results are given in Table 3.

One low restrained eater was considered an outlier because she skewed the data by eating much more than all the other subjects (ninth percentile). After this subject was removed, a 2×3 ANOVA was carried out on the calorie intake as dependent variable, with Group (high versus low restrained eaters) and Condition (thin versus fat versus neutral slides) as main factors. Neither main effects for Group ($F(1, 50)=6.8$, $p=0.12$) or Condition ($F(2, 50)=0.3$, n.s.), nor an interaction effect ($F(2, 50)=0.5$, n.s.) emerged. Thus, being subliminally exposed to thin or fat models did not influence the eating behaviour of the present sample.

Table 3. Food intake of highly and low restrained eaters after subliminal exposure to thin models, fat models and neutral slides

	Food intake (kcal)		
	Thin models	Fat models	Neutral slides
Highly restrained subjects ($n=26$)	282 (151) $n=10$	318 (113) $n=9$	262 (92) $n=7$
Low restrained subjects ($n=24$)	213 (68) $n=9$	223 (94) $n=5$	247 (119) $n=10$

DISCUSSION

In the present study, it was tested whether subliminal exposure to thin or fat media models influenced women's mood, self-esteem and eating behaviour. Along the lines of studies using supraliminal exposure to thin and fat models, it was expected that the mood and self-esteem of women would decrease after being exposed to thin female models, whereas their mood and self-esteem were expected to increase after exposure to fat female models. The effects were expected to be significantly more pronounced in highly restrained-eating subjects than in low restrained eaters. It was also tested whether the subliminal exposure to thin models triggered overeating in highly restrained eaters.

The subliminal presentation of stimuli in the present experiment gave subjects minimal possibilities for coping strategies, thereby making it impossible to give socially desirable answers or to show other conscious distortions and biases. By eliminating these possibilities, the effect of thin female beauty models on mood and self-esteem disappeared. No changes in self-esteem were found after being exposed to the fat or thin models and also eating behaviour was not influenced by the manipulation. The latter data support the earlier findings of Waller's group. Waller and co-workers also found that the subliminal presentation of specific eating disorder-related cues did not facilitate eating (Waller and Mijatovich, 1998; Meyer and Waller, 2000).

What do the present data mean? The data suggest that when the beauty of a model is not consciously processed, the model has no effect on the mood, self-esteem and eating behaviour of women with either restrained or unrestrained eating behaviour. This means that the automatic processing of thin ideal bodies does not influence the feelings and behaviour of women, which is of interest for several reasons. First, many advertisements using thin beauty female models are not noticed consciously. Considering the data from the present experiment, implicit exposure to thin female beauty ideals will have no devastating effect on the well-being of women. It also cannot be excluded that studies using supraliminal exposure and finding a mood- and self-esteem-lowering effect of thin models, are seriously confounded by socially desirable answers. After all, when relying on self-reports, the occurrence of demand characteristics is a serious risk.

Second, the data have some implications for treatment. Clearly, it does not matter whether subjects walk around in a world dominated by media models and the thin beauty ideal, as long as they are not consciously processing these stimuli. However, at the moment they show controlled or strategic processing of the thin-ideal, a decrease in mood and self-esteem as well as an increase in body dissatisfaction and

disordered eating behaviour in subjects prone to eating disorders is expected to occur. This line of reasoning implies that treatment should, at least partly, concentrate on interventions that tackle or shape the strategic processing of the thin-ideal stimuli. It thus might be effective to use a cognitive therapy programme which is aimed at challenging dysfunctional beliefs and schemata concerning, amongst other things, the beauty ideal (see e.g. the recent cognitive therapy manual by Cooper *et al.*, 2000).

ACKNOWLEDGEMENTS

Thanks are expressed to Peter de Jong, Theo van Aerts and Eric Schouten for their technical assistance.

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