

## **Chapter 1**

### **General Introduction**

## Section 1: Introduction

In recent years a disturbance in body image has been discussed frequently in relation to the eating disorders anorexia nervosa and bulimia nervosa. This is principally because concerns with body size and shape are striking features of these disorders. Indeed, it has been suggested that such concerns are of cardinal importance to the disorders. Nevertheless, similar concerns are also found among many women in the community.

The concept of body image may be considered to encompass two main aspects: perception of body size and concern with body shape. It is essential to distinguish between these two aspects because they are not synonymous or even necessarily related. A disturbance in body image may manifest in incorrectly assessing body size or in marked concern with body shape. A person may incorrectly assess their body size but be untroubled by this. Conversely, a person may correctly assess their body size but experience intense disparaging feelings towards their body shape. Researchers in the field of body image have not always drawn the distinction between perception of body size and concern with body shape. In order to evaluate the nature and significance of a disturbance in body image in anorexia nervosa and bulimia nervosa, it is first necessary to describe these disorders briefly.

### *Anorexia Nervosa*

Anorexia nervosa is predominantly found among adolescent females. It is characterised by extreme self-induced weight loss to the point of emaciation with no known physical cause, together with morbid concerns about shape and weight. Many symptoms accompany the weight loss, including severe dietary restraint, unusual eating patterns (eg. monotonous and ritualised), amenorrhoea and hyperactivity. Depressed mood is a common feature.

The importance of body image in anorexia nervosa was perhaps first recognised by Hilde Bruch (1962). She reported that these patients show *a disturbance in body image of delusional proportions*, that this disturbance is *pathognomic* to the disorder, being more important than weight loss, and that *a realistic body image is a precondition for recovery from the disorder* (Bruch, 1962, 1973). Many patients with anorexia nervosa report that they *feel fat* or claim that they *are fat*; and all show an intense fear of becoming fat and pursue a markedly thin body shape. Such concerns with shape are more extreme than those shown by normal young women, and are included in the major formal diagnostic criteria for anorexia nervosa, as shown in Table 1.1. (Full criteria are given in Appendix 1.)

---

Table 1.1  
Concerns with body shape necessary for a diagnosis of  
Anorexia nervosa

"....a morbid fear of becoming fat...."

(Russell,1970)

"....a desired body image of extreme thinness...."

(Feighner et al,1972)

"....intense fear of becoming obese, which does not diminish as weight loss progresses....Disturbance of body image, eg., claiming to 'feel fat' even when emaciated."

(DSM III; American Psychiatric Association,1980)

---

#### *Bulimic disorders*

In contrast with anorexia nervosa which was first described in the seventeenth century, bulimic disorders have been recognised only over the past decade. Many terms have been used to describe these disorders, but the two which have gained widest acceptance are *bulimia nervosa* (Russell,1979) which is principally the British term, and *bulimia* (DSM III, American Psychiatric Association,1980) which is principally the American term. The syndromes bulimia nervosa and bulimia are characterised by discrete episodes of overeating, usually called *binges*, which are experienced by the sufferer as being beyond voluntary control. Binges typically occur in secret, are distressing and evoke intense feelings of guilt and self-disgust (Fairburn et al,1986a). The majority of sufferers are of normal weight because they compensate for the fattening effects of overeating by inducing vomiting, abusing laxatives, vigorous exercising or strict dieting. Almost all who suffer from bulimia nervosa or bulimia are female.

The symptoms necessary for diagnosing bulimia nervosa and bulimia are slightly different. Russell (1979) included *a morbid fear of becoming fat* as a necessary feature of bulimia nervosa, but this is not essential for a diagnosis of bulimia. All patients with bulimia nervosa satisfy criteria for bulimia, whereas the converse is not true (Fairburn and Cooper,1984a). The full diagnostic criteria for the syndromes are given in Appendix 2.

#### *Three questions*

There are many similarities between anorexia nervosa and bulimia nervosa. Some patients with anorexia nervosa experience the bulimic episodes which define bulimia nervosa, and depressed mood is a common feature of both disorders. Both anorexia nervosa and bulimia nervosa are characterised by a marked fear of fatness and an extreme importance placed on achieving and maintaining a slim body shape. The distinction between concerns with body size and shape raises three main questions:

- (1) Do patients with eating disorders inaccurately perceive their body size?
- (2) If patients with eating disorders inaccurately perceive their body size and experience extreme concern with their body shape, do such disturbances distinguish these patients from women in the general population?
- (3) Are disturbances in body size perception and concern with shape clinically significant, in terms of their relationship with other symptoms, response to treatment, and outcome from the disorders?

The relevant research literature will be reviewed in an attempt to answer these questions.

## **Section 2: Perception of body size**

Various methods have been used to measure perception of body size. Some of these techniques have been reported to be methodologically unsound (eg. Swenson, 1968) and will not be discussed. The four most commonly used methods are the moveable calliper technique, the image marking method, the image distortion method, and the serial pictures method. Although the specific apparatus has varied between studies, the basic principles of each technique have remained the same.

### *The moveable calliper technique*

The apparatus for the moveable calliper technique basically consists of two moveable reference points, such as small points of light or markers. The subject adjusts the distance between the markers to correspond with the width of various areas of her body, such as the waist and hips. She makes her estimations either by controlling the markers herself, or by directing the experimenter to adjust them. The actual width of the subject is then measured, and estimated width is expressed as a percentage of actual width, where 100 percent represents correct estimation, percentages less than 100 represent underestimation, and percentages greater than 100 represent overestimation.

### *The image marking method*

Using the image marking method, a subject estimates her body size by marking a piece of paper fixed to a wall. She stands facing the paper, imagines that she is looking at her reflection, and marks the paper according to how large she thinks various areas of her body are. Again, estimated width is expressed as a percentage of actual width.

### *The image distortion method*

The image distortion method involves projecting an image of the subject onto a screen, usually a television monitor, a camera projector screen or a mirror. An optical or electrical device varies the width of the image, and the subject adjusts a distorted image to the size she thinks she is. Again, estimations are expressed as a percentage of correct size.



### *The serial pictures method*

Using the serial pictures method, a subject views a series of human figure drawings which range from very thin to very fat, and selects the picture which she thinks most closely resembles her own body size. A major problem with this method is that it is not possible to determine which picture is *correct* since the pictures are not of the subject's own body. It is therefore not possible to say whether the subject is accurate at estimating her body size. Nevertheless, selecting from a series of pictures is useful for studying desired size, and dissatisfaction with body size in terms of the discrepancy between perceived and desired size.

### *Disturbances in body size perception*

To determine whether patients with eating disorders show disturbances in body size perception it is necessary to compare their estimations with those of normal women. If patients alone were studied with no control population and it were found that they overestimated their size, this may be because *all* women show a similar tendency, perhaps due to the specific conditions of the testing situation. If this were the case then overestimation could not be considered to represent a disturbance in body size perception.

### **Perception of body size in anorexia nervosa**

Clinical reports suggest that at least some patients with anorexia nervosa may misperceive their body size, as is illustrated by a severely underweight patient reported by Garfinkel and Garner (1982a) who is quoted to have said:

I look in a full length mirror at least four or five times daily and I really cannot see myself as too thin. Sometimes after several days of strict dieting, I feel that my shape is tolerable, but most of the time, odd as it may seem, I look in the mirror and believe that I am too fat.

In recent years there has been considerable research into body size perception in patients with anorexia nervosa to determine whether these patients recognise their emaciated state.

### *The moveable calliper technique*

Slade and Russell (1973) were the first to assess systematically body size perception in patients with anorexia nervosa. In a seminal paper using the moveable calliper technique, they reported that these patients overestimated the width of certain areas of their body, whereas control subjects were accurate at estimating their own size. Since Slade and Russell's report many other studies have measured body size perception in anorexia nervosa, and findings have been less clear. Using the moveable calliper technique, all studies found that patients with anorexia nervosa overestimated their body size. Only 11 studies included a control group; and of the 11 case

controlled studies,<sup>1</sup> only six found that patients with anorexia nervosa overestimated their size significantly more than controls. Findings are summarized in Table 1.2. In the studies which presented estimations for individual body parts the means of these are presented.<sup>2</sup>

Table 1.2  
Body size overestimation in patients with anorexia nervosa using  
The moveable calliper technique

	Patients $\bar{X}$	Controls $\bar{X}$	P
Slade and Russell (1973)	135.9	97.3	*
Crisp and Kalucy (1974)	Insufficient data		NS <sup>1</sup>
Garner et al (1976)	Insufficient data		NS
Button et al (1977)	112.3	114.1	NS
Fries (1977)	136	109	***
Pierloot and Houeben (1978)	123.7	104.6	***
Casper et al (1979)	114.0	110.1	NS
Ben-Tovim et al (1984)	Insufficient data		NS
Norris (1984)	118.0	101.5	*** <sup>2</sup>
Fichter et al (1986)	Insufficient data		*
Proctor and Morley (1986)	142.1	110.8	*** <sup>3</sup>

\*  $P < .05$ ; \*\*\*  $P < .001$

1 Not significant

2 Although the author reported no significant difference between the estimations of patients with anorexia nervosa and controls, using Student's t-test the difference between these two groups is highly significant (Anorexia nervosa  $\bar{X}=118.0$ ,  $sd=11.5$ ,  $N=12$  versus controls  $\bar{X}=101.5$ ,  $sd=7.3$ ,  $N=12$ ;  $t=4.01$ ,  $df=22$ ,  $P < .001$ ).

3 This study reports different estimations using several sets of instructions. The results reported here refer to estimations using *ambiguous instructions*, which the authors believed were most similar to the instructions used in other studies.

#### *The image marking method*

Six studies have used the image marking method to compare estimations of body size of patients with anorexia nervosa with those of controls. All found that patients with anorexia nervosa overestimated their body size. However, similar to the moveable calliper technique, only three studies found that overestimation in these patients was significantly greater than that shown

<sup>1</sup> One other study (Thompson et al, 1986) compared the estimations of normal women with the estimations of women with eating disorders, some of whom appeared to be suffering from anorexia nervosa. However, the authors did not use conventional diagnostic criteria, making it difficult to interpret the results from this study.

<sup>2</sup> Since all studies measured estimations of chest, waist and hip size, the mean of these three body parts is given.

by normal young women. Findings are summarized in Table 1.3. As above, in the studies which presented estimations for individual body parts the mean of these is presented.

Table 1.3  
Body size overestimation in anorexia nervosa  
Using the image marking method

	Patients $\bar{X}$	Controls $\bar{X}$	P
Wingate and Christie (1978)	120.0	93.8	*
Pierloot and Houben (1978)	124.9	108.9	*
Strober et al (1979)	121.5	115.3	NS <sup>1</sup>
Meerman (1983)	117.2	111.3	NS
Whitehouse (1985)	112.0	102.2	NS
Fichter et al (1986)	Insufficient data		*

\*  $P < .05$ ;

<sup>1</sup> Not significant

#### *The image distortion method*

Thirteen studies used the image distortion method to measure body size perception among patients with anorexia, as shown in Table 1.4. However, it is difficult to interpret the results from one study (Huon and Brown, 1986), since the authors used several sets of experimental instructions for each subject and presented figurative data only from individuals, omitting group means (although the authors reported that the estimations of patients and controls were similar). Of the remaining 12 studies, only eight included a control comparison group; but for two of the studies which omitted a control group, comparison data may be derived from other published studies by the same authors (Garner et al, 1976; Touyz et al, 1984; personal communication). Of the 10 case controlled studies, six found that patients slightly overestimated their body size; and five found that estimations were significantly larger than those of normal women who usually either underestimated or were accurate.

Table 1.4  
Body size overestimation in anorexia nervosa using the  
Image distortion method

	Patients	Controls	P
Garner et al (1976)	100.5	95.8	**
Garfinkel et al (1977)	No control group		
Garfinkel et al (1978)	103.9	100.6	* <sup>1</sup>
Strober (1981)	No control group		
Freeman et al (1983)	106.7	103.4	*
Meerman (1983)	94.2	85.2	*
Touyz et al (1984)	99.5	101.0	NS <sup>2</sup>
Freeman et al (1985a)	106.4	102.9	NS
Garner et al (1985) <sup>3</sup>	104.2	95.8	**
Touyz et al (1985) <sup>4</sup>	105.5	101.0	NS
Whitehouse (1985)	100.7	96.1	NS
Fichter et al (1986)	Insufficient data		NS
Huon and Brown (1986)	Insufficient data		NS

\* P<.05; \*\* P<.01;

<sup>1</sup> (P<.06)

<sup>2</sup> Not significant

<sup>3</sup> Control group data from Garner et al (1976): personal communication

<sup>4</sup> Control group data from Touyz et al (1984): personal communication

Thus, with all three methods of measuring body size overestimation, patients with anorexia nervosa have sometimes been found to overestimate their body size more than normal young women, but frequently no difference has been found. However, studies have reported considerable variability in estimations within samples of patients. Not all overestimate; and some normal women overestimate. Therefore, body size overestimation is not particularly useful for distinguishing patients with anorexia nervosa from normal young women, and is certainly not pathognomic of the disorder.

#### *Factors associated with body size overestimation*

Since some patients with anorexia nervosa have been found to markedly overestimate their body size while others are either accurate or underestimate, it is important to examine the clinical significance of overestimation. Studies have found that using all three methods of measurement, body size overestimation before treatment is generally associated with a number of factors indicative of a severe illness. In addition, and perhaps more important, body size overestimation has been found to predict a poor recovery from the disorder. Factors which have most commonly



been associated with overestimation among these patients are summarized in Tables 1.5, 1.6 and 1.7.

---

Table 1.5  
Factors associated with body size overestimation using the  
Moveable calliper technique

Relapse after discharge	Slade and Russell	(1973)
	Crisp and Kalucy	(1974)
	Button et al	(1977)
	Goldberg et al	(1977)
Very low body weight	Button et al	(1977)
	Goldberg et al	(1977)
	Ben-Tovim et al	(1979)
	Casper et al	(1979)
Poor weight gain during treatment	Casper et al	(1979)
Fewer outpatient appointments	Casper et al	(1979)
More previous hospitalisations	Casper et al	(1979)
Vomiting	Button et al	(1977)
Loss of appetite	Goldberg et al	(1977)
	Casper et al	(1979)
Denial of illness	Goldberg et al	(1977)
	Casper et al	(1979)
Hyperactivity	Goldberg et al	(1977)
Psychosexual immaturity	Goldberg et al	(1977)
	Casper et al	(1979)

---

Thus, among patients with anorexia nervosa, body size overestimation assessed using the moveable calliper technique has most commonly been associated with a very low body weight and a poor outcome from the disorder.

---

Table 1.6  
Factors associated with body size overestimation using the  
Image marking method

Vomiting	Strober et al	(1979)
Low ego strength	Wingate and Christie	(1978)

---

Thus, there has been very little empirical investigation into factors associated with body size overestimation using the image marking method among patients with anorexia nervosa and no firm conclusions may be drawn.

---

Table 1.7  
Factors associated with body size overestimation using the  
Image distortion method

Poor recovery	Garfinkel et al	(1977)
Very low body weight	Garfinkel and Garner	(1984)
More previous hospitalisations	Garfinkel et al	(1977)
Restrained eating	Garfinkel and Garner	(1984)
High EAT <sup>1</sup> score	Garner and Garfinkel	(1981)
	Freeman et al	(1984)
Small desired size	Garner and Garfinkel	(1981)
Dissatisfaction with body shape	Garfinkel and Garner	(1984)
Depressed mood	Garner and Garfinkel	(1981)
	Strober	(1981)
Labile mood	Garfinkel and Garner	(1984)
Anhedonia	Garfinkel and Garner	(1984)
Anxiety	Garfinkel and Garner	(1984)
Low self-esteem	Garfinkel and Garner	(1984)
External locus of control	Garner et al	(1976)
Neuroticism	Garner et al	(1976)

1 Eating Attitudes Test (Garner and Garfinkel, 1979)

---

Thus, among patients with anorexia nervosa, body size overestimation using the image distortion method has been associated with factors suggesting a severe illness and a poor general psychological state.

#### *Change during treatment*

Despite the attention devoted to body size estimation in anorexia nervosa, comparatively few studies have examined change in estimations in relation to treatment for the disorder. One study (Slade and Russell, 1973) found that overestimation decreased with weight gain, but four studies (Crisp and Kalucy, 1974; Button et al, 1977; Garfinkel et al, 1979; Strober et al, 1979) reported that estimations were similar before and after weight gain. Thus, overestimation is a phenomenon which appears to persist.

### *Desired size and body size dissatisfaction*

A cardinal feature of anorexia nervosa is a strong desire for thinness. Seven studies have examined the desired size of these patients using the image distortion method by asking them to adjust the image to the size they would like to be. Two of these studies (Freeman et al,1985a; Touyz et al,1984) found that the desired size of patients with anorexia nervosa was significantly smaller than their perceived size; and four studies (Garfinkel et al,1979; Garner et al,1976,1985; Touyz et al,1985) found that desired size was similar to perceived size. Again, there was considerable variability within samples of patients, with some wishing to be much smaller than their perceived size, and others wishing to be much larger.

Dissatisfaction with body size is arguably more important than estimation of body size *per se*, since a subject may accurately estimate her size but experience a strong desire to be thinner. Conversely, a subject may overestimate but be unconcerned with her size. The discrepancy between perceived and desired size is a useful index of dissatisfaction with body size. Although only one study (Freeman et al,1985a) explicitly reported body size dissatisfaction in patients with anorexia nervosa, dissatisfaction scores may be derived from two others (Garner et al,1985; Touyz et al,1985). It is not possible to conduct statistical analysis on these data but it is apparent from Table 1.8 that patients with anorexia nervosa are no more dissatisfied (and perhaps are more satisfied) with their size compared with normal women. In a recapitulation of Hilde Bruch's (1962) ideas about the importance of body image disturbance in anorexia nervosa, it could be argued that it is this satisfaction with an emaciated body which may be considered to be a pathognomic feature of the disorder, since no other patients derive pleasure from extreme thinness.

No study has reported relationships between desired size, dissatisfaction with size and other clinical features of anorexia nervosa.

Table 1.8  
Body size dissatisfaction (perceived size minus desired size)  
in anorexia nervosa

	Anorexia Nervosa Patients %	Controls %
Freeman et al (1985a)	6.2	8.5
Garner et al (1985) <sup>1</sup>	-0.6	5.68
Touyz et al (1985) <sup>1</sup>	10.5	21.11

1 Control groups derived from Garner et al (1976) and Touyz et al (1984): personal communication.

### *Summary*

Although only some patients with anorexia nervosa overestimate their size more than normal young women, overestimation has been associated with factors indicating severe illness and predicts a poor recovery from the disorder. As a group, patients with anorexia nervosa appear to be more satisfied with their body size than normal young women, and this satisfaction with a thin body may represent a pathognomic feature of the disorder.

### **Perception of body size in bulimia and bulimia nervosa**

There have been nine studies of body size perception in patients with bulimia or bulimia nervosa, as shown in Table 1.9. However, it is difficult to interpret the results from two of these studies. The report by Williamson et al (1985) was based on the serial pictures method, and using this method it is not possible to say whether an individual overestimates her size since none of the pictures are of her own body. The study by Huon and Brown (1986), as mentioned above, did not present group mean estimations (although the authors reported no significant difference between the estimations of patients and controls). Of the remaining seven studies, two included no control group of normal women (Garner et al, 1985; Touyz et al, 1985), but it is possible to extrapolate control data from other studies published by the same authors (Garner et al, 1976; Touyz et al, 1984: personal communication). Among the seven case controlled studies, all except one found that patients with bulimia nervosa or bulimia overestimated their body size significantly



more than normal young women.

Table 1.9  
Perception of body size in patients with  
bulimia or bulimia nervosa

	Method	Patients	Controls	P
Norris (1984)	MCT <sup>1</sup>	118.5	101.5	* <sup>2</sup>
Freeman et al (1985a)	IDM <sup>3</sup>	106.5	102.9	*
Garner et al (1985)	IDM	107.6	95.8	***
Touyz et al (1985)	IDM	111.3	101.0	*
Williamson et al (1985)	SPM <sup>4</sup>	Insufficient data		*
Willmuth et al (1985)	MCT	115.7	103.7	**
Birtchnell et al (1985)	MCT	123.7	117.6	NS <sup>5</sup>
Huon and Brown (1986)	IDM	Insufficient data		NS
Whitehouse et al (1986)	IMM <sup>6</sup>	110.8	102.2	*
	IDM	103.1	96.1	**

\* P<.05; \*\* P<.01; \*\*\* P<.001

1 Moveable calliper technique

2 Although the author reported no significant difference between patients with bulimia and controls, using Student's t-test the difference between these two groups is significant (Bulimia patients=118.5, sd=12.6, N=12 versus Controls=101.5, sd=7.3, N=12; t=3.87, df=22, P<.001).

3 Image distortion method

4 Serial pictures method

5 Not significant

6 Image marking method

Five studies measured body size perception in patients with bulimia or bulimia nervosa and also in patients with anorexia nervosa, as shown in Table 1.10.<sup>3</sup> In one study patients with bulimia or bulimia nervosa overestimated their size significantly more than patients with anorexia nervosa; and in four studies there was no difference between the estimations of these two groups of patients. Findings are therefore equivocal but suggest no difference in estimations of body size between patients with anorexia nervosa and patients with bulimia.

<sup>3</sup> The study by Whitehouse (1985) did not compare the estimations of patients with bulimia and anorexia nervosa, but it is possible to derive the data from this study.

Table 1.10  
Body size estimation in patients with anorexia nervosa and bulimia

	Method	Anorexia Nervosa Patients	Bulimia Patients	P
Norris (1984)	MCT <sup>1</sup>	118.0	118.5	NS <sup>2</sup>
Freeman et al (1985a)	IDM <sup>3</sup>	106.4	106.5	NS
Garner et al (1985)	IDM	104.2	107.6	NS
Touyz et al (1985)	IDM	105.5	111.3	*
Whitehouse (1985)	IMM <sup>4</sup>	112.0	110.8	NS
	IDM	100.7	103.1	NS

\* P<.05

1 Moveable calliper technique

2 Not significant

3 Image distortion method

4 Image marking method

Although studies generally found that patients with bulimia nervosa or bulimia overestimated their size more than normal women and sometimes more than patients with anorexia nervosa, the extent of overestimation was not great. Indeed, the average overall difference across the studies between the estimations of patients and controls was smaller than the average range in estimations within samples of patients. Thus, although patients with bulimia or bulimia nervosa do overestimate their body size more than normal young women, this overestimation does not appear to represent a gross perceptual error, not all patients make this perceptual error, and some normal women do.

Since not all patients with bulimia or bulimia nervosa appear to overestimate their body size, it is relevant to assess the clinical significance of body size overestimation in terms of its association with other features of the disorder. There has been no systematic investigation into factors associated with body size overestimation among patients with bulimia or bulimia nervosa, but preliminary assessments made by some studies suggest that overestimation may be associated with demographic variables and clinical features of the disorder. Birtchnell et al (1985) found that overestimation was associated with a high body weight; Freeman et al (1983) found that overestimation was associated with a high score on the Eating Attitudes Test (Garner and Garfinkel, 1979) which measures disturbed eating attitudes and behaviour; and Whitehouse et al (1986) found that overestimation was associated with dissatisfaction with specific body parts. Only one study (Freeman et al, 1985a) has attempted systematically to identify a range of factors associated with overestimation, and the results from this study are difficult to interpret because

the authors used principal components analysis to examine factors related to body size perception "as a means of data reduction".

Thus, among patients with bulimia or bulimia nervosa the clinical significance of body size overestimation in terms of its association with other features of the disorder is not known.

#### *Desired size and body size dissatisfaction*

Although the clinical features of anorexia nervosa and bulimia nervosa are similar, it has been suggested that few patients with bulimia nervosa show the extreme desire for thinness which characterises anorexia nervosa (Fairburn and Cooper,1984a). Four studies have examined the desired size of patients with bulimia or bulimia nervosa. Three (Freeman et al,1985a; Garner et al,1985; Touyz et al,1985) used the image distortion method; and one (Williamson et al,1985) used the serial pictures method. All found that these patients wished to be significantly thinner than their perceived size.

However, as was shown in Table 1.8, it is usual for young women to wish to be thinner than their perceived size. It must therefore be established whether patients with bulimia nervosa or bulimia are more dissatisfied with their body size compared with normal women. Williamson et al (1985), using the serial pictures method, reported that these patients were six times more dissatisfied with their size compared with normal women. Only one other study reported body size dissatisfaction among these patients (Freeman et al,1985a), but data may be derived from two others (Garner et al,1985; Touyz et al,1985). Although there is insufficient information to conduct statistical analysis, Table 1.11 shows that in all three studies patients with bulimia were markedly more dissatisfied with their size compared with normal young women.

---

Table 1.11  
Body size dissatisfaction (perceived size minus desired size) in  
patients with bulimia

	Bulimia Patients	Controls
Freeman et al (1985a)	19.1	8.5
Garner et al (1985)	22.9	5.68
Touyz et al (1985)	29.4	21.1

---

There has been very little research into the relationship between body size dissatisfaction and other clinical features of bulimia. One study (Freeman et al,1983) reported that body size dissatisfaction was associated with depressed mood. Another study (Freeman et al,1985a) investigated the relationship between body size dissatisfaction and a range of other factors. However, as with these authors' report on body size overestimation, they used principal components analysis to identify related factors, thereby making it difficult to interpret factors associated with body size dissatisfaction. A further study by the same group (Freeman et al,1985b) reported that dissatisfaction with body size at the end of treatment predicted relapse six months later.

Thus, there has been some indication that patients with bulimia may be highly dissatisfied with their body size, and that such dissatisfaction may predict relapse from the eating disorder, but the general clinical significance of body size dissatisfaction among these patients is not known.

### *Summary*

Young women suffering from bulimia or bulimia nervosa have usually been found to overestimate their size more than normal young women, and their estimations have been found to be similar to those of patients with anorexia nervosa. Patients with bulimia appear to be markedly more dissatisfied with their size than normal women. There has been little systematic investigation into the clinical significance of body size overestimation and body size dissatisfaction among these patients, but preliminary evidence suggests that marked dissatisfaction may be related to depressed mood and may predict a poor recovery from the disorder.

### **Section 3: Methodological considerations**

Despite significant findings which have arisen from studies of body size perception, there have been many inconsistencies between studies. These may be at least partly due to methodological problems and procedural differences. In view of methodological limitations findings from many of the studies must be interpreted with caution.

#### *Reliability*

Reliability refers to whether a measure repeatedly produces the same results under the same testing conditions (Anastasi,1968). It is important because, if a measurement is not repeatable, its results cannot be interpreted. If subjects do not estimate their size similarly with repeated testing on the same apparatus in the absence of other changes, then it is illegitimate to regard estimations as meaningful.

The reliability of methods of measuring body size estimation has been assessed in two ways: i) by comparing estimations of the same body area made at different times; and ii) by comparing successive estimations of different body parts. Some variation in estimations is to be expected with both methods; first, because time may introduce meaningful changes which may not be readily obvious and which may affect estimations of body size; and second, because it does not



necessarily follow that if subjects overestimate the size of one body part they will equally overestimate the size of other body areas. Nevertheless, significant relationships between estimations made across time and between successive estimations of different body parts would suggest that a measure is reliable.

Using the moveable calliper technique, only one study has reported correlations between estimations made across time. Ben-Tovim et al (1984) found that for a small group of normal women, estimations repeated one hour and two weeks later were highly related to the initial estimation ( $r=.88$  and  $r=.87$  respectively). No study using the moveable calliper technique has reported reliability coefficients for patients with eating disorders; and no study has reported test re-test reliability coefficients using the image marking method. Using the image distortion method, three studies (Garfinkel et al, 1979; Freeman et al, 1984, 1985a) reported correlations between estimations of body size across time for patients with eating disorders and controls, and reliability coefficients ranged from .45 to .91 for estimations made up to two weeks apart. Thus, the moveable calliper technique has shown significant test re-test reliability for normal women, and the image distortion method has shown significant test re-test reliability for patients with eating disorders and normal women.

An alternative method of assessing the reliability of body size estimation would be to examine relationships between consecutive trials within the same testing session. This would indicate short term reliability, and would reduce the possibility of introducing changes in other factors which may affect estimations. Most studies included four trials for each estimation, ie. two trials from a wide stimulus and two from a narrow; but none reported the correlations between the two estimations made from a wide stimulus; or between the two estimations made from a narrow stimulus.

With studies which used the moveable calliper technique the average correlation between estimations of different body parts was .67 for patients with anorexia nervosa,<sup>4</sup> and  $r=.61$  for controls.<sup>5</sup> Using the image marking method, the average correlation between different body parts for patients with anorexia nervosa was .52,<sup>6</sup> and for control women  $r=.57$ .<sup>7</sup> For the image distortion method, estimations of frontal and profile images of body size were significantly related for patients and controls, with coefficients ranging from .59 to .86.<sup>8</sup> These findings imply that subjects who overestimate one area of their body also tend to overestimate other areas.

---

<sup>4</sup> Studies which provided the data for this figure are: Slade and Russell (1973), Button et al (1977), and Pierloot and Houben (1978).

<sup>5</sup> Studies which provided the data for this figure are: Slade and Russell (1973), Button et al (1977), Halmi et al (1977), and Pierloot and Houben (1978).

<sup>6</sup> Studies which provided the data for this figure are: Pierloot and Houben (1978) and Strober et al (1979).

<sup>7</sup> Studies which provided the data for this figure are Pierloot and Houben (1978) and Strober et al (1979).

<sup>8</sup> Studies which provided the data for these figures are: Meerman (1983) and Freeman et al (1985a).

### *Summary*

Since there is great variability in estimations of body size, it is important to assess the reliability of methods used to measure estimations. The moveable calliper technique and the image distortion method show a satisfactory degree of test re-test reliability for normal women; the image distortion method also shows a satisfactory degree of reliability for patients with eating disorders; but the reliability of the image marking method has not been established.

### *Validity*

Validity refers to whether a measure assesses the phenomenon it is intended to measure (Anastasi, 1968). With body size estimation, different estimations between subjects may reflect how subjects respond to the specific conditions of the testing situation rather than errors at estimating their body size. One way of assessing the validity of a measure is to examine its relationship with similar measures. Although four studies of body size perception used more than one method of measuring estimations (Garner et al, 1976; Pierloot and Houben, 1978; Meerman, 1983; Whitehouse, 1985), only two studies reported the relationship between different methods. Garner et al (1976) found that estimations of body size using the moveable calliper technique were moderately related to estimations using the image distortion method for patients with anorexia nervosa ( $r=.50$ ) and obese patients ( $r=.44$ ), but they found no significant relationship between the two methods for normal women. Whitehouse (1985) found that estimations using the image marking method were significantly related to estimations using the image distortion method for patients with anorexia nervosa ( $r=.72$ ), and for patients with bulimia ( $r=.47$ ); but again found no significant relationship between the two measures for normal women ( $r=-0.22$ ). Thus, different methods of measuring body size estimation have been found to be moderately related among patients with eating disorders but not among controls. These results provide some support for the concurrent validity of the moveable calliper technique, the image marking method and the image distortion method for patients with eating disorders but not for controls.

Another way of examining the validity of measures of body size estimation is to examine the relationships between these perceptual measures and conceptually related measures. Dissatisfaction with body shape measured by questionnaires has been found to be moderately related to body size overestimation using the image distortion method for patients with anorexia nervosa (Garfinkel and Garner, 1982a) and bulimia (Willmuth et al, 1985; Whitehouse et al, 1986). Dissatisfaction with body shape was found to be unrelated to body size overestimation using the moveable calliper technique for obese patients (Pearlson et al, 1981); and to body size overestimation using the image marking method for patients with anorexia nervosa, bulimia and controls (Whitehouse, 1985). These results provide some support for the concurrent validity of the image distortion method but not for the moveable calliper technique or the image marking method.

One advantage the image distortion method has over the moveable calliper technique and the image marking method is that it does not rely on a subject's memory of their body size for

imagining or visualising their image in order to estimate their size, which would appear to provide further support for the validity of this method.

### *Summary*

Estimations using different methods of measuring body size perception have been found to be moderately related to each other among patients with eating disorders but not among normal women. Dissatisfaction with specific body parts has been associated with body size overestimation using the image distortion method but not with overestimation using the moveable calliper technique or the image marking method. These findings provide some support for the concurrent validity of the image distortion method, but the validity of the moveable calliper technique and image marking method remain questionable.

### *Selection and classification of patients*

Important to all studies of patients is the way in which they are selected for inclusion in the research. Most of the British studies of body size perception assessed consecutive attenders at National Health Service clinics, which is a highly satisfactory method of recruitment since patients are not selected according to extraneous social variables such as social class or affluence. Many of the American studies are based on patients attending private clinics or women recruited by advertisements. These women are not necessarily representative of patients with eating disorders in general, and results should be interpreted cautiously with this in mind.

Different studies used different diagnostic criteria for classifying their patient series. This is particularly relevant to studies of patients who experienced bulimic episodes since a morbid fear of fatness is a necessary criterion for a diagnosis of bulimia nervosa but not for bulimia. Certain studies did not state which criteria were used for classifying their patients; and few reported important clinical details about patients, such as stage in treatment. Some studies even failed to present the relative weight in relation to age and height for patients with anorexia nervosa. Since many clinical features have been found to be related to body size overestimation, clinical differences between patient samples across studies may again contribute towards inconsistent findings.

Sample size has been a problem in several studies. Some reports were based on small samples of patients (eg. Norris, 1984), which makes results difficult to interpret in view of the large variance in estimations of body size.

### *Standardised experimental instructions*

When examining reports of body size estimation it is necessary to consider the instructions used to direct the subjects. Of the 30 studies discussed, only seven state that the same wording was used for all subjects. This is important because there are several indications that precise wording may affect estimations. Proctor and Morley (1986), in a rigorous examination of the effect of different sets of instructions, found that estimations changed with different instructions;



and that compared with control subjects, patients with anorexia nervosa were more influenced by the experimenter's words. Crisp and Kalucy (1974) had patients with anorexia nervosa re-estimate their body size after reminding them about their thinness and inviting each patient to *drop your guard*; and they found that estimations decreased. The authors interpreted more accurate estimations as reflecting more honest responses established in *an overall therapeutic relationship*, but it is possible that changed estimations were a compliant response to the perceived demands of the experimenter.

#### *Directional differences*

All studies which used the moveable calliper technique or the image distortion method included at least one trial with the stimulus moved from its widest setting and one trial from the narrowest setting; and then derived the mean estimation made from both directions. This procedure is known as the *method of limits* and is commonly used in psychophysics experiments (Woodworth and Schlosberg, 1950). Such experiments usually find that estimations made from an incrementing stimulus are smaller than estimations made from a decrementing stimulus, and this difference is discussed in a number of basic texts (eg. Woodworth and Schlosberg, 1950).

Only one study (Whitehouse et al, 1986) presented estimations of body size made from initially wide and narrow stimuli separately, and reported a large and significant difference between these two trials. Indeed, the difference between directions was greater than the difference between the averaged estimations of patients and controls. Other studies make no mention of directional differences, and their possible significance is not known.

#### *Control of equipment*

Studies which used the moveable calliper technique or the image distortion method differ in the degree of control the subject had over the equipment. Some studies allowed the subject to move the markers or image width, while in other studies the subject directed the experimenter to adjust the equipment. Some studies fail to state how the equipment was controlled. Compared with experimenter-controlled equipment, it is likely that when subjects themselves controlled the equipment they were able to make finer adjustments to their estimations, which suggests that their estimations across trials may have been more consistent.

A further methodological consideration concerns the speed at which the markers or image width changed when adjusted. Compared with slow moving markers or images, faster changing ones were likely to have introduced greater variability since the subject had less control over adjusting each estimation.

#### *More specific methodological considerations*

Other methodological considerations apply to specific methods of measuring body size perception.



Many variations on the moveable calliper technique have appeared in the literature, and differences between studies include discrete versus continuous markers; points of light versus pointers for the markers; the height of the markers in relation to the body part being estimated; mechanical versus electrically controlled markers; and a dark versus a lit testing room. These differences probably contribute towards contrary findings between studies.

With image distortion methods the amount of distortion has varied between studies. In an early report using this method (Allebeck et al,1976), image width varied by 15 percent of correct size. In subsequent studies greater degrees of distortion were introduced. Compared with limited levels of distortion, large degrees of distortion are likely to have introduced a greater range of responses. In certain studies the degree of narrow distortion was less than the degree of wide distortion. A greater degree of wide distortion is likely to shift the average estimation in the direction of a wide estimate ie. greater wide distortion will bias estimations in favour of overestimation, because there is greater potential to overestimate than underestimate.

In studies which used the image distortion method, some reported equipment which did not allow extreme levels of distortion and found that the extent of distortion constrained estimations, ie. *floor* and *ceiling* effects appear in the data. These are likely to influence the overall group mean. Other factors which possibly influence estimations are the size of the screen and the distance between the subject and the screen. Few studies report such details. With a large screen, adjusting image width makes little visible change to the image; whereas the same adjustment using a small screen markedly changes image size. Thus, compared with small screens, large screens produce a smaller range of estimations. It is noteworthy that Garner, Garfinkel and their colleagues used a life-size screen and equipment which allowed distortion of up to 20 percent compared with 50 percent in other studies, and reported the smallest range in estimations within groups of subjects. Distance from the screen also affects estimations. When a subject stands close to her image, adjusting image width introduces a visible change; whereas standing further from the screen, a larger adjustment is necessary to introduce a noticeable change in image width.

These factors undoubtedly help to explain why, using image distortion methods, some studies found that patients with eating disorders overestimated their body size, while other studies reported that patients were accurate or underestimated. It is essential to compare the estimations of patients with those of controls tested under precisely the same experimental conditions, since it is *relative* rather than *absolute* overestimation which is important.

A further problem specific to the image distortion method is that in some studies the clarity and contrast of the image in relation to the background varied across image widths. With some image distortion methods wide images were grey and poorly defined, as illustrated by Touyz and his colleagues (Touyz et al,1984). This is problematic for at least three reasons. First, poorly defined images make estimation more difficult since the size of the image is ambiguous. Second, change in contrast and clarity across different widths may provide a cue to correct size because wide images appear grey and blurred compared with a veridical image. Third, perception of size

is influenced by the contrast between foreground and background (Goldstein,1980). These considerations make it difficult to interpret estimations of body size in studies where the image was poorly defined.

### *Conclusions*

The numerous methodological considerations relevant to body size perception make it difficult to interpret the results from many of the studies and therefore findings should be regarded with caution. Most of the studies reported were methodologically unsatisfactory in at least one of the respects discussed. The many methodological differences between studies help to explain inconsistent findings and make it difficult to draw comparisons between studies. In view of the methodological problems discussed it would appear illegitimate to compare results between studies which used different methods of measuring body size perception, although many authors have done so.

## **Section 4: Concern with shape**

### *Concern with shape in anorexia nervosa*

Perhaps the central features of anorexia nervosa are an extreme fear of becoming fat which does not diminish with weight loss, and a relentless pursuit of thinness (Bruch,1973). Fatness is viewed as odious and reprehensible, and extreme importance is placed on achieving and maintaining a thin body shape (Fairburn et al,1986a). Although many young women regard slimness as a desirable attribute, patients with anorexia nervosa hold this attitude to an extreme degree, and weight and shape may become the sole measure of self-worth.

Despite the recognised importance of concern with shape in anorexia nervosa, this aspect of the disorder has received comparatively little research attention. Several studies have used repertory grids to examine attitudes towards shape among these patients (Crisp and Fransella,1972; Feldman,1975; Ben-Tovim et al,1977; Fransella and Crisp,1979; Fransella and Button,1983). These studies were intensive and were usually based on small samples of patients, with single case reports being common. Different studies specified different attitudes for evaluating concern with shape, making it difficult to compare findings between studies. Nevertheless, the technique is useful for eliciting maladaptive concerns about shape which may then be addressed in therapy. Other studies have used questionnaires to examine attitudes to body shape in anorexia nervosa. Buvat-Herbaut (1983) reported that one third of a group of patients with anorexia nervosa thought that certain parts of their body were too big. Garner et al (1983) reported that compared with normal young women, patients with anorexia nervosa were more dissatisfied with specific parts of their body.

Examining change in concern with shape during treatment for anorexia nervosa, Garner et al (1983) reported that recovered patients were no more dissatisfied with specific parts of their body than normal young women. Morgan and Russell (1975) used a standardised interview to measure

concern with appearance and fatness, and reported that several years after weight restoration patients still experienced a high level of concern with their shape, felt fat and were markedly afraid of becoming fat.

Despite the suggestions that patients with anorexia nervosa show a high level of concern with their shape, there has been no systematic empirical study of this concern, probably because there has been no satisfactory published measure of such concern in the clinical literature. All the reports on concern with shape among patients with anorexia nervosa have been based either on clinical observation (eg. Bruch,1962), or on unvalidated interviews with no standardised coding scheme (eg. Morgan and Russell,1975), or else simply examined dissatisfaction with specific body parts (eg. Garner et al,1983). Therefore, no firm conclusions about the significance of concern with shape among patients with anorexia nervosa may be drawn from these studies.

### *Summary*

The few studies of concern with shape among patients with anorexia nervosa suggest that these patients may be dissatisfied with their body shape, feel fat and are markedly afraid of becoming fat; and that a fear of fatness and feeling fat may persist after weight restoration. However, no study has used a satisfactory measure of concern with shape, and therefore no firm conclusions may be drawn about the nature, prevalence or course of concern with shape in anorexia nervosa.

### *Concern with shape in bulimia nervosa*

Similar to anorexia nervosa, perhaps the most prominent psychopathological features of bulimia nervosa are extreme views about the importance of attaining a slim body shape and a morbid fear of becoming fat (Cooper and Cooper,1987). Patients with bulimia nervosa are highly sensitive about their shape. In addition to frequent weighing, some patients assess their size by the tightness of their clothes, by scrutinizing themselves in a mirror and measuring their body size. Some find their appearance so unsightly and distressing that they shun any situation where they might see themselves, by avoiding communal changing rooms, undressing in the dark and even bathing while wearing clothes (Fairburn et al,1986a). Such extreme degrees of body shape disparagement are similar to those observed in some obese patients (Stunkard and Mendelson,1961,1967), although the majority of women with bulimia nervosa are of normal weight (Fairburn and Cooper,1984a).

Despite the apparent prominence of concern with shape in bulimia nervosa, there has been very little empirical study of this concern. Several studies used the *Body Dissatisfaction* subscale of the Eating Disorder Inventory (Garner et al,1983), a self-report measure, to examine dissatisfaction with specific body parts among patients with bulimia. One study (Whitehouse et al,1986) reported that these patients were more dissatisfied with their body than normal young women; and one other study (Garner et al,1985) reported that patients with bulimia were more dissatisfied with their body than patients with anorexia nervosa. Wooley and Kearney-Cooke



(1986) examined dissatisfaction with body parts before and after treatment for bulimia, and found that such dissatisfaction was markedly reduced at the end of treatment. This change was consistent with general clinical improvement and was maintained at follow-up one year later. There has been only one study of concern with shape in patients with bulimia or bulimia nervosa which has not examined dissatisfaction with specific body parts (Fairburn and Cooper, 1984a). In a study of a consecutive series of patients with bulimia nervosa who were assessed using a clinical interview, 29 percent experienced disparaging feelings towards their body shape and 86 percent showed an extreme fear of fatness, although few pursued extreme thinness. However, this study also had limitations, in that an unstandardised clinical interview was used with only limited attention paid to concern with shape. There has been no study of the specific nature of concern with shape in bulimia nervosa, together with antecedents and behavioural consequences of such concern.

#### *Summary*

There are preliminary indications that patients with bulimia nervosa show a high level of concern with their shape. However, similar to anorexia nervosa, no study has used a satisfactory measure of this concern. Therefore, no firm conclusions may be drawn about the nature and significance of concern with shape in bulimia nervosa.

#### *Concern with shape in the obese*

Concern with shape is often an important issue for obese people, which is not surprising given society's hostile attitudes towards being overweight. Indeed, Bruch (1973) suggested that our social climate praises slenderness to such a degree that it is astounding that not all fat people suffer from feelings of disgust and self-hatred. Many studies have shown that, compared with normal weight people, fat people are less liked and more negatively evaluated. For example, Worsley (1981) reported that among the many negative attributes applied to the obese, fat people were rated as stupid, unattractive, weak-willed, lazy and unhealthy.

Stunkard and Mendelson (1961, 1967) were perhaps the first to suggest that some obese people show a *disturbance in body image*, in that some of their patients interpreted a wide range of experiences with self-reference to their weight which became their sole concern. These obese patients viewed their body with hateful self-devaluation, finding it grotesque and loathsome, and believed that others viewed them with horror and contempt. The disturbance markedly affected their emotional and social behaviour, often leading to extreme social isolation. They were reported to feel immensely self-conscious of their appearance, experience extreme distress on seeing their reflection, were inhibited with and avoided the opposite sex, and envied thinner people. Often they avoided eating with others and in public places due to their shame at being fat, shunned social gatherings, were concerned about fitting through narrow spaces and about taking up too much space (such as when sharing a seat), avoided running, avoided communal changing rooms and swimming pools, and wore baggy clothes designed to hide their body (Stunkard and



Mendelson,1961,1967; Stunkard and Burt,1967; Stunkard,1976; Rand and Stunkard,1978). The intensity of these disparaging concerns with shape were noted to be labile, even over short periods of time. At times of positive affect such concerns were slight or absent. However, during a depressed mood, obesity became the focus of all unpleasant things in the overweight person's life, and the explanation of all their unhappiness (Stunkard and Burt,1961).

Not all obese people were noted to experience these disparaging feelings. Stunkard and Mendelson (1961,1967) observed that body shape disparagement was first manifest during late adolescence and that three setting conditions were necessary. First, the onset of obesity occurring before adulthood. Intense derogatory attitudes towards body shape were rarely found among those not obese during childhood. Second, *the presence of neurosis*, often following from a disturbed family environment. Third, negative evaluation of the obesity by significant people in the person's life. Stunkard and his colleagues concluded that the disturbed adolescent incorporated the derogatory views of his parents or peers into an enduring view of himself.

Concerns about body shape have been studied before and after weight reduction among the obese. Two studies reported that derogatory attitudes towards body shape experienced by obese patients decreased with weight loss (Kalucy and Crisp,1974; Solow et al,1974); three studies found that such feelings were unaffected by weight loss (Stunkard and Burt,1967; Schiebel and Castelnovo-Tedesco,1977; Pearlson et al,1981); and two studies reported that the obese still felt too large after reducing (Kalucy and Crisp,1974; Glucksman et al,1968). Stunkard and his colleagues concluded that *Body image disparagement is a chronic intractable disorder, strongly resistant to change* (Rand and Stunkard,1978). Discrepant findings between studies may reflect differences between the patient populations studied and different methods of treatment used. Some patients were treated primarily for their obesity while others were treated for emotional problems independent of their weight. Some were treated using a restricted diet, others by surgery involving no dietary restraint, and others by psychotherapy. Patient populations also differed considerably in the degree to which they were overweight.

#### *Summary*

Intense body shape disparagement has been found among a subgroup of obese patients and exerts a debilitating effect on sufferers' lives. This disturbance has been associated with receiving derogatory comments about weight and shape during childhood from family and peers. Although findings are inconsistent, there is some evidence to suggest that such feelings may remain unchanged by weight loss.

#### *Concern with shape among women in the community*

Similar to patients with eating disorders, women in the community often show concern with their shape, although usually in attenuated form. A slim body shape is important to most women and feeling fat is common (Rodin et al,1984; Wooley and Wooley,1984). In a study of a consecutive series of women attending a British family planning clinic, 60 percent of the sample

reported that they *persistently felt fat*, 21 percent were *terrified of being overweight*, and 18 percent were *preoccupied with the thought of having fat on their body* (Cooper and Fairburn,1983).

Many women are dissatisfied with their body shape. In a relatively early questionnaire survey carried out by the popular American magazine *Psychology Today* (Berscheid et al,1972,1973), women were generally found to be more dissatisfied with their body compared with men, although there was considerable variability in the degree of dissatisfaction. Younger responders were more dissatisfied than older responders. Those teased about their appearance during childhood were generally dissatisfied with their adult appearance, particularly when the teasing was by important people in the person's life, such as parents; and those who rated themselves as unattractive during adolescence also rated themselves as unhappy adults. These findings were consistent with Stunkard and Mendelson's (1961,1967) observations that body shape disparagement arises during adolescence and has enduring psychological effects.

A similar *Psychology Today* survey was conducted in 1985 and many of the earlier findings were replicated (Cash et al,1986). However, compared with 1972 female responders, 1985 responders were even less satisfied with their body, and such dissatisfaction was associated with bingeing, purging and dieting behaviour. Sixty-three percent of the 1985 responders were *afraid of becoming fat* (although no comparison rate was presented in the earlier study). In another American magazine survey, 75 percent of female responders reported *feeling fat* (Wooley and Wooley,1984).

Among the many other studies of body dissatisfaction among women, dissatisfaction has been associated with degree of overweight (Gray,1977), dieting and restrained eating (Dent,1981), (Blanchard and Frost,1983), emotional eating (Striegel-Moore et al,1986), anxiety (Johnson,1956; Goldberg and Folkins,1974) and low self-esteem (Secord and Jourard,1953; Berscheid et al,1973, Lerner et al,1976). A consistent finding is that depressed mood is an important associated factor: four studies (Goldberg and Folkins,1974; Berscheid et al,1973; Marsella et al,1981; Noles et al,1985) reported that, compared with women who were satisfied with their appearance, those who were dissatisfied were also more depressed. Thus, body dissatisfaction appears to be associated with disturbed eating behaviour and psychological distress.

Dissatisfaction with shape has been reported to begin early in life for the female population and is widespread by the teenage years (Buvat-Herbaut et al,1983; Clifford,1971; Crisp,1977; Davies and Furnham,1986; Druss and Silverman,1979; Dwyer et al,1967; Guggenheim et al,1977; Huenemann et al,1966; Nylander,1971; Rodin et al,1984; Wardle and Beales,1986). The degree of such dissatisfaction is much higher among girls than boys (Clifford,1971; Crisp,1977; Guggenheim et al,1977; Simmons and Rosenberg,1975; Nylander,1971; Wardle and Beales,1986), and boys show very different concerns with their body (Wardle and Beales,1986). Adolescent girls commonly experience their body as being too big (Clifford,1971, Buvat-Herbaut et al,1983; Crisp,1977; Guggenheim et al,1977; Huenemann et al,1966; Dwyer et al,1967), are preoccupied

with their body shape (Buvat-Herbaut et al,1983), and feel fat (Crisp,1977; Druss and Silverman,1979; Huenemann et al,1966; Nylander,1971; Wardle and Beales,1986). Such dissatisfaction is typically centred on fleshy body areas such as the waist, hips and thighs (Clifford,1971; Davies and Furnham,1986; Guggenheim et al,1977; Huenemann et al,1966). Dissatisfaction with body shape and feelings of fatness have been reported to motivate dieting which is widespread among teenage girls (Crisp,1977; Davies and Furnham,1986; Druss and Silverman,1979; Dwyer et al,1967; Guggenheim et al,1977; Huenemann et al,1966; Nylander,1971; Wardle and Beales,1986), and evokes feelings of guilt after eating (Wardle and Beales,1986). Thus, concern with fatness and shape appears to be widespread among teenage girls, and has been associated with dieting.

The prevalence of concern with shape has been reported to increase during the teenage years (Huenemann et al,1966; Nylander,1971). Simmons and Rosenberg (1975) found that 50 percent of girls aged between eight and 11 were dissatisfied with their body, and that dissatisfaction markedly increased during adolescence. However, one study (Wardle and Beales,1986) found that 12 year old girls showed a similar and distressing degree of concern with fatness compared with young women of 18. It is important to know the age at which such maladaptive concerns arise, but as yet no study has used an adequate measure to be able to determine when these feelings first emerge.

Similar to studies of concern with shape among patients with eating disorders, the findings from the studies of concern with shape among women in the community must be interpreted with caution. None used a satisfactory validated measure of such concern. They either examined dissatisfaction with body parts not specifically associated with shape (eg. Berscheid et al,1972), or examined perception of sexual attractiveness (eg. Cash et al, 1985), or simply asked respondents whether they *felt fat* (eg. Nylander,1971), or asked respondents to rate their shape on a simple scale of fatness (eg. Wardle and Beales,1986). The use of unsatisfactory measures of concern with shape makes results difficult to interpret.

#### *Summary*

It has been suggested that feeling fat and body dissatisfaction may be widespread among adult women and may be associated with disturbed eating behaviour and psychological disturbance. Dissatisfaction with appearance may also be common among teenage girls, but the age at which concern with shape arises is not known. These suggestions must be regarded with caution since they are based on unsatisfactory measures of concern with shape.

### **Section 5: Summary and general discussion**

From the many studies of body image which have appeared in the clinical literature, despite methodological problems and inadequate measures, findings suggest that some patients with eating disorders do appear to show *a disturbance in body image* in that they overestimate their body



size, are markedly dissatisfied with a normal size or are satisfied with a very thin size, place extreme importance on being slim, and may show a high level of concern with their shape. However, these factors are not invariably found among patients with eating disorders; and they have sometimes been found among normal women, and are therefore not pathognomic of the eating disorders.

The extreme importance placed on shape among patients with eating disorders may be more than simply one of many symptoms of the disorders and may be of central importance. Indeed, it has been argued that attitudes towards shape and weight constitute cardinal features of anorexia nervosa (Bruch, 1973) and bulimia nervosa (Fairburn et al, 1986a), which distinguish these conditions from other psychiatric disorders. Given these attitudes, many other features of the disorders become understandable, and it has been suggested that such attitudes may be important in maintaining many of the other symptoms (Fairburn et al, 1986a). Morgan and Russell (1975) observed that the most common reason why patients with anorexia nervosa refused to eat was because of a fear of becoming fat or feeling fat. Fairburn and his colleagues have suggested that, in view of the extreme importance placed on shape and weight, extreme dieting, frequent weighing, sensitivity to change in shape, self-induced vomiting and laxative abuse all become understandable. Even bulimic episodes can be interpreted as secondary to the fundamental values concerning shape and weight, since severe dietary restraint may precipitate overeating (Herman and Mack, 1975). The cognitive model of the maintenance of the eating disorders proposed by Fairburn and his colleagues has important implications for prognosis. As long as a patient with anorexia nervosa evaluates her self-worth according to how thin she is she will be at risk for further weight loss, particularly after weight restoration; and as long as a patient with bulimia nervosa has a marked fear of fatness she will attempt to avoid becoming fat by dieting, inducing vomiting and abusing laxatives, which in turn may encourage gross overeating. Consistent with Bruch's contention that a realistic body image is a precondition for recovery from anorexia nervosa, Fairburn et al (1986a) suggested that a change in maladaptive beliefs about shape may be necessary for a full and lasting recovery from an eating disorder.

Various ideas have appeared in the literature that attempt to explain why some patients with eating disorders overestimate their size, including a failure to adapt to a change in size following a change in weight (Slade, 1977), heightened concern with body size (Slade, 1977), denial of illness (Crisp and Kalucy, 1974), regression to a pre-menarchal state (Crisp and Kalucy, 1974), and a failure of cognitive development (Bruch, 1973). There is little empirical support for these ideas. However, one plausible explanation of body size overestimation encompasses the dysfunctional beliefs about shape described above. Garner and Garfinkel (1981) observed that patients with anorexia nervosa commonly show low self-esteem, and that body size and shape become a measure of self-evaluation. They suggested that if an individual equates low self-worth with fatness, and if she evaluates herself negatively, then she may see herself as larger than her true size. This hypothesis may be extended to include concern with fatness. Given that fatness is



negatively evaluated, then negative personal appraisal may lead to heightened concern with shape and feeling fat.

The suggested association between negative personal appraisal, concern with shape and disturbances in body size perception is consistent with ideas in Beck's cognitive model of depression. Depressed mood is almost invariably associated with a sense of general self-depreciation (Beck,1973). Beck observed that the distorted thinking which typically accompanies depression commonly extends to feelings about physical appearance, particularly among women. A depressed patient often becomes preoccupied with the thought of getting fat. Indeed, Beck stated that *Sometimes the patient may believe that (s)he has grown fat even though there is no objective evidence to support this* (Beck,1973). Given the belief that one is getting fat or is fat, it is conceivable that this may lead to overestimating body size. However, not all who are depressed feel fat or overestimate their size. Therefore there must be a mediating factor between feeling fat, body size overestimation and depressed mood. That mediating factor may be the overall importance placed on a slim body shape. Only when body shape is highly valued will negative self-appraisal exacerbate concern with shape and perception of body size. Body shape becomes the *Achilles heel* of such people. Conversely, if body shape is unimportant then negative self-appraisal will affect some other valued personal attribute. This hypothesis is consistent with Beck's observation that depressed mood is associated with increased concern with fatness more commonly among women than men, since slimness is more important to women (Rodin et al,1984).

The hypothesis that depressed mood may exacerbate concern with shape and disturbances in body size perception among women for whom shape is important, is consistent with some of the findings in the research literature. In the review presented above, depressed mood, dissatisfaction with body shape, and low self-esteem were all associated with body size overestimation among women with eating disorders, and all are conceptually related to negative self-appraisal. Furthermore, depression was also associated with dissatisfaction with body shape among women in general and not simply among patients with eating disorders.

Thus, disturbances in body size perception and a high level of concern with shape appear to be characteristic of women with eating disorders, but are also found among some women in the community. There is tentative evidence to suggest that these disturbances in body image may be related to depressed mood and feelings of general self-depreciation.

#### Section 6: General aims

In view of the suggested importance of body size and shape to many women, the general aim of the ensuing studies was to investigate further the nature and significance of body image disturbance in the form of disturbances in body size perception and concern with shape:

(1)

There has been considerable research into body size overestimation among patients with anorexia nervosa, and the reports by Garfinkel, Garner and their colleagues have been methodologically sound in terms of the measure used to assess body size perception and the samples studied. There has been no comparable research into body size perception among patients with bulimia nervosa. The few published studies on body size perception among patients with bulimic disorders have all been unsatisfactory for a number of reasons: they were based on poorly defined or poorly described samples of patients, or on a small number of patients, or included no control comparison group; or used a method of measuring body size perception whose test re-test reliability and concurrent validity are questionable; or did not examine aspects of body size perception aside from overestimation; or did not examine the significance of perceptual disturbances in terms of their relationship with other features of the disorder or outcome from the disorder.

Therefore, *the first aim was to investigate disturbances in body size perception among patients with bulimia nervosa and to examine the significance of such disturbances.*

(2)

Disturbances in body size perception have been found among patients with eating disorders but have also been found among some women in the community. It is therefore conceivable that factors common but not exclusive to the eating disorders may give rise to disturbances in body size perception. Several studies have suggested that depressed mood may be related to disturbances in body size perception among patients with eating disorders. A hypothesis was outlined above which suggested that negative self-appraisal as a symptom of depressed mood may be associated with disturbances in body size perception, particularly among women who place great importance on shape.

Therefore, *the second aim was to investigate the relationship between depressed mood, concern with shape and disturbances in body size perception among women in the community, and to test the hypothesis that depressed mood may exacerbate disturbances in body size perception.*

(3)

Although it has been alleged that concern with shape is of central importance in bulimia nervosa, there has been no satisfactory empirical study of such concern among these patients. This is at least partly because there has been no adequate measure of concern with shape.

Therefore, *the third aim was to develop a satisfactory measure of concern with shape, and to investigate the nature and significance of concern with shape among patients with bulimia nervosa in terms of the relationship between such concern and other clinical features of the disorder and outcome from the disorder.*

(4)

It has been suggested that a slim shape is important to the majority of women in the community, and that from a young age many show a high level of concern with their shape. There have been tentative indications that such concern may be related to demographic variables, disturbed eating behaviour and a number of indices of psychological distress. However, there has been no satisfactory study of the nature and significance of concern with shape among women in the community.

Therefore, *the fourth aim was to investigate concern with shape among women in the community in terms of the relationship between such concern, and demographic factors, behavioural disturbance and mental state.*