



## RESEARCH PAPER

# Weight loss expectations and body dissatisfaction in young women attempting to lose weight

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### Abstract

**Background:** Unrealistic weight loss expectations (WLEs) and greater body dissatisfaction may be associated with the poor long-term outcomes of dietary and lifestyle weight loss treatments. We evaluated the association between body size, WLEs and body dissatisfaction in young women attempting to lose weight.

**Methods:** Forty-four young healthy women [age range 18–35 years, body mass index (BMI) range 23–40 kg/m<sup>2</sup>] were recruited. Women were classified as obese (BMI ≥ 30.0 kg/m<sup>2</sup>) and non-obese (BMI <30.0 kg/m<sup>2</sup>). The Body Dissatisfaction scale of the Eating Disorder Inventory-2 and the Body Image Assessment for Obesity silhouette charts were used to assess body dissatisfaction. WLEs were categorised according to personal (ideal, happiness, satisfaction, weight history), lifestyle (fitness) and social (career, family acceptance, peer acceptance, mass media, social pressure) factors. Individual WLEs were compared with recommended clinical targets (5%, 10% and 20%) for weight loss.

**Results:** Body dissatisfaction was lower in non-obese subjects and was directly associated with BMI ( $P < 0.05$ ). WLEs were directly associated with BMI and the obese group reported greater expectations. Five non-obese subjects (23%) desired to lose more than 20% of their body weight, whereas the proportion was significantly higher in the obese group (17 subjects; 74%). Subjects derived the greatest WLEs from mass media, whereas they perceived that family and friends were supportive of a lesser degree of weight loss.

**Conclusions:** We observed a mismatch between clinical and personal expectations, and social pressure and interpersonal relationships appear to have a prominent role with respect to influencing the association.

### Introduction

Changes in body weight are typically more rapid at the beginning of weight loss treatments, which may explain the higher motivational drive observed during the early weight loss phases (Heymsfield *et al.*, 2011). The initial drive for thinness appears to predict a greater decline in body weight in the short-term and maintenance in the long-term (Linde *et al.*, 2004, 2005). However, it also

appears that when the initial weight loss expectations (WLEs) are unrealistic and they are not met by the reality of the changes in body weight, the same high motivation could be associated with decreased self-esteem, loss of confidence and increased disinhibitory eating behaviour, which could potentially result in frustration and disengagement from obesity treatments (Cervone *et al.*, 1991). Both scenarios have been reported in longitudinal studies, which appear to configure a U-shaped curvilinear

relationship between WLEs, attrition rates and long-term changes in body weight (Oettingen & Wadden, 1991; Wadden *et al.*, 2003; Teixeira *et al.*, 2004; Ames *et al.*, 2005; Dalle Grave *et al.*, 2005; Fabricatore *et al.*, 2007).

The association between WLEs and body image perception has not been previously reported in overweight and obese dieters. Hence, in the present study, we investigated the link between WLEs and body image dissatisfaction using psychometric and visual perceptive methods in young women attempting to lose weight. We also examined the relationship between the multiple domains linked to WLEs (ideal, reasonable, fitness, happy, past, family, friends, mass media and social pressure) with current body weight and recommended weight loss targets (5%, 10% and 20% of baseline body weight).

## Materials and methods

Forty-four young healthy female [age range 18–35 years; body mass index (BMI) 23.0–45.0 kg/m<sup>2</sup>], nonsmoking subjects attending a dietetic clinic for the purpose of reducing their body weight between January and December 2010 participated in the present study. The study was approved by the Research and Ethics Committee of the Medical School of the University of Naples Federico II, Italy. Each subject provided their written informed consent before being enrolled.

### Assessment of eating behaviour and body dissatisfaction

The Eating Attitude Test-26 (EAT-26) (Garner *et al.*, 1982) and the Three Factor Eating Questionnaire (TFEQ) (Stunkard & Messick, 1985) were used to assess eating behaviour. The body dissatisfaction subscale of the Eating Disorder Inventory (EDI-2\_BD) (Garner & Olmsted, 1986) and the Body Image Assessment for Obesity (BIA-O) (Williamson *et al.*, 2000) were used to assess body dissatisfaction. The BIA-O consists of 18 female silhouettes varying from very thin to severely obese. Each subject had to indicate the silhouettes that most closely resembled their current body size (CBS) and their ideal body size (IBS) and body dissatisfaction was expressed as the difference between current and ideal body size (CBS-IBS). More detailed information on each method is provided in the Supporting information.

### Weight loss expectations and weight loss targets

Each subject was administered a questionnaire where they had to indicate the appropriate weight (kg) for each specific question. Questions are reported in the Supporting information. Weight loss goals may vary according to the baseline BMI. Therefore, we calculated three accepted

medical targets (5% WL, 10%WL and 20%WL) and compared each target with the individual WLEs in obese and not obese women.

### Statistical analysis

Mann-Whitney *U*-tests and the Wilcoxon signed rank test were used for the analysis of independent and paired samples, respectively. The Spearman-Rank correlation was used to assess the association between BMI, body dissatisfaction and WLEs. Linear regression was applied to investigate the association between the various measures of WLEs with BMI and body image perception (CBS-IBS). The statistical analyses were carried out using STATA, version 8 (Stata Corp, College Station, TX, USA).

## Results

Groups were matched for age, education and eating behaviour (EAT-26 and TFEQ). Obese subjects reported higher levels of global evaluative body dissatisfaction (CBS-IBS) compared to non-obese subjects ( $P = 0.02$ ) (see Data S1

**Table 1** Current body weight and personal, lifestyle and social determinants of weight loss expectations in subjects divided according to their body mass index

Body weight (kg)	All	BMI <30 kg/m <sup>2</sup>	BMI ≥ 30 kg/m <sup>2</sup>	<i>P</i>
Current	76.2 (11.2)	69.3 (8.4)	82.5 (9.6)	<0.001
Ideal	60.3 (7.2)	57.1 (6.7)	63.3 (6.5)	0.007
Δ	-15.8 (7.8)	-12.1 (4.0)	-19.2 (8.8)	<0.001
Happy	57.9 (6.1)	56.0 (6.5)	59.6 (5.2)	NS
Δ	-18.2 (8.1)	-13.2 (4.9)	-22.8 (7.8)	<0.001
Reasonable	61.8 (6.6)	59.8 (7.0)	63.7 (5.6)	NS
Δ	-14.3 (7.7)	-9.5 (3.3)	-18.8 (7.9)	<0.001
Past	60.5 (7.0)	58.4 (7.7)	62.4 (5.7)	NS
Δ	-15.7 (7.5)	-10.8 (4.6)	-20.1 (7.0)	<0.001
Fitness	58.0 (5.6)	56.6 (6.3)	59.2 (4.7)	NS
Δ	-18.2 (8.1)	-12.6 (4.5)	-23.3 (7.3)	<0.001
Successful	58.4 (6.5)	57.6 (7.4)	59.2 (5.5)	NS
Δ	-17.7 (8.9)	-11.6 (5.3)	-23.3 (7.8)	<0.001
Family	63.7 (10.6)	60.2 (7.7)	66.9 (12.1)	NS
Δ	-12.5 (10.9)	-9.0 (7.3)	-15.6 (12.7)	NS
Friends	62.0 (10.4)	59.3 (7.2)	64.4 (12.2)	NS
Δ	-14.2 (10.5)	-9.9 (6.6)	-18.1 (12.0)	0.01
Mass media	54.8 (6.2)	53.8 (6.6)	55.7 (5.8)	NS
Δ	-21.3 (9.6)	-15.5 (6.1)	-26.7 (9.1)	<0.001
Social pressure	60.5 (7.6)	58.3 (6.8)	62.5 (8.0)	NS
Δ	-15.6 (8.0)	-10.9 (4.0)	-19.9 (8.4)	<0.001

The difference (Δ) between current body weight and weight loss expectations was calculated. Data are shown as the mean (SD). The Mann-Whitney test was used to compare the two body mass index groups. Values for weight loss expectations are reported as kg of body weight.

BMI, body mass index; NS, not significant.

and Table S1). EDI-2\_BD and CBS-IBS were statistically correlated ( $\rho = 0.48$ ,  $P < 0.001$ ) and were both significantly associated with BMI (EDI-2\_BD,  $\rho = 0.30$ ,  $P = 0.05$ ; CBS-IBS,  $\rho = 0.35$ ,  $P = 0.01$ ).

The obese group reported greater WLEs than the non-obese group with the exception of family WLEs. Both obese and non-obese subjects identified family and friends as having more lenient WLEs, whereas a greater pressure on WLEs was instead associated with mass media (Table 1). The difference between current body weight, weight loss medical targets and WLEs increased proportionally with BMI, and family and friends appeared again to be consistently supportive of a lesser degree of weight loss (Fig. 1).

BMI was associated with greater WLEs and the coefficients of correlations ( $\rho$ ) ranged from  $-0.42$  (family WLEs) to  $-0.84$  (fitness WLEs). CBS-IBS was indirectly associated with all measures of WLEs but not with family, mass media and social pressure (see Supporting Information, Table S2). The EDI-2\_BD and the eating behaviour

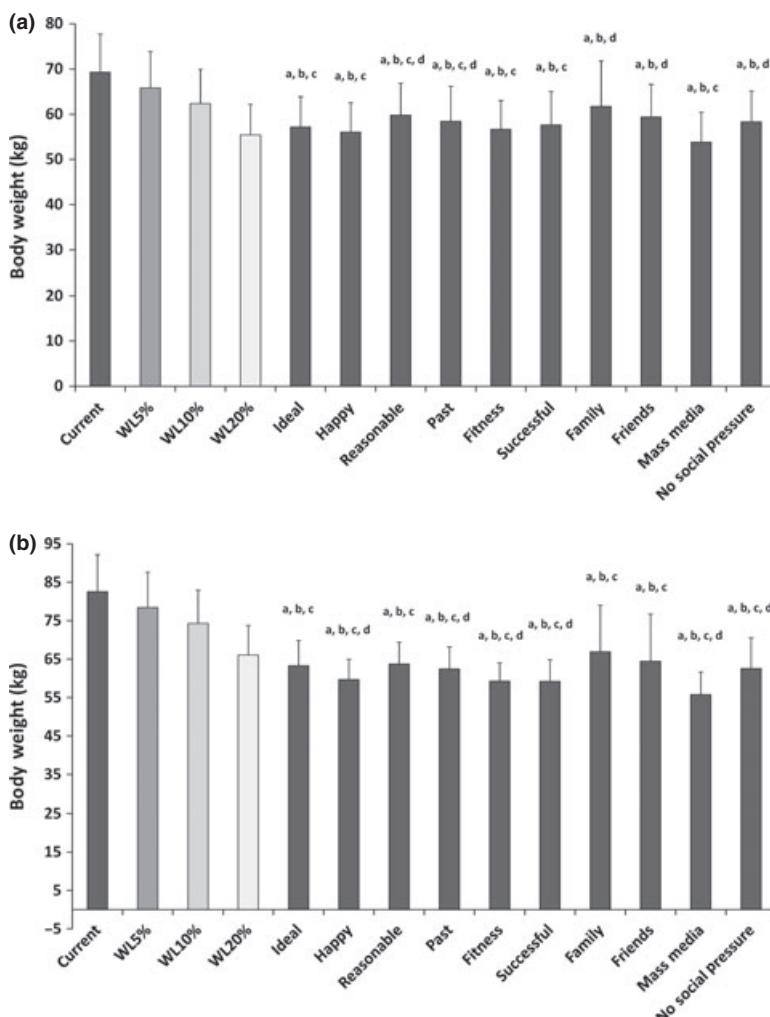
subscale scores (EAT-26, TFEQ) were not significantly associated with WLEs.

The regression lines of the relationship between BMI, CBS-IBS and WLEs had different slopes and intercepts, which suggested that subjects with the same BMI might have greater mass media WLEs compared to family WLEs, whereas their ideal WLEs would lie between these values (Fig. 2).

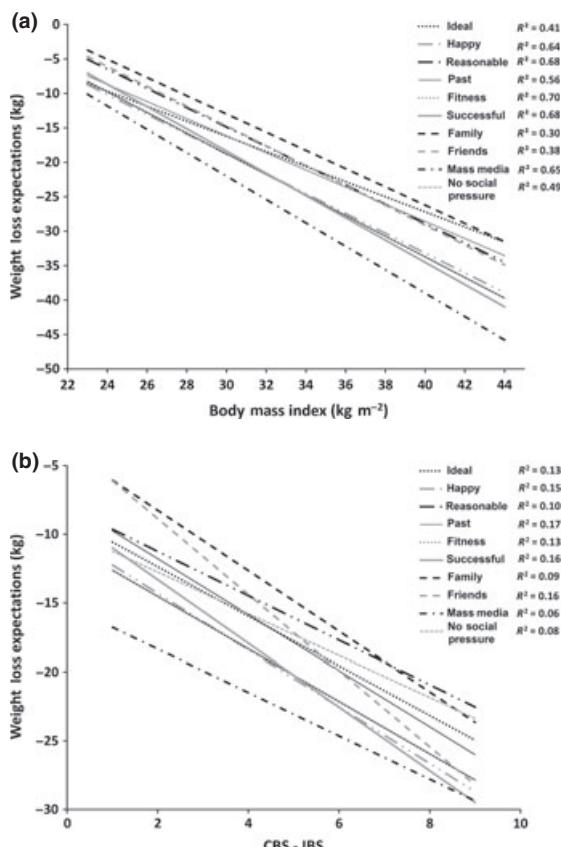
## Discussion

Mass media, friends and family had significant but opposite influences on WLEs. In addition, global evaluative body dissatisfaction, measured using the visual figure-choice method, showed a closer relationship with WLEs than the widely used but site-specific, nonvisual EDI\_BD.

A greater body size has been linked to a lower ideal body weight and the relationship appears to be modified by sex and age because young women are generally more preoccupied with their body image and reveal a greater



**Figure 1** Personal, lifestyle and social determinants of weight loss (WL) expectations in non-obese (a) and obese (b) young women. Weight loss expectations were compared with current body weight and with medically recommended 5% WL, 10% WL and 20% WL targets. Error bars indicate the SD. Wilcoxon signed rank test was used to compare individual WL expectations with current body weight and with medical WL targets (5%, 10% and 20%). a, statistically different from current body weight; b, statistically different from body weight after 5% WL; c, statistically different from body weight after 10% WL; d, statistically different from body weight after 20% WL.



**Figure 2** Linear regression between personal, lifestyle and social determinants of weight loss expectations with body mass index (BMI) (a) and body image perception [current body size (CBS) – ideal body size (IBS)] (b) in young women.  $R^2$  = coefficient of determination. Variables included in the regression analyses were normally distributed, with the exception of body image dissatisfaction (CBS-IBS). The transformation ( $\log, 1/n$ ) of CBS-IBS did not improve the normality profile. The variable was entered untransformed in the model and the results of this analysis may need to be interpreted with caution.

drive for thinness (Provencher *et al.*, 2007). This association was observed in the present study because body dissatisfaction (CBS-IBS) was significantly associated with WLEs. However, the relationship was not consistent across the multiple domains of WLEs, which appears to indicate that WLEs could be characterised by different constructs related to eating behaviour, dieting history, phenotypic characteristics, psychological traits and socio-cultural norms. The relationship between body image perception (CBS-IBS) and WLEs has not previously been reported. Dalle Grave *et al.* (2004, 2005) explored the association between body dissatisfaction assessed using the Body Uneasiness Test and found a significant association with WLEs (ideal, happy, reasonable, past).

Participants' contrasting perceptions of mass-media and family/peer-to-peer WLEs are an intriguing finding. The role of the mass media as a promoter of an ideal thin

body shape has inculcated unhealthy and unrealistic standards of thinness, particularly in young women (Tigge-mann and Pickering, 1996; Jaworowska & Bazylak, 2009; Calado *et al.*, 2010; Diedrichs *et al.*, 2011). We have transposed for the first time the social dimension of the 'mass media-body image association' to a dietetic clinic to evaluate their impact on setting unrealistic WLEs in non-obese and obese young women. Family and peers were perceived to be more supportive of lesser WLEs in both groups. We speculate that the more supportive WLEs could be linked to the theoretical model of social network of obesity (Christakis & Fowler, 2007). The model reported that overweight and obese subjects were more likely to have social interactions with individuals having the same body size (Christakis & Fowler, 2007). Within this self-selected social cluster of individuals with larger body size, a greater acceptance of obesity could become a social norm (Hebebrand *et al.*, 2000; Jacobson *et al.*, 2007; Speakman *et al.*, 2007).

We have reported once again the mismatch between medical and personal WLEs. A moderate weight loss such as the unanimously accepted '10% target' is frequently considered as a disappointing target by the majority of obese subjects (Wadden *et al.*, 2003; Fabricatore *et al.*, 2007; Provencher *et al.*, 2007). The current evidence is still unable to clarify whether the individual modification of WLEs can improve weight loss outcomes. As reported previously, high WLEs appear to be inconsistently associated with greater changes in body weight and higher attrition rates, whereas more realistic WLEs may be associated with greater long-term weight maintenance (Crawford & Glover, 2012). The relationship between WLEs, obesity and weight changes is a dynamic process and repeated evaluations are needed to understand the direction and magnitude of the changes.

The cross-sectional nature of the present study is an important limitation because the causality of the associations could not be ascertained. In addition, the results are limited to a selected population of young women attending a dietetic clinic and they may not be generalisable to other individuals. The results from this pilot study have to be considered as preliminary as a result of the small sample size.

Likert-based psychometric scales are valuable instruments for the assessment of evaluative, site-specific body dissatisfaction, although visual figure-choice scales can arguably provide a more sensitive index of global body size dissatisfaction (Thompson & Tantleff-Dunn, 1998; Pull & Aguayo, 2011). One plausible explanation for this finding is the greater sensitivity of the visual scale to subtle gradations in the degree of body dissatisfaction expressed because the EDI\_BD allows for a relatively narrower range of responses. Used together, these measures

provide complementary methods for assessing the relationship between WLEs and body weight dissatisfaction and contribute to the development of prediction models to plan more effective strategies for the treatment of excess adiposity.

### Conflicts of interest, sources of funding and authorship

The authors declare that there are no conflicts of interest. Department of Neuroscience, Faculty of Medicine, University of Naples 'Federico II', Italy, provided internal funding.

MS and CM wrote the manuscript. MS contributed to the design of the study, analysis of the data and revised the manuscript. GN, AP, EI and EM contributed to the collection of the data and to the critical revision of the manuscript. BCMS and EE contributed to the interpretation of the results and to the critical revision of the manuscript. AC contributed to the design and to the critical revision of the manuscript.

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### Supporting information

Additional Supporting Information may be found in the online version of this article:

**Data S1.** Methods.

**Table S1.** Anthropometric characteristics, body dissatisfaction and eating behaviour in young women categorised according to their body mass index (BMI).

**Table S2.** Association between body mass index (BMI), body dissatisfaction (CBS-IBS) and weight loss expectations in 44 young women.