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An evaluation of an airbrushing educational intervention on body dissatisfaction.

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**Purpose:** This experimental study explored the impact of media images on women's body dissatisfaction and assessed whether this impact could be reduced by an educational intervention describing the power of airbrushing. **Methodology:** The study involved a 2 X 2 factorial design with two conditions: picture (thin vs fatter) and airbrushing intervention (present vs absent). Two hundred women completed measures of body dissatisfaction before and after viewing the experimental information. **Findings:** The results showed that women felt consistently more dissatisfied with their bodies after viewing thin pictures and more satisfied after viewing fatter pictures. In addition, the airbrushing intervention reduced the detrimental effect of viewing the thinner pictures but had no effect on the benefits of viewing the fatter pictures. **Conclusion:** Media images may have a role to play in body dissatisfaction in women. But a simple intervention focusing on airbrushing can facilitate a more critical perspective and thus provide a buffer against the influence of media images.

**Reducing the impact of media images: an evaluation of the effectiveness of an airbrushing educational intervention on body dissatisfaction.**

Body dissatisfaction is a common characteristic of many women and can express itself in terms of discrepancies between perceived, actual and desired body size and feeling fat and behaviourally in terms of attempts to restrain food intake and episodes of overeating (Herman and Mack, 1975; Ogden, 2003; Muth and Cash, 1997; Cash and Pruzinsky, 1990; 2002; Grogan, 1999). Theories of body dissatisfaction include psychodynamic, gender and sexuality perspectives (eg. Bruch, 1974; Orbach, 1978; Cash and Pruzinsky, 1990; 2002; Grogan, 1999). In addition, many books and papers suggest that media stereotypes, particularly of women play a central role in creating and exacerbating body dissatisfaction. It is suggested that comparisons between the self and media ideals of female attractiveness creates dissatisfaction and 'shame' (Silberstein *et al.*, 1987; Morrison *et al.*, 2004; Bessenoff, 2006) and that media stereotypes in the Western world where thinness is valued highly create and perpetuate the association between ideals of thinness and positive attributes such as a sense of control, success and attractiveness (eg. Glassner, 1988; Ogden, 2003; Clay *et al.*, 2005; Clark and Tiggemann, 2006). In addition, the media is deemed responsible for the association between fatness and negative attributes of self indulgence, lethargy and slovenliness (eg. Glassner, 1988; Ogden, 2003). The increased prevalence of dieting behaviour has also been related to the decreased size of fashion models (Morris *et al.*, 1989) and the differences between the women selected by artists as their models in past centuries and contemporary models are often cited as possible reasons for the increase in eating disorders (eg. Morris *et al.*, 1989; Stice *et al.*, 1994; Morrison *et al.*, 2004).

Some empirical research has explored the association between media presentations of women and experiences of body dissatisfaction. For example, using correlational designs research shows an association between the frequency of viewing popular magazines and the importance placed on the images used in such magazines and factors such as body dissatisfaction, drive for thinness and pathological eating (Harrison and Cantor, 1997; Stice *et al.*, 1994; Stice and Shaw, 1994; Murray *et al.*, 1996; Tiggemann, 2006). Similarly, McCabe and Ricciardelli (2001) reported that greater exposure to television and magazines had a greater impact upon adolescent girls and Field *et al.* (1999) concluded from their survey of young girls that the majority stated that magazine images of women influenced their idea of the perfect shape and that nearly a half wanted to lose weight because of the images they saw in magazines. Other research has used experimental designs and has explored the impact of showing women magazine images of the 'ideal body shape'. Using this approach research suggests that acute exposure to media images for only a few minutes increases body size distortion in those with anorexia, bulimia and pregnant women compared to neutral images (Waller *et al.*, 1992; Sumner *et al.*, 1993; Hamilton and Waller, 1993). Such exposure can also make women report a significant increase in their body dissatisfaction (Ogden and Munday, 1996; Hawkins *et al.*, 2004; Stice and Shaw, 1994; Halliwell and Dittmar, 2004; Halliwell *et al.*, 2005; Heinberg and Thompson, 1995; see Groesz *et al.*, 2002 for a review). Research also illustrates that an exposure to media images can have a detrimental impact upon adolescent girls (Champion and Furnham, 1999).

Body dissatisfaction is therefore common particularly among women and the media would seem to have a major role in both its development and perpetuation. Some

researchers have argued that women could be taught to be more critical of the methods used by the media as a means to minimise its impact (Oliver, 2001). In line with this, Stormer and Thompson (1995) developed an educational intervention concerning the methods used by the media to manipulate images making them more 'ideal' and reported improvements in young women's body image and decreased internalisation of the ideal image. Similarly, Thompson and Heinberg (1999) developed an intervention to show how images of beauty are created using techniques such as airbrushing and computer generated images and reported decreases in weight related anxiety. Similarly, Yamamiya *et al.* (2005) reported a beneficial impact of a media literacy information based intervention on preventing the adverse effects of media images in women with high levels of internalisation of media ideals. Further, Watson and Vaughn (2006) provided an analysis of how interventions can be made more effective and Posavac *et al.* (2001) highlight the impact of social comparisons processes. Therefore although women may be influenced by the media it would seem that they can also be taught to be more critical of the images it provides.

To date, research illustrates that women may respond to media images of the ideal body with increased body dissatisfaction. Research also indicates that educational interventions may help women to be more critical of what they read and see. The present study aimed to explore the effects of acute exposure to images of stereotypical attractiveness (thin pictures) and to compare this to changes following images of overweight individuals. In addition, the study aimed to evaluate the effectiveness of a simple educational intervention which described and illustrated the power of airbrushing which was developed from an existing website (<http://demo.fb.se/e/girlpower>). In particular the study aimed to assess the extent to

which such an intervention could minimise the detrimental impact of media images.

The study utilised a simple intervention which if effective could be incorporated into school and University based health education campaigns.

## **Method**

### **Sample**

A total of 200 questionnaires were distributed to women ranging in age from 18-37 (mean age 22 yrs) who were selected to provide a heterogenous sample of young women. They were either University students (76%) or employed in local businesses (24%; 9.5% were shop assistants, 8% were bar assistants/waitresses, 4% were office workers, 1.5% were hairdressers, 0.5% was a banker and 0.5% was a housewife). The researcher personally administered all 200 questionnaires resulting in a 100% response rate. The majority of the women described themselves as white (n=152), 16 were Indian, 11 were of mixed ethnicity, 9 were Black African, 4 were Chinese, 2 were Black Caribbean and 1 was of Pakistani origin.

### **Design**

The study consisted of an experimental design with both a within and between subject design. The two between subject variables were: picture (thin versus fat) and airbrushing intervention (airbrushing versus no airbrushing), and the within subject factor was time (before versus after). All participants completed a set of measures before (time 1) and after (time 2) exposure to the pictures (either fat or thin) and either with or without the airbrushing intervention. The study therefore involved a 2 X 2 factorial design resulting in 4 conditions: thin picture and airbrushing; thin picture and no airbrushing; fat picture and airbrushing intervention; fat picture and no airbrushing

intervention. The air brushing intervention was compared to no intervention rather than an alternative set of images or information as the aim was to assess whether accessing the website intervention could be helpful when compared to not accessing this information. The study was approved by the University ethics committee.

### **Experimental interventions**

#### **i)Picture intervention (fat vs. thin)**

Participants in each condition were asked to examine six coloured pictures of women for five minutes. In order to focus their attention onto the pictures the participants were asked to rate all the pictures for their attractiveness ('Not at all' (1) to 'Very attractive' (10)). They then had to tick which one they would most like to look like. These pictures were of either thin women or fatter women. The pictures chosen for the thin condition were of six women representing stereotypical attractive bodies and varied in terms of clothing style, hair colour and ethnicity as a means to make them generally accessible. The same women used in thin picture condition were used again in the fatter condition, however they had all been digitally enhanced to make them overweight bordering on obese. Although somewhat artificial this approach to creating the thinner and fatter pictures meant that both sets of pictures were matched exactly in terms of facial expression, and clothes to avoid any effect of mood, facial expression, clothing and body exposure.

#### **ii)Airbrushing educational intervention**

Half the participants were randomly assigned to receive an airbrushing educational intervention which consisted of two A4 pages of information about airbrushing. This informed the participants about the extent of airbrushing used in magazines and

within the media. It also illustrated how easy it is to alter someone's appearance by presenting pictures of a girl before and after airbrushing, showing the amount of alterations that can occur. This was used to make participants more aware of the media and to be more critical towards these images. The images were taken from an internet site designed to teach people about the power of air brushing (<http://demo.fb.se/e/girlpower>) and the intervention was deemed to be simply enough to be incorporated into a health education campaign.

### **Procedure**

Participants were approached individually by the researcher and asked to take part in a study exploring beliefs about attractiveness. They were then given a questionnaire which consisted of a set of measures before and after viewing a set of pictures of either thin or fatter women. If they were in the airbrushing intervention condition they were also asked to read the information relating to airbrushing after viewing the pictures and prior to their last set of ratings.

### **Measures**

All participants were asked to complete the following measures. Where appropriate the reliability of the measures was assessed using Cronbach's alpha.

#### **Time 1 only**

**i) Demographics:** Participants described their age, ethnicity, occupation, height and weight (to compute BMI) and how often they read magazines (never / seldom / sometimes / often / very often). Ethnicity was recoded into white vs other and occupation was recoded as student vs non student.

**ii) Restrained eating:** They completed the restrained eating section of the Dutch Eating Behaviour Questionnaire (Van Strien *et al.*, 1986;  $\alpha=0.93$ ).

### **Time 1 and time 2**

They also completed the following measures relating to aspects of body dissatisfaction both before and after the interventions and were asked how they felt 'RIGHT NOW':

**i) Silhouettes.** Participants were given a set of female body silhouettes ranging from extremely thin (1) to extremely obese (9) (Stunkard *et al.*, 1986). The participants were asked to indicate (1) what do you think is the ideal body size, (2) how do you feel you look right now. A body dissatisfaction score was computed (ideal score-now score). A positive score indicates that participants see themselves as overweight, and a negative score indicates that participants see themselves as underweight.

**ii) Body Shape Questionnaire:** Participants also completed a 10 item version of the Body Shape Questionnaire to assess their body dissatisfaction (BSQ, Cooper *et al.*, 1987; time 1  $\alpha=0.94$ , time 2  $\alpha=0.94$ ).

**iii) Visual analogue scales:** Participants were asked to rate the following 9 items for how they were feeling 'Right Now' on a scale from 'Not at all' (1) to 'Very' (5). These were summated to create three scales describing attractiveness, body shape, and wanting to lose weight and were taken from previous work on the impact of media

images (Ogden and Munday, 1996). The reliability of the scales was assessed using Cronbach's alphas.

**Attractiveness:** 'How sexy do you feel?', 'How attractive do you feel?', 'How pretty do you feel?' (time 1 alpha=0.84, time 2 alpha=0.85).

**Body shape:** 'How fat do you feel?', 'How well toned do you feel?', 'How comfortable do you feel with your body shape?' (time 1 alpha=0.87, time 2 alpha=0.85).

**Wanting to lose weight:** 'How much would you like to lose weight?', 'How much would you like to be thinner?', 'How much would you like to change your body size?' (time 1 alpha=0.96, time 2 alpha=0.96).

## Results

### Data analysis

The results were analysed to explore differences in demographics by condition using ANOVA and  $X^2$  to assess the effectiveness of the randomisation. They were then analysed to explore the main effects of picture size (thin vs fat) and airbrushing (airbrushing vs none) and to assess the interactions between picture size, airbrushing and time using a 2 way repeated measures ANOVA and post hoc tests.

### 1. Differences in demographics by condition

The differences in demographics by condition are shown in table 1.

-insert table 1 about here –

The results showed that the four conditions were comparable in terms of age, restrained eating, how often they read magazines, occupation and ethnicity indicating that the different groups were comparable.

## **2. The impact of the interventions**

The impact of the picture (thin vs fat) and airbrushing (airbrushing vs none) interventions and their interactions with time and each other are shown in table 2.

-insert table 2 about here –

### **i) Picture by time interaction**

The results showed a significant picture by time interaction for body dissatisfaction as measured by the BSQ and the silhouettes and for the visual analogue scales describing attractiveness, body shape and a desire to lose weight. Examination of the means indicates that the thinner picture resulted in the participants feeling more dissatisfied with their body, showing a greater discrepancy between the ideal body shape and their own perceived body shape, feeling less attractive, feeling less happy with their shape and reporting a greater desire to lose weight. In contrast the fatter picture made them feel more positive for all these dimensions.

### **ii) Airbrushing by time interaction**

The results showed a significant airbrushing by time interaction for body dissatisfaction as measured by the BSQ. Examination of the means showed that those who did not receive the airbrushing intervention showed more change after seeing the pictures compared to those who received the intervention. No significant results were found for the silhouettes or any of the visual analogue scales.

### **iii) Picture by airbrushing by time interactions**

The results showed significant picture by airbrushing by time interactions for body dissatisfaction as measured by the silhouettes and the visual analogue scales measuring satisfaction with body shape and the desire to lose weight. The means showed that whereas those who did not receive the airbrushing intervention reported feeling more dissatisfied with their bodies, less happy with their body shape and a greater desire to lose weight after seeing the thinner pictures compared to those who saw the fatter pictures, those who received the airbrushing intervention were significantly less affected by the thinner images. The airbrushing intervention had no effect on the beneficial consequences of viewing the fatter images. No significant 3 way interactions were found for the BSQ or measures of attractiveness.

## **Discussion**

The present study aimed to explore the impact of acute exposure to images of stereotypically thin women on body dissatisfaction and the role of an educational intervention at reducing this impact. The results showed that after viewing the images of thinner women the participants reported an increase in body dissatisfaction as assessed using a range of measures including feeling less attractive, less happy with their shape and a greater desire to lose weight. These findings are in line with previous studies which illustrate an immediate detrimental impact of acute exposure to media images of thin women in both clinical and non clinical samples (eg. Waller *et al.*, 1992; Hamilton and Waller, 1993; Ogden and Munday, 1996; Hawkins *et al.*, 2004; Stice and Shaw, 1994). Much literature places the responsibility for body dissatisfaction and its associated behaviours such as dieting and eating disorders with the media and its use of unrealistic images of women (eg. Silberstein *et al.*, 1987;

Orbach, 1978). The present study illustrates how even exposure to such images in the short term can have a detrimental effect.

The study also aimed to explore the impact of an educational intervention concerned with the power of airbrushing. The results showed that overall, those who received the airbrushing intervention reported less change in the body dissatisfaction as measured by the BSQ regardless of which images they had been exposed to. In addition, the results indicated that whereas those who were exposed to the thinner pictures reported greater body dissatisfaction afterwards if they had not been given the airbrushing intervention, if they had read the information about airbrushing this impact was reduced. In contrast however, those who were exposed to the fatter images reported improved body dissatisfaction regardless of whether they were exposed to the airbrushing intervention or not. The airbrushing intervention was therefore successful at reducing the negative impact of viewing thinner images but did not undermine the positive effect of viewing fatter images. Previous research indicates that women can be educated to be more critical of the media (Stormer and Thompson, 1995; Thompson and Heinberg, 1995; Posavac *et al.*, 2001; Yamamiya *et al.*, 2005). The present study supports these findings and illustrates that this increase in criticism may also protect women from any damaging effects on their body dissatisfaction.

There are some problems with the study however that need to be addressed. First, the majority of the sample consisted of female students which may limit the generalisability of the results. Student samples however are most problematic when the research question is not of particular relevance to those involved. For the present study, a young female sample who read magazines are appropriate as body

dissatisfaction and the potential impact of the media is of particular importance in this group. Furthermore the sample also consisted of non students who were employed and those from a range of different ethnic backgrounds. Second the methodology involved a controlled experimental design which does not reflect the ongoing and more naturalistic ways in which magazines are read. However the approach used in the present study enables many extraneous variables to be controlled for and illustrates that even in a short and artificial situation the media can have an effect. Finally, it could be argued that the success of the airbrushing intervention simply reflected demand characteristics if participants became aware of the aims of the study and simply interpreted the intervention as an instruction to show less body dissatisfaction after viewing the images. It is possible that participants were aware of what the study was trying to do as the airbrushing intervention was so closely linked with images of attractiveness. However, if the results were purely a consequence of demand characteristics then it could be predicted that participants would have been consistently less affected by both the images of thinner and overweight women. This was not the case as the airbrushing intervention had a greater impact following the thinner images.

To conclude, body dissatisfaction is common among women. The results from the present study indicate that acute exposure to media images of thin women can exacerbate body dissatisfaction even in the short term. The results however also show that a simple brief educational intervention can minimise the impact of the media and may provide a buffer against media influence by encouraging a more critical understanding of the methods used. These results have implications for both research and practice. Future research should explore the longer term protection

provided by such an intervention and could explore whether such an intervention could influence variables beyond body dissatisfaction such as mood and eating behaviour. In terms of practice, the intervention could be used with young women in both non clinical and clinical settings to encourage a more critical approach to the media and to hopefully promote improved body satisfaction which may persist into the longer term. Media images may have a detrimental impact upon the ways in which young women see themselves. The media may also however, be a powerful educational tool that when used constructively can help protect young women from information which is less positive in its consequences.

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Table 1: Demographics by condition (means, SDs and frequencies)

	Airbrushing		No airbrushing		Main effects		Air x Picture
	Thin	Fat	Thin	Fat	airbrush	picture	
Age (yrs)	x=21.2 sd=2.6	x=21.9 sd=3.2	x=22.58 sd=3.77	x=22.04 sd=2.8	F=2.7 P=0.1	F=0.08 P=0.77	F=2.3 P=0.1
Restrained eating	x=2.11 sd=0.69	x=2.19 sd=0.73	x=2.23 sd=0.69	x=2.36 sd=0.83	F=1.74 P=0.19	F=1.00 P=0.32	F=0.05 P=0.83
BMI	x=23.2 sd=1.82	x=22.6 sd=1.56	x=22.85 sd=1.7	x=22.68 sd=2.43	F=0.62 P=0.43	F=2.4 P=0.7	F=0.77 P=0.38
Reading Magazines	x=3.86 sd=0.96	x=3.46 sd=1.21	x=3.56 sd=1.16	x=3.62 sd=1.22	F=0.19 P=0.68	F=1.1 P=0.29	F=2.0 P=0.16
Occupation (student vs non student)	stud=36 non stud=14	stud=40 non stud=10	stud=38 non stud=12	stud=38 non stud=12			X <sup>2</sup> =0.8 p=0.8
Ethnicity (white vs other)	w=38 o=13	w=42 o=8	w=41 o=9	w=37 o=13			X <sup>2</sup> =0.8 p=0.8

**Table 2: Impact of the interventions (means / SDs)**

	No Airbrushing				Airbrushing				Main effects			Interactions		
	Thin picture		Fat picture		Thin picture		Fat picture		Air	Picture	Time	Air / time	Pict / time	Air/pic/ Time
	T1	T2	T1	T2	T1	T2	T1	T2	F (p)	F (p)	F (p)	F (p)	F (p)	F (p)
BSQ	2.3	2.5	2.6	2.5	2.2	2.24	2.3	2.2	2.7	1.06	2.46	<b>4.4</b>	<b>46.5</b>	1.89
	$\pm 0.8$	$\pm 0.95$	$\pm 1.01$	$\pm 0.95$	$\pm 0.8$	$\pm 1.02$	$\pm 0.9$	$\pm 0.8$	(0.09)	(0.69)	(0.12)	<b>(0.04)</b>	<b>(0.001)</b>	(0.17)
Bod dis ideal/ now	0.86	1.15	0.98	0.75	0.93	0.97	0.75	0.69	0.42	1.48	0.09	0.41	<b>27.64</b>	<b>12.76</b>
	$\pm 0.86$	$\pm 1.00$	$\pm 1.2$	$\pm 1.19$	$\pm 1.12$	$\pm 1.33$	$\pm 1.02$	$\pm 0.99$	(0.51)	(0.23)	(0.76)	(0.52)	<b>(0.001)</b>	<b>(0.01)</b>
Attract.	3.01	2.81	3.11	3.39	3.15	3.17	3.05	3.35	1.23	<b>4.45</b>	<b>10.84</b>	3.08	<b>39.14</b>	2.71
	$\pm 0.62$	$\pm 0.63$	$\pm 0.77$	$\pm 0.74$	$\pm 0.64$	$\pm 0.69$	$\pm 0.64$	$\pm 0.65$	(0.27)	<b>(0.04)</b>	<b>(0.001)</b>	(0.81)	<b>(0.0001)</b>	(0.10)
Shape	3.20	2.89	2.85	3.29	3.14	3.15	3.23	3.45	1.98	0.72	<b>10.25</b>	1.14	<b>82.88</b>	<b>25.86</b>
	$\pm 0.92$	$\pm 0.86$	$\pm 1.03$	$\pm 0.98$	$\pm 0.95$	$\pm 1.01$	$\pm 0.95$	$\pm 0.88$	(0.16)	(0.40)	<b>(0.002)</b>	(0.29)	<b>(0.0001)</b>	<b>(0.001)</b>
Lose weight	2.55	3.09	3.07	2.75	2.72	2.91	2.65	2.43	1.41	0.33	0.72	1.20	<b>33.33</b>	<b>4.02</b>
	$\pm 1.05$	$\pm 1.08$	$\pm 1.21$	$\pm 1.13$	$\pm 1.24$	$\pm 1.33$	$\pm 1.22$	$\pm 1.12$	(0.24)	(0.57)	(0.34)	(0.28)	<b>(0.0001)</b>	<b>(0.05)</b>

Bold denotes significance ( $p < 0.05$ )