Appendices

Appendix 1

Research Diagnostic Criteria For Anorexia Nervosa

Russell's Criteria (1970)

(1) The patient's behaviour leads to a marked loss of body weight[1] and malnutrition. The abnormal behaviour consists of a studied and purposive avoidance of foods considered to be of a 'fattening nature', usually carbohydrate-containing foods such as sugar, bread and cereals, potatoes, pastries and confectionery. Often, but not invariably, the patient resorts to additional devices which ensure a loss of weight: self-induced vomiting or purgation, or excessive exercise. Occasionally a patient may indulge in bouts of overeating but these are usually compensated for by subsequent vomiting or prolonged starvation which effectively counteract the transient increase in the caloric intake.

(2) There is an endocrine disorder which manifests itself clinically by cessation of menstruation in those patients who are most commonly afflicted by the illness - adolescent girls or women during the reproductive period of life. The amenorrhoea is an early symptom and may precede the onset of weight loss; it is often very persistent and may last for several years.

In male subjects the equivalent symptom is a loss of sexual interest and lack of potency, but in adolescent boys it may be difficult to elicit these symptoms. In them, it is desirable to establish by means of hormone assays evidence for the hormonal disturbance which will be discussed later.

(3) There are aspects of the psychopathology which are characteristic of anorexia nervosa, irrespective of the patient's sex. They are essentially manifestations of a morbid fear of becoming fat, which may be fully expressed by the patient or may be more explicit in her behaviour. To safeguard herself against what the patient often calls 'losing control' - meaning not being able to stop eating - she strives to remain abnormally thin. She defends her attitude by asserting that to be thin is for her right and desirable, and she often appears to be absolutely convinced of the justification of her ideas. She loses all judgement as to her requirements for food and may protest that she is eating satisfactorily; she often over-estimates her body weight and sets herself a precise weight, above which she dare not rise.

There are, in addition, greatly varying psychopathological manifestations, especially depressive symptoms, but also obsessional, hysterical or phobic symptoms.

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[1] A weight loss of 25lb or more has been stipulated but this figure obviously should be modified according to the patient's weight before the onset of the illness and the body build.

Criteria of Feighner et al (1972)

For a diagnosis of anorexia nervosa, A through E are required.

(A) Age of onset prior to 25.

(B) Anorexia with accompanying weight loss of at least 25 percent of original body weight.

(C) A distorted, implacable attitude towards eating, food, or weight that overrides hunger, admonitions, reassurance and threats; eg. (1) Denial of illness with a failure to recognize nutritional needs, (2) apparent enjoyment in losing weight with overt manifestation that food refusal is a pleasurable indulgence, (3) a desired body image of extreme thinness with overt evidence that it is rewarding to the patient to achieve and maintain this state, and (4) unusual hoarding or handling of food.

(D) No known medical illness that could account for the anorexia and weight loss.

(E) No other known psychiatric disorder with particular reference to primary affective disorders, schizophrenia, obsessive-compulsive and phobic neurosis. (The assumption is made that even though it may appear phobic or obsessional, food refusal alone is not sufficient to qualify for obsessive-compulsive or phobic disease.)

(F) At least two of the following manifestations. (1) Amenorrhoea. (2) Lanugo. (3) Bradycardia (persistent resting pulse of 60 or less) (4) Periods of overactivity. (5) Episodes of bulimia. (6) Vomiting (may be self-induced).

DSM III Criteria (American Psychiatric Association,1980)

(A) Intense fear of becoming obese, which does not diminish as weight loss progresses.

(B) Disturbance of body image, eg. claiming to "feel fat" even when emaciated.

(C) Weight loss of at least 25 percent of original body weight or, if under 18 years of age, weight loss from original body weight plus projected weight gain expected from growth charts may be combined to make the 25 percent.

(D) Refusal to maintain body weight over a minimal normal weight for age and height.

(E) No known physical illness that would account for the weight loss.

Appendix 2

Research Diagnostic Criteria For Bulimic Disorders

Russell's Criteria for Bulimia Nervosa (1979)

The criteria which should all be satisfied in bulimia nervosa are that:

(1) The patients suffer from powerful and intractable urges to overeat;

(2) They seek to avoid the 'fattening' effects of food by self-induced vomiting or abusing purgatives or both;

(3) They have a morbid fear of becoming fat.

DSM III Criteria for Bulimia (American Psychiatric Association,1980)

(A) Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time, usually less that two hours).

(B) At least three of the following:

  (1) consumption of high-caloric, easily ingested food during a binge

  (2) inconspicuous eating during a binge

  (3) termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting

  (4) repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or use of cathartics or diuretics

  (5) frequent weight fluctuations greater than ten pounds due to alternating binges and fasts

(C) Awareness that the eating pattern is abnormal and fear of not being able to stop eating voluntarily.

(D) Depressed mood and self-deprecating thoughts following eating binges.

(E) The bulimic episodes are not due to Anorexia Nervosa or any known physical disorder.

DSM III-R Criteria for Bulimic Disorder (A.P.A.,1987)

(A) Recurrent episodes of binge-eating (rapid consumption of a large amount of food in a discrete period of time, usually less than two hours).

(B) During the eating binges there is a feeling of lack of control over the eating behaviour.

(C) The individual regularly engages in either self-induced vomiting, use of laxatives, or rigorous dieting or fasting in order to counteract the effects of the binge-eating.

(D) A minimum average of two binge-eating episodes per week for at least three months.

(E) Persistent overconcern with shape and weight.

Appendix 3

Body Shape Questionnaire Interview

Many women feel fat at times and have negative feelings about their body. I am trying to understand this phenomenon in more detail, and am asking people a number of questions about it.

Do you sometimes feel fat?

What is this feeling like?

What does this feeling consist of?

Are there particular thoughts which go through your mind when you feel fat, such as specific phrases or sentences?

Do you feel this about your whole body, or about certain parts of your body?

When you feel fat does it concern your:

face

arms above the elbow

waist

stomach

hips

buttocks

thighs

calves

any where else

And what precisely are the thoughts you have about .... (body part)?

Do you have other negative feelings or thoughts about your body? (eg. about being unattractive or ugly?)

Are you ever unhappy about the relative proportions of your body?

What is it about feeling fat that (their words: eg. upsets) you in this way?

Why does it (upset) you?

(examples with which to prompt the subject)

Some people are concerned about fat showing, or bulges showing through their clothes. Is this something that concerns you?

If they feel fat, some people don't like the texture of their body. They feel that their flesh is not firm, that their flesh wobbles, or that their flesh is too dimply. Do you ever feel this way?

Some people say that when they feel fat they are concerned about their body taking up too much space. They are worried that they will not fit between spaces such as doorways, or barriers, or won't fit into chairs such as cinema seats. Do you ever feel this way?

Are there any particular circumstances which are likely to make you feel fat, or provoke these negative feelings about your body?

Do ....(the circumstances given by the subject) always provoke negative feelings about your body shape, or do the feelings occur only sometimes?

(If only sometimes) Why?

Does a small increase in weight make you feel fat?

How small an increase makes you feel this way?

If the clothes you are wearing fit tighter than usual, does this make you feel fat?

Would any of the following make you feel fat?

being in the bath or shower

seeing yourself in a mirror or shop window

certain times during the menstrual cycle

Do any social situations make you feel fat? What about:

being with women thinner than yourself

being with certain men

using communal changing rooms

wearing a bathing suit, or other revealing clothing

Do food related situations ever make you feel fat?

Do you ever feel fat after eating?

Does the quantity or type of food influence how you feel about your body shape?

Do even innocuous comments about your appearance make you feel fat? Like what?

Do emotional feelings ever make you feel fat? You may feel miserable or anxious about something in life aside from your weight or shape, such as your work or relationships with your family. What about feeling bored, or tired? Do any of these make you feel fat?

When you feel fat, how much does it affect your behaviour?

Do you carry on as usual, or does it affect what you might otherwise do?

Does it affect:

going out

meeting people

talking to people

your general self-confidence

the way you dress

Does feeling fat affect your eating?

Do you eat more, or less, or eat different sorts of food?

Does feeling fat affect your concern about how much you weigh?

Do you weigh yourself more/less often than usual?

Does feeling fat affect you in any other way?

You have described feeling fat and how it affects your life. Can you tell me how often you feel this way?

How often do you have these thoughts or feelings about.... (subject's own words)?

How long do these thoughts or feelings usually last?

How strongly do you feel these things?

Do these thoughts or feelings vary in intensity?

Appendix 4

Topics eliminated in the development of the BSQ

If something upsetting happens I tend to blame it on my shape.

After eating I immediately feel as if everything I have eaten puts weight on my hips, thighs and bottom.

I never feel good about my body; at best, I think it is O.K.

Feeling lonely can make me think about my shape and feel fat.

Feeling nervous about something can make me feel fat.

Having no exercise makes me feel fat.

I feel fat and bloated just before my menstrual period.

I feel slimmer when my skin is tanned.

If my body shape was O.K. what I weigh would still be important.

Any increase in weight makes me feel fat.

Any decrease in weight makes me feel slimmer.

Feeling fat makes me more worried about what I weigh.

When I feel fat I weigh myself more often than usual.

When I feel fat I avoid weighing myself.

I feel bad about my shape even when I am with women fatter than myself.

I feel less conscious about my body shape when I am with my closest friends.

I feel more self-conscious about my shape when I am with strangers.

Wearing tight clothes makes me feel fat.

I feel fat if my normal clothes fit tighter than usual, even if they shrink after being washed.

I feel thinner wearing a skirt compared with trousers.

Whilst shopping for trousers, if I was to try on a pair and found that I needed a size larger than usual, it would make me feel fat, even though it is possible that the trousers were made too small.

Feeling fat makes me take a lot of trouble over my appearance.

Feeling fat makes me not bother about what I look like.

Feeling fat stops me from enjoying sex.

Feeling fat makes me less confident.

When I feel fat I don't want to be with anyone.

Appendix 5

The 51-item Body Shape Questionnaire

We should like to know how you have been feeling about your appearance over the past FOUR WEEKS. Please read each question and circle the appropriate number to the right. Please answer all the questions.

OVER THE PAST FOUR WEEKS

	Never	Rarely	Sometimes	Often	Very Often	Always
1) Has feeling bored made you brood about your shape?	1	2	3	4	5	6
2) Have you been so worried about your shape that you have been feeling that you ought to diet?	1	2	3	4	5	6
3) Have you thought that your thighs, hips or bottom are too large for the rest of you?	1	2	3	4	5	6
4) Have you been afraid that you might become fat (or fatter)?	1	2	3	4	5	6
5) Has feeling physically exhausted made you feel happy (or less unhappy) about your shape?	1	2	3	4	5	6
6) Have you felt that your body was horrible, unattractive or ugly?	1	2	3	4	5	6
7) Has eating even a small amount of food made you feel fat?	1	2	3	4	5	6
8) Have you worried about your flesh being not firm enough?	1	2	3	4	5	6
9) Has feeling full (eg. after eating a large meal) made you feel fat?	1	2	3	4	5	6
10) Have you felt so bad about your shape that you have cried?	1	2	3	4	5	6

	Never	Rarely	Sometimes	Often	Very Often	Always
11) Have you gone home to change your clothes because you have felt fat?	1	2	3	4	5	6
12) Have you felt that if you were happy with your shape everything in your life would be better?	1	2	3	4	5	6
13) Have you avoided running because your flesh might wobble?	1	2	3	4	5	6
14) When things have gone wrong have you felt particularly bad about your shape?	1	2	3	4	5	6
15) Has being with thin women made you feel self-conscious about your shape?	1	2	3	4	5	6
16) Have you worried about your thighs spreading out when sitting down?	1	2	3	4	5	6
17) Have you noticed the shape of other women and felt that your own shape compared unfavourably?	1	2	3	4	5	6
18) Have you worried about fitting through narrow spaces (eg. between two pieces of furniture)?	1	2	3	4	5	6
19) Have you felt ashamed of your body?	1	2	3	4	5	6
20) Have you felt that it is not fair that other women are thinner than you?	1	2	3	4	5	6
21) Has thinking about your shape interfered with your ability to concentrate (eg. while watching television, reading, listening to conversations)?	1	2	3	4	5	6
22) Has being naked, such as when taking a bath, made you feel fat?	1	2	3	4	5	6
23) Have you felt disgusted with yourself because of your shape?	1	2	3	4	5	6
24) Have you avoided wearing clothes which make you particularly aware of the shape of your body?	1	2	3	4	5	6

	Never	Rarely	Sometimes	Often	Very Often	Always
25) Has worry about your shape made you feel you ought to exercise?	1	2	3	4	5	6
26) Have you imagined cutting off fleshy areas of your body?	1	2	3	4	5	6
27) Has eating sweets, cakes, or other high calorie food made you feel fat?	1	2	3	4	5	6
28) Have you not gone out to social occasions (eg. parties) because you have felt bad about your shape?	1	2	3	4	5	6
29) Have you breathed in to make yourself look slimmer?	1	2	3	4	5	6
30) Has worry about your shape made you diet?	1	2	3	4	5	6
31) Have you felt happiest about your shape when your stomach has been empty (eg. in the morning)?	1	2	3	4	5	6
32) Have you thought that you are the shape you are because you lack self-control?	1	2	3	4	5	6
33) Have you worried about your flesh being dimply?	1	2	3	4	5	6
34) Have you vomited in order to feel thinner?	1	2	3	4	5	6
35) When in company have you worried about taking up too much room (eg. sitting on a sofa, or a bus seat)?	1	2	3	4	5	6
36) Have you thought about the amount of fat compared with the amount of muscle in your body?	1	2	3	4	5	6
37) Have you felt excessively large and rounded?	1	2	3	4	5	6
38) Have complimentary comments about your clothes or shape made you feel fat?	1	2	3	4	5	6
39) Have you pinched areas of your body to see how much fat there is?	1	2	3	4	5	6
40) Has seeing your reflection (eg. in a mirror or show window) made you feel bad about your shape?	1	2	3	4	5	6

	Never	Rarely	Sometimes	Often	Very Often	Always
41) Have you worried about other people seeing rolls of flesh around your waist or stomach?	1	2	3	4	5	6
42) Have you taken laxatives in order to feel thinner?	1	2	3	4	5	6
43) Have you measured parts of your body to see how big they are?	1	2	3	4	5	6
44) Have you avoided situations where people could see your body (eg. communal changing rooms or swimming baths)?	1	2	3	4	5	6
45) Have you been particularly self-conscious about your shape when in the company of other people?	1	2	3	4	5	6
46) Has worry about your shape made you feel miserable about your whole life?	1	2	3	4	5	6
47) Have you worn clothes designed to hide your shape from other people?	1	2	3	4	5	6
48) Has being among children made you feel that your body was too large?	1	2	3	4	5	6
49) Have you exercised in response to feeling unhappy about your shape?	1	2	3	4	5	6
50) Have you been upset about your body being pear-shaped?	1	2	3	4	5	6
51) Have you avoided fat people because they make you feel bad about your shape?	1	2	3	4	5	6

Appendix 6

Fear of fatness measure

How afraid are you of becoming fat?

(1) Not at all

(2) Slightly

(3) Moderately

(4) Markedly

Appendix 7

The importance of being slim measure

How important to you is being slim?

(1) Not at all

(2) Slightly

(3) Moderately

(4) Extremely

Appendix 8

The prevalence of bulimia nervosa: a replication study

Introduction

Since the eating disorders bulimia nervosa (Russell,1979) and bulimia (American Psychiatric Association,1980) were first described, there have been numerous epidemiological surveys designed to assess their prevalence. Many of these studies have suggested high prevalence rates. For example, among young female American women the prevalence of bulimic episodes has been estimated to be around 60 percent, and the prevalence of the syndrome DSM III bulimia has been estimated at around 19 percent (Halmi et al,1981).

Against this and similarly alarming findings, two studies produced significantly lower rates. One of these was British (Cooper and Fairburn,1983), and was conducted in 1981/82. In a questionnaire survey of women attending a family planning clinic, 20.9 percent reported binge-eating, defined as current episodes of *uncontrollable excessive eating;* 2.9 percent used self-induced vomiting to control their weight; and 1.9 percent fulfilled self-report diagnostic criteria for bulimia nervosa. Three criteria were used to define *probable bulimia nervosa:* i) binge eating; ii) self-induced vomiting for weight control; iii) a morbid fear of fatness, defined by a response of at least *Often* to the item on the Eating Attitudes Test (Garner and Garfinkel,1979) concerning *being terrified of being overweight.* The other study (Pyle et al,1983) was American, and used a questionnaire to survey a large number of college students. One percent fulfilled strict DSM III (1980) criteria for bulimia, ie. weekly binge eating episodes, plus self-induced vomiting or laxative abuse.

The authors of the American study recently replicated their earlier study (Pyle et al,1986), and using a similar questionnaire survey they reported a three-fold increase in the prevalence of bulimia nervosa ie. 3.2 percent. However, this finding is somewhat questionable since the two American studies used slightly different diagnostic criteria to define bulimia.

The aim of the present study was to investigate the prevalence of bulimia nervosa, and to compare the prevalence with that reported by Fairburn and Cooper in 1983.

Method

Over a four week period in 1986 all consecutive attenders at two Cambridge family planning clinics were asked to complete questions indicating their current age, height and weight; and to indicate how afraid they were of becoming fat, rated on a 4-point scale of *Not at all, Slightly, Moderately,* and *Extremely (Appendix 6).* They were also asked to indicate whether they currently experienced episodes of uncontrollable and excessive overeating and whether they currently used self-induced vomiting as a means of weight control. All replies were anonymous. These questions were similar to those used in the earlier British prevalence study by Cooper and Fairburn (personal communication).

Results

Three-hundred and seventy-one consecutive attenders at the clinics were asked to complete the questions. Thirteen (3.5 percent) refused. Two-hundred and seventy-six (74.4 percent) completed the questions while waiting to see the doctor, and the remainder (82) were asked to

return the questions by post. Only 55 complied. Thus, the response rate to questions completed in the clinic was much higher than those returned by post (95.5 percent versus 67.1 percent). A comparison was made of the demographic features and eating habits of the women who completed the questions in the clinic and those who returned them by post. Since there were no differences between the two groups (P>.05), the full sample of 331 was examined (ie. 89 percent of the original 371 women approached).

As can be seen from Table 1, these women were very similar to those in the earlier study in terms of age, weight and eating habits. In the present study a morbid fear of fatness was defined as a response of *Markedly* to the question about a fear of becoming fat. Six of the 331 women reported at least two current bulimic episodes over the past month, and used self-induced vomiting to control their weight and had a morbid fear of fatness. This represents a prevalence rate of probable bulimia nervosa of 1.8 percent, which is very similar to the rate of 1.9 percent reported in the earlier British study.

Table 1
A comparison of the 1981/82 sample with the 1986 sample

	1981/82 (N=369) %	1986 (N=331) %	χ^2	P
Age				
15-19	19.8	27.7	6.5	>.05
20-24	40.8	36.0		
25-29	22.8	20.1		
30-34	10.1	10.1		
>35	6.5	6.1		
MPMW				
<75	0.0	0.3	7.6	>.05
75-85	7.4	11.4		
86-100	52.3	55.7		
101-115	33.7	26.8		
>115	6.6	5.8		
Eating behaviour				
Bulimic episodes	20.9	27.1	3.50	>.05
Self-induced vomiting	2.9	2.4	0.09	>.05
Probable bulimia nervosa	1.9	1.8	0.04	>.05

Discussion

This study replicates an earlier British survey concerning the prevalence of bulimia nervosa. Both studies used similar measures on samples very similar in demographic features. Similar prevalence rates were found for bulimic episodes, self-induced vomiting and probable bulimia nervosa.

It could be argued that a comparison of syndrome prevalence is illegitimate since the later study defined *a morbid fear of fatness* in a different way to the first. Since in both the present study and the first (personal communication) no individual reported disturbed eating in the absence of a morbid fear of fatness; and in both studies many more women reported a fear of fatness than bulimic episodes and self-induced vomiting, it is unlikely that the different definitions had influence on the syndrome prevalence figures.

It is unclear why there was a difference in prevalence rates between the two American studies but not between the two British studies. One reason may be a genuine difference in the prevalence of disturbed eating behaviour between the two countries. Another reason may be that different diagnostic criteria and assessment measures were used in the American and British studies. Thus, the epidemiology of bulimia nervosa will remain uncertain until common diagnostic criteria and research methods are used.

Appendix 9

Items eliminated from the BSQ by the correlational method

(1)

(i) *Retained:* Have you felt ashamed of your body?

(ii) *Dropped:* Have you felt that your body was horrible, unattractive or ugly?

(2)

(i) *Retained:* Have you felt that if you were happy with your shape everything in your life would be better?

(ii) *Dropped:* When things have gone wrong have you felt particularly bad about your shape?

(3)

(i) *Retained:* Have you felt disgusted with yourself because of your shape?

(ii) *Dropped:* Have you felt that if you were happy with your shape everything in your life would be better?

(4)

(i) *Retained:* Has being naked, such as when taking a bath, made you feel fat?

(ii) *Dropped:* Have you felt disgusted with yourself because of your shape?

(5)

(i) *Retained:* Have you avoided wearing clothes which make you particularly aware of the shape of your body?

(ii) *Dropped:* Have you worn clothes designed to hide your shape from other people?

(6)

(i) *Retained:* Have you been particularly self-conscious about your shape when in the company of other people?

(ii) *Dropped:* Has worrying about your shape made you feel miserable about your whole life?

Appendix 10

Items eliminated from the BSQ by the discrimination method

(1) Has feeling physically exhausted made you feel happy (or less unhappy) about your shape?

(2) Have you breathed in to make yourself look slimmer?

(3) Have you thought about the amount of fat compared with the amount of muscle in your body?

(4) Have you measured parts of your body to see how big they are?

(5) Have you exercised in response to feeling unhappy about your shape?

(6) Have you been upset about your body being pear-shaped?

Appendix 11

Items eliminated from the BSQ by the endorsement method

(1) Have you gone home to change your clothes because you have felt fat?

(2) Have you worried about fitting through narrow spaces (eg. between two pieces of furniture)?

(3) Have complimentary comments about your clothes or appearance made you feel fat?

(4) Has being among children made you feel that your body was too large?

(5) Have you avoided fat people because they make you feel bad about your shape?

Appendix 12

The 34-item Body Shape Questionnaire

We should like to know how you have been feeling about your appearance over the past FOUR WEEKS. Please read each question and circle the appropriate number to the right. Please answer all the questions.

OVER THE PAST FOUR WEEKS

	Never	Rarely	Sometimes	Often	Very Often	Always
1) Has feeling bored made you brood about your shape?	1	2	3	4	5	6
2) Have you been so worried about your shape that you have been feeling that you ought to diet?	1	2	3	4	5	6
3) Have you thought that your thighs, hips or bottom are too large for the rest of you?	1	2	3	4	5	6
4) Have you been afraid that you might become fat (or fatter)?	1	2	3	4	5	6
5) Have you worried about your flesh being not firm enough?	1	2	3	4	5	6
6) Has feeling full (eg. after eating a large meal) made you feel fat?	1	2	3	4	5	6
7) Have you felt so bad about your shape that you have cried?	1	2	3	4	5	6
8) Have you avoided running because your flesh might wobble?	1	2	3	4	5	6
9) Has being with thin women made you feel self-conscious about your shape?	1	2	3	4	5	6
10) Have you worried about your thighs spreading out when sitting down?	1	2	3	4	5	6
11) Has eating even a small amount of food made you feel fat?	1	2	3	4	5	6
12) Have you noticed the shape of other women and felt that your own shape compared unfavourably?	1	2	3	4	5	6

	Never	Rarely	Sometimes	Often	Very Often	Always
13) Has thinking about your shape interfered with you ability to concentrate (eg. while watching television, reading, listening to conversations)?	1	2	3	4	5	6
14) Has being naked, such as when taking a bath, made you feel fat?	1	2	3	4	5	6
15) Have you avoided wearing clothes which make you particularly aware of the shape of your body?	1	2	3	4	5	6
16) Have you imagined cutting off fleshy areas of your body?	1	2	3	4	5	6
17) Has eating sweets, cakes, or other high calorie food made you feel fat?	1	2	3	4	5	6
18) Have you not gone out to social occasions (eg. parties) because you have felt bad about your shape?	1	2	3	4	5	6
19) Have you felt excessively large and rounded?	1	2	3	4	5	6
20) Have you felt ashamed of your body?	1	2	3	4	5	6
21) Has worry about your shape made you diet?	1	2	3	4	5	6
22) Have you felt happiest about your shape when your stomach has been empty (eg. in the morning)?	1	2	3	4	5	6
23) Have you thought that you are the shape you are because you lack self-control?	1	2	3	4	5	6
24) Have you worried about other people seeing rolls of flesh around your waist or stomach?	1	2	3	4	5	6
25) Have you felt that it is not fair that other women are thinner than you?	1	2	3	4	5	6
26) Have you vomited in order to feel thinner?	1	2	3	4	5	6
27) When in company have you worried about taking up too much room (eg. sitting on a sofa, or a bus seat)?	1	2	3	4	5	6

	Never	Rarely	Sometimes	Often	Very Often	Always
28) Have you worried about your flesh being dimply?	1	2	3	4	5	6
29) Has seeing your reflection (eg. in a mirror or show window) made you feel bad about your shape?	1	2	3	4	5	6
30) Have you pinched areas of your body to see how much fat there is?	1	2	3	4	5	6
31) Have you avoided situations where people could see your body (eg. communal changing rooms or swimming baths)?	1	2	3	4	5	6
32) Have you taken laxatives in order to feel thinner?	1	2	3	4	5	6
33) Have you been particularly self-conscious about your shape when in the company of other people?	1	2	3	4	5	6
34) Has worry about your shape made you feel you ought to exercise?	1	2	3	4	5	6

Appendix 13

Questions used to gain information from women in the community

How old are you?
How tall are you?
What do you weigh? (If uncertain, give your best estimate)
What would you like to weigh?
Are you currently on a diet? If so, why and what is the diet?
Do you regard yourself as having an eating problem? If so, please describe the problem.
Have you had an eating problem in the past? Is so, please describe the problem.
Do you regard yourself as having a weight problem? If so, what is the problem.
Have you had a weight problem in the past? If so, what was the problem?
Did it interfere with your periods, and if so, for how long?
What has been your lowest weight since puberty?
How old were you at the time?
What was your height?
What has been your highest weight since puberty?
How old were you at the time?
What was your height?
Do you currently have episodes of uncontrolled and excessive eating? If so, how many times has this happened over the past four weeks?
Do you currently make yourself sick as a means of controlling your weight? If so, how many times have you done this over the past four weeks?
Do you currently take laxatives as a means of controlling your weight? If so, how many times have you done this over the past four weeks?

Appendix 14

Questions used to gain information from the Weight Watchers

What weight would you like to be? Would you really be satisfied with that weight?

What has been your highest weight since puberty? How old were you then? And how tall were you then?

What is your *Weight Watchers* goal weight?

What was your weight when you joined *Weight Watchers?*

Were you at any time during childhood put on a diet in order to reduce your weight?

Were you aware of having *puppy fat* at puberty?

Did it bother you?

How did you feel about the changes in your shape at puberty, for example, your hips, breasts?

Appendix 15

Questions used to gain information from men

How old are you?
How tall are you?
What do you weigh? (If uncertain, please give your best estimate).
What would you like to weigh?
Are you currently on a diet? If so, why and what is the diet?
Have you ever dieted to lose weight? If yes, please give brief details.
What has been your highest weight since puberty?
How old were you then?
What was your height
What has been your lowest weight since puberty?
How old were you then?
What was your height?
Over the past six months have you had episodes of uncontrollable and excessive overeating?
If so, how many times has this happened over the past month?
Have you ever experienced episodes of uncontrollable and excessive overeating? If yes, please give a brief description.
Over the past six months have you made yourself sick to control your weight?
If yes, how many times has this happened over the past month?
Have you ever made yourself sick to control your weight? If yes, please give a brief description.
Over the past six months have you taken laxatives to control your weight?
If yes, how many times have you done this over the past month?
Have you ever taken laxatives to control your weight? If yes, please give a brief description.

Appendix 16

Recruitment of subjects for the study of the menstrual cycle

I'm doing a research project in clinical psychology, and am studying the physical and mental health of Cambridge students over this term. Would you be willing to help? Firstly, I'd like to emphasise that all information is strictly confidential. The first thing I'd like to know is are you taking any medication? So you're not taking the contraceptive pill?

The study will involve filling in a few simple questionnaires every day (which will take about 30 seconds), and I will come around once a week to see how you're getting on, and to ask a few extra questions.

O.K.? Thanks very much. May I ask you a few introductory questions now?

Name
Date of birth
Year at University
Academic subject
How are you coping with your work? Do you feel that you are under any stress?
Height
Weight
Have you ever had a serious physical illness?
Have you had any illnesses recently eg. colds, 'flu, etc.?
Do you have menstrual periods? Are they regular?
When was your last period?
And when is your next period due?
Are you on a special diet, eg. vegetarian?
Do you give blood? When last?

Appendix 17

Visual analogue scales

Please indicate by marking each line in the appropriate place how you have been feeling TODAY.

1. Tiredness

Not at all tired — Extremely tired

2. Aches and pains

No aches and pains — Severe aches and pains

3. Irritable

Not at all irritable — Extremely irritable

4. Mood

Very happy — Extremely unhappy

5. Bloated

Not at all bloated — Extremely bloated

6. Tension

Not at all tense — Extremely tense

Appendix 18

Questions asked each week by the interviewer

Have you had a cold/'flu over the past week?
Have you been under more stress than usual?
Have you started a period?
Have you had an upset stomach?
Have you had more exercise than usual?

Appendix 19

Instructions used to measure body size perception: Chapter 4, Section 1

"Hello. I'm Melanie Taylor and I'm a doctoral student. I'm investigating perception of body size. The research is completely confidential. A number will be assigned to each subject, so that names do not appear next to information about individuals. There are two main parts to the experiment. The first involves various measures relating to your body size; and the second involves completing various questions about yourself. The first part of the experiment necessitates taking a photograph of you. It is important that subjects are able to view the outline of their body and for this reason all subjects wear a dark coloured leotard which I provide. Some people don't like this bit much, but it only takes a few seconds, and then the experiment gets interesting. Therefore, would you object to having your photograph taken wearing a leotard?

(subject is photographed wearing leotard and then dresses)

O.K. Thank you very much. You're now going to see a picture of yourself on the screen in front of you, and this knob here controls the width of the picture, if you would like to take it and play around with it for a minute. Moving the knob clockwise makes the image wider and moving the knob anticlockwise makes the image narrower. I'm going to ask you to correct the picture you see and it is important that you are as accurate as possible, so make as many adjustments and readjustments as you like before settling on the final picture. I don't mind how many times you move the picture in and out, or how long it takes you.

Perceived size

You're looking at a distorted image of yourself and I would like you to correct the distorted image. I will ask you to do this twice - once from wide and once from narrow. Adjust the image so that it corresponds to your actual size. Do you understand or shall I go through it again?

"Adjust the image so that it corresponds to your actual size"

O.K. Now I'd like you to move the image all the way in/out.

And now I'd like you to do it again, this time turning the knob in the other direction.

"Adjust the image so that it corresponds to your actual size"

Desired size

I'd now like you to adjust the image of yourself to the size that you would most like to be. I'll ask you to do this twice - once from wide and once from narrow. Do you understand or shall I go through it again?

"Adjust the image to the size you would most like to be"

O.K. Now I'd like you to move the image all the way in/out.

And now I'd like you to do it again.

"Adjust the image to the size you would most like to be"

O.K. Thanks very much."

xxx

Appendix 20

Reliability of body size perception : fifty normal women

The reliability of the image distortion method used to measure body size perception reported in Section 1 of Chapter 4 was established as follows, based on the data from the sample of 50 normal young women.

Test re-test reliability

For perceived size estimations made from the widely distorted image and the narrowly distorted image were significantly related (r=.81, P<.001); and similarly for desired size (r=.84, P<.001). The first fifteen subjects were retested between three and five weeks later. For both perceived size and desired size estimations made from narrowly and widely distorted images and the means of these two estimations were significantly related across the two testing occasions, as shown in Table 1.

Table 1
Correlations (Pearson's r) between the 1st and 2nd testing occasions

	Perceived size		Desired size	
	r	P	r	P
From narrow[1]	.54	.02	.71	.01
From wide[2]	.64	.01	.79	.001
Mean narrow/wide[3]	.57	.01	.80	.001

1 Image initially placed on its narrowest width
2 Image initially placed on its widest width
3 Mean of estimations made from narrowly and widely distorted images

Directional differences

Directional differences are a common psychophysical phenomenon, and were discussed in Chapter 1. When adjusting a stimulus presented from its maximum level a subject usually does not reduce it sufficiently; and when adjusting a stimulus presented from its minimum level a subject usually does not enlarge it sufficiently. Psychophysics experiments generally present the mean of both estimations. Indeed, the author was unable to find a published psychophysical experiment which reported the difference between estimations made from maximum and minimum

stimuli.[1] Differences between estimations made from widely and narrowly distorted images were minimized by instructing subjects that they might adjust the image in and out as many times as necessary before settling on their final estimation. Table 2 shows that estimations made from wide and narrow images were significantly different.

Table 2
Differences in estimations made from widely and narrowly distorted images

	Image adjusted from narrow $\bar{X}$/sd	Image adjusted from wide $\bar{X}$/sd	t	df	P
Perceived size	95.8 10.3	103.1 11.2	7.78	49	.001
Desired size	81.2 10.7	88.3 11.3	8.13	49	.001

Despite these differences, there was no reason to believe that they were problematic for interpreting estimations since it is relative rather than absolute estimations which are important in studies of body size perception.

Thus, the image distortion method used to measure body size perception reported in Section 1 of Chapter 4 was deemed to show a satisfactory degree of test re-test reliability for women in the community.

[1] The difference between estimations made from maximum and minimum stimuli is often reduced by a procedure known as 'bracketing'. The subject makes an estimation from the maximum stimulus and is then asked to reduce the stimulus further and then re-adjust their estimation. Similarly, the subject estimates from a narrow stimulus and is asked to enlarge the stimulus further and then re-adjust it. The current author tested bracketing in a pilot study of body size perception but discarded the procedure because it confused subjects. Furthermore, asking subjects to re-adjust their estimation was interpreted as the initial estimation being incorrect.

Appendix 21

The semi-structured interview

I now have to ask all subjects some rather personal questions. As I stressed before, your responses are completely confidential.

(1) What has been your lowest weight since being an adult?
    How old were you then?
    How tall were you then?

(2) What has been your highest weight since being an adult?
    How old were you then?
    How tall were you then?

(3) In the past have you ever had an eating or weight problem?
    When was this?
    How long did it last?
    Did you receive any help with this problem?

(4) Do you have an eating or weight problem now?
    Are you receiving any help?

(5) Are you currently on a diet to control your weight?

(6) Finally, what would you like to weigh?

Appendix 22

Instructions used to measure body size perception: Chapter 4, Section 2

I'm going to ask you to estimate your body size. I have some rather elaborate equipment here for measuring estimations of body size. You're going to see an image of yourself on the television screen and you'll be able to vary the width of the image. It's necessary that you are able to see the outline of your body and for this reason I ask everyone to wear a dark coloured leotard which I provide. Some people don't like this bit much, but you are the only one who really looks at yourself and you will probably find the procedure interesting. Would you mind putting on a leotard?

This knob here controls the width of the image on the television screen. Moving the knob one way makes the image grow slowly wider; and moving the knob the other way makes the image grow slowly narrower. I'm going to ask you to correct a false image until it corresponds with your true size. It is important that you are as accurate as possible and so please move the image in and out as many times as you like before settling on the final width. It doesn't matter how long you take. Do you understand?

Now, I should like you to stand up nice and straight with your heels on the white tape, with your arms held away from the side of you. O.K.?

Before we begin I'd like you to move the image all the way in/out.

I'd like you to adjust the image so that it corresponds with your actual size. Please remember to tell me when you have finished and please be as accurate as possible. Do you understand?

"Adjust the image so that it corresponds to your actual size. Please be as accurate as possible and please tell me when you have finished"

That's fine. Now I'd like you to move the image all the way out/in.

O.K. And again I'd like you to

"Adjust the image so that it corresponds to your actual size"

(Repeat).

That's fine. Now I'd like you to adjust the image to the size you would most like to be. Do you understand what I mean by this?

"Adjust the image to the size you would most like to be"

That's fine. Now I'd like you to move the image all the way in/out.

"And again I'd like you to adjust the image to the size you would most like to be."

Appendix 23

Reliability of body size perception: women in the community

Test re-test reliability

The test re-test reliability of the image distortion method used to measure body size perception reported in Sections 2 and 3 of Chapter 4 was established as follows.

A group of 24 women were selected on their availability and provided data for a reliability study of body size perception. The mean age of these subjects was 42.3 years, sd=13.1, and their mean weight was 93.9 percent, sd=11.0. They were asked to estimate their body size and indicate their desired size using the method reported in Section 2 of Chapter 4. For both perceived and desired size there were two estimations made from a widely distorted image made in close succession; and two from a narrowly distorted image. The two estimations made from the same direction of distortion were significantly related, as shown in Table 1.

Table 1
The reliability of two successive trials of body size estimation

	Perceived size		Desired size	
	r	P	r	P
Image adjusted From narrow	.86	.001	.90	.001
Image adjusted From wide	.91	.001	.92	.001

Despite this satisfactory degree of test re-test reliability, subjects showed a considerable range in estimations across trials. Table 2 shows the mean differences between estimations made from the same direction of distortion.

Table 2
Differences between successive estimations

	Perceived size $\bar{X}$/ sd	Desired size $\bar{X}$/ sd
Narrow-narrow	4.62	1.93
mean difference	10.80	9.82
Wide-wide	1.04	0.15
mean difference	7.83	8.91

The 24 women repeated the assessment of body size perception between six and ten weeks later. Estimations made on the first testing occasion were significantly related to estimations made on the second occasion, as shown in Table 3. These relationships were slightly stronger than the test re-test correlations reported in Appendix 20 for the method described in Section 1 of Chapter 4.

Table 3
Relationships between estimations made between 6 and 10 weeks apart

	Perceived size		Desired size	
	r	P	r	P
From narrow 1st trial	.51	.01	.65	.001
From narrow 2nd trial	.68	.001	.79	.001
From wide 1st trial	.53	.01	.60	.001
From wide 2nd trial	.45	.02	.64	.001

Thus, this method of measuring body size perception was deemed to show a satisfactory degree of test re-test reliability for women in the community.

Directional differences

Similar to the method of measuring body size perception reported in Appendix 20, estimations made from widely and narrowly distorted images were significantly different, as shown in Table 3.

Table 3
Differences between estimations made from widely and narrowly distorted image

	Narrow image[1] $\bar{X}$/sd	Wide image[1] $\bar{X}$/sd	t	df	P
Perceived size	108.5 16.8	123.5 18.4	5.80	23	.001
Desired size	94.3 19.0	103.9 22.1	4.74	23	.001

1 Mean of 2 trials

Despite these differences, there was no reason to believe that they were problematic for interpreting estimations since it is relative rather than absolute estimations which are important in studies of body size perception.

Validity

Assessing the validity of a measure is difficult and can be approached in a number of ways. Although perception of body size and concern with body shape are not necessarily invariably related, one would expect a relationship between these two aspects of body image, and establishing a significant relationship would provide one assessment of the validity of body size perception.

For the group of women in the community reported in Section 2 of Chapter 4, perceived size, desired size and body size dissatisfaction (ie. perceived size minus desired size) were significantly related to score on the BSQ (see Chapter 2) (for perceived size Spearman's[1] r=.43, P<.01; for desired size Spearman's r=-.49, P<.01; and for body size dissatisfaction Spearman's r=.69, P<.001).

Thus, this method of measuring body size perception was deemed to show a satisfactory degree of concurrent validity for women in the community.

Discussion

Despite showing a satisfactory degree of test re-test reliability and concurrent validity, the image distortion method used to measure body size perception reported in Sections 2 and 3 of Chapter 4 and Section 2 of Section 5 had several limitations. Subjects viewed their image from quite a distance (4.5m), and it was not possible to reduce this distance due to the shape of the

1 Spearman's r was used in preference to Pearson's r because BSQ scores were not normally distributed.

experimental room. This distance may have made estimations more variable for reasons discussed in Section 3 of Chapter 1 (see P.20).

It is possible that the variability in estimations may have been reduced by using a life-size image for reasons discussed in Section 3 of Chapter 1 (see P.20), but this was not possible with the resources available. The variability of estimations was minimized by allowing subjects to control the image width themselves, and by using a slow-adjusting control button to allow fine adjustment of estimations. Nevertheless, there was still a considerable range in estimations.

A further limitation of this method of measuring body size perception was that the equipment allowed greater levels of wide distortion compared with narrow distortion (ie. 50-220%). This factor is likely to have biased estimations in favour of overestimation for reasons discussed in Section 3 of Chapter 1 (see P.20). Indeed, the mean estimation for the women in the community described in Section 3 of Chapter 4 was 105.8 percent. It would have been desirable to use equal levels of wide and narrow distortion, but this was an electronic problem which was not solved. However, unequal levels of distortion was not considered a problem for interpreting estimations since it is relative rather than absolute estimations which are important.

One strong point about the method used to measure body size perception was that standardised experimental instructions were used throughout, which was important for reasons outlined in Section 3 of Chapter 1 (see P.18). Despite the limitations of the reported image distortion method, it showed a satisfactory degree of test re-test reliability and concurrent validity, and was considered to adequately measure perception of body size.

Appendix 24

Mood induction cards

Statements used for the induction of low mood

I feel ashamed of things I've done
I am less successful than other people
I feel drained of energy and thoroughly worn out
I don't think I could exert myself even if I wanted to
Everything I do seems to turn out badly
I'm so tired I don't want to do anything at all
I feel disappointed with the way things have turned out
I don't get the same satisfaction out of things as I used to
There are things about me that I don't like
I feel so tired I just want to sit and do nothing
The future seems just one string of problems
I feel lonely and isolated
I'm not hopeful about the future
I've made many mistakes in my life
There are things about me that aren't very attractive
Life seems boring and uninteresting
It seems such an effort to do anything
I'm miserable and things aren't going to get any better
I wish I was somebody else
I really can't be bothered to do anything
I think I make a bad impression on other people
I get annoyed at myself for being bad at making decisions
I just can't make the effort to liven myself up
Many people don't have a very high opinion of me
There are too many bad things in my life

Statements used for the control condition

I feel that I am a nice person
I enjoy being with my friends
Doing something I am good at is very satisfying
I have a positive outlook on life
I love hearing waves crash on to a pebbly beach
I like to look at and smell fresh flowers
I enjoy going out with my friends
There are things that I look forward to in the future
I like watching the seasons change
I am equally able or more able than the average person
I feel that my friends bring out my good points

Making other people laugh makes me feel good
I enjoy having no work to do
I feel relaxed when I am with my closest friends
I love to see a rainbow
I think sunset is a beautiful time of the day
I like to curl up with a good book
I enjoy having a lie in
I can trust my friends
I have been successful at some things
I like sitting in the shade on a hot summer day
Receiving letters gives me great pleasure
I'd like to give everyone a present
Listening to my favourite music gives me great pleasure
I like watching the leaves change colour in Autumn

Appendix 25

Mood visual analogue scale

Please mark the line between A and B as appropriate: the exact place you mark will depend on how despondent you feel.

A. I am feeling
not at all
despondent

B. I am feeling
extremely
despondent

Appendix 26

Mood induction open-ended statements

Open-ended statements completed by subjects in the low mood condition

I feel ashamed of myself because....
I feel a failure because....
I feel disappointed with myself because....
I feel I let myself down by....
I feel I let other people down by....

Open-ended statements completed by subjects in the control condition

I feel proud of myself because....
I feel a success because....
I feel happy with myself because....
I feel I do myself justice by....
I feel I help other people by....

Appendix 27

Intercorrelations between measures for patients with bulimia nervosa (N=72)

	BSQ	Age	MPMW	High MPMW	Low MPMW	Des. MPMW
Age	.09 >.05					
MPMW	.21 .04	.05 >.05				
High MPMW	.25 .02	.21 .04	.67 .001			
Low MPMW	.25 .02	.08 >.05	.60 .001	.35 .002		
Desired MPMW	.11 >.05	.17 >.05	.72 .001	.39 .001	.51 .001	
Weight Dissat.	.28 .02	.05 >.05	.93 .001	.72 .001	.54 .001	.42 .001
Dur. Binge.	.12 >.05	.43 .001	.03 >.05	.08 >.05	.13 >.05	.17 >.05
Freq. Binge.	-.09 >.05	.08 >.05	.09 >.05	.02 >.05	.05 >.05	.15 >.05
Freq. Vomit.	-.15 >.05	.03 >.05	.10 >.05	.02 >.05	.14 >.05	.02 >.05
Freq. Lax.	.30 .01	.09 >.05	.02 >.05	.07 >.05	.14 >.05	.04 >.05
Freq. Exerc.	.03 >.05	.32 .003	.05 >.05	.12 >.05	.02 >.05	.01 >.05
EAT	.50 .001	.12 >.05	.09 >.05	.02 >.05	.09 >.05	.03 >.05
DT	.72 .001	.18 .08	.11 >.05	.14 >.05	.05 >.05	.04 >.05

B	.14 >.05	.14 >.05	.04 >.05	.10 >.05	.06 >.05	.02 >.05
BD	.74 .001	.07 >.05	.45 .001	.43 .001	.49 .001	.33 .01
I	.42 .001	.10 >.05	.19 .07	.05 >.05	.23 .04	.36 .01
P	.35 .002	.12 >.05	.09 >.05	.09 >.05	.09 >.05	.04 >.05
ID	.44 .001	.02 >.05	.11 >.05	.05 >.05	.14 >.05	.25 .04
IA	.32 .004	.25 .02	.10 >.05	.12 >.05	.05 >.05	.14 >.05
MF	.21 .05	.20 .06	.07 >.05	.06 >.05	.02 >.05	.15 >.05
Diet. Restr.	.36 .02	.03 >.05	.10 >.05	.07 >.05	.15 >.05	.01 >.05
Disinh.	.14 >.05	.01 >.05	.14 >.05	.30 .04	.13 >.05	.03 >.05
Perc. Hung.	.08 >.05	.19 >.05	.24 .08	.23 >.05	.10 >.05	.01 >.05
BDI	.44 .001	.07 >.05	.03 >.05	.09 >.05	.04 >.05	.21 .06
Self-Esteem	.52 .001	.03 >.05	.09 >.05	.13 >.05	.08 >.05	.21 .07
Social Adjust.	.45 .001	.04 >.05	.07 >.05	.06 >.05	.03 >.05	.22 .05
S	.30 .01	.22 .04	.04 >.05	.02 >.05	.01 >.05	.03 >.05
OC	.37 .001	.01 >.05	.19 .07	.11 >.05	.13 >.05	.34 .01

IS	.59	.11	.12	.16	.04	.04
	.001	>.05	>.05	>.05	>.05	>.05
D	.43	.01	.04	.03	.03	.27
	.001	>.05	>.05	>.05	>.05	.02
A	.26	.08	.04	.01	.15	.27
	.02	>.05	>.05	>.05	>.05	.03
H	.24	.06	.24	.02	.06	.31
	.03	>.05	.03	>.05	>.05	.01
PA	.19	.07	.11	.10	.02	.15
	.06	>.05	>.05	>.05	>.05	>.05
PI	.48	.13	.01	.13	.01	.23
	.001	>.05	>.05	>.05	>.05	.05
P	.47	.20	.01	.04	.03	.15
	.001	.06	>.05	>.05	>.05	>.05
GSI	.49	.10	.03	.05	.04	.24
	.001	>.05	>.05	>.05	>.05	.04

	Weight Dissat	Dur. Binge.	Freq. Binge.	Freq. Vomit.	Freq. Lax.	Freq. Exerc.
Dur. Binge.	.18					
	>.05					
Freq. Binge.	.01	.08				
	>.05	>.05				
Freq. Vomit.	.01	.16	.84			
	>.05	>.05	.001			
Freq. Lax.	.01	.08	.01	.14		
	>.05	>.05	>.05	>.05		
Freq. Exerc.	.09	.10	.16	.09	.06	
	>.05	>.05	>.05	>.05	>.05	
EAT	.06	.23	.01	.08	.22	.09
	>.05	.03	>.05	>.05	.03	>.05

DT	.08	.16	.19	.29	.21	.03
	>.05	>.05	.07	.01	.05	>.05
B	.05	.19	.06	.01	.11	.17
	>.05	.06	>.05	>.05	>.05	>.05
BD	.48	.14	.03	.04	.17	.07
	.001	>.05	>.05	>.05	>.05	>.05
I	.04	.04	.05	.06	.12	.09
	>.05	>.05	>.05	>.05	>.05	>.05
P	.14	.07	.28	.23	.14	.10
	>.05	>.05	.02	.04	>.05	>.05
ID	.07	.09	.01	.02	.19	.20
	>.05	>.05	>.05	>.05	.06	.05
IA	.08	.03	.02	.05	.12	.10
	>.05	>.05	>.05	>.05	>.05	>.05
MF	.03	.02	.04	.08	.24	.05
	>.05	>.05	>.05	>.05	.03	>.05
Diet. Rest.	.21	.11	.14	.29	.17	.17
	>.05	>.05	>.05	.05	>.05	>.05
Disinhib.	.12	.21	.40	.58	.12	.13
	>.05	>.05	.01	.001	>.05	>.05
Perc. Hung.	.21	.12	.14	.21	.17	.14
	>.05	>.05	>.05	>.05	>.05	>.05
BDI	.17	.19	.07	.01	.14	.06
	>.05	>.05	>.05	>.05	>.05	>.05
Self-Esteem	.20	.04	.18	.06	.01	.01
	.07	>.05	>.05	>.05	>.05	>.05
Social Adjust.	.09	.10	.01	.07	.13	.01
	>.05	>.05	>.05	>.05	>.05	>.05
S	.01	.04	.22	.29	.24	.02
	>.05	>.05	.04	.01	.03	>.05
OC	.09	.02	.08	.08	.07	.18

	>.05	>.05	>.05	>.05	>.05	.07
IS	.11	.02	.01	.01	.19	.07
	>.05	>.05	>.05	>.05	.06	>.05
D	.11	.04	.05	.04	.08	.01
	>.05	>.05	>.05	>.05	>.05	>.05
A	.14	.09	.07	.13	.03	.01
	>.05	>.05	>.05	>.05	>.05	>.05
H	.09	.12	.03	.03	.05	.11
	>.05	>.05	>.05	>.05	>.05	>.05
PA	.14	.03	.36	.47	.03	.14
	>.05	>.05	.001	.001	>.05	>.05
PI	.09	.12	.06	.03	.15	.03
	>.05	>.05	>.05	>.05	>.05	>.05
P	.10	.13	.02	.02	.17	.02
	>.05	>.05	>.05	>.05	>.05	>.05
GSI	.04	.05	.09	.13	.14	.01
	>.05	>.05	>.05	>.05	>.05	>.05

	EAT	DT	B	BD	I	P
DT	.69					
	.001					
B	.32	.25				
	.01	.03				
BD	.31	.47	.15			
	.01	.001	>.05			
I	.50	.36	.32	.21		
	.001	.002	.01	.05		
P	.17	.34	.11	.15	.27	
	.08	.01	>.05	>.05	.02	
ID	.43	.33	.21	.22	.59	.36
	.001	.01	.05	.04	.001	.01

IA	.45	.44	.31	.10	.55	.19
	.001	.001	.01	>.05	.001	.06
MF	.10	.16	.14	.03	.38	.02
	>.05	>.05	>.05	>.05	.001	>.05
Diet. Restr.	.48	.49	.28	.19	.16	.31
	.002	.002	.06	>.05	>.05	.04
Disinh.	.03	.29	.30	.03	.08	.07
	>.05	.05	.05	>.05	>.05	>.05
Perc. Hung.	.11	.09	.41	.07	.14	.26
	>.05	>.05	.01	>.05	>.05	.07
BDI	.40	.35	.36	.21	.62	.15
	.001	.002	.001	.05	.001	>.05
Self-Esteem	.37	.29	.13	.27	.69	.20
	.001	.01	>.05	.02	.001	.06
Social Adjust.	.32	.34	.15	.15	.57	.37
	.01	.01	>.05	>.05	.001	.001
S	.33	.16	.35	.16	.46	.03
	.01	>.05	.01	>.05	.001	>.05
OC	.24	.30	.13	.01	.53	.21
	.03	.008	>.05	>.05	.001	.05
IS	.34	.38	.01	.29	.54	.32
	.002	.001	>.05	.01	.001	.01
D	.38	.32	.14	.16	.54	.24
	.001	.01	>.05	>.05	.001	.03
A	.21	.14	.15	.01	.46	.08
	.06	.02	>.05	>.05	.001	>.05
H	.20	.28	.13	.02	.41	.04
	.06	.02	>.05	>.05	.001	>.05
PA	.12	.03	.16	.07	.26	.03
	>.05	>.05	>.05	>.05	.02	>.05

PI	.27	.33	.07	.16	.53	.17
	.02	.01	>.05	>.05	.001	>.05
P	.33	.39	.13	.10	.48	.28
	.01	.001	>.05	>.05	.001	.02
GSI	.35	.33	.18	.13	.61	.18
	.01	.01	>.05	>.05	.001	>.05

	ID	IA	MF	Diet. Restr.	Disinh.	Perc. Hung.
IA	.50					
	.001					
MF	.12	.24				
	>.05	.03				
Diet. Restr.	.11	.02	.13			
	>.05	>.05	>.05			
Disinhib.	.01	.07	.02	.13		
	>.05	>.05	>.05	>.05		
Perc. Hung.	.25	.02	.17	.16	.50	
	.08	>.05	>.05	>.05	.001	
BDI	.48	.60	.31	.06	.05	.01
	.001	.001	.01	>.05	>.05	>.05
Self-Esteem	.49	.35	.29	.16	.01	.22
	.001	.002	.01	>.05	>.05	>.05
Social Adjust.	.59	.49	.25	.07	.03	.20
	.001	.001	.02	>.05	>.05	>.05
S	.42	.58	.18	.30	.37	.14
	.001	.001	.08	.04	.02	>.05
OC	.63	.58	.14	.04	.07	.23
	.001	.001	>.05	>.05	>.05	>.05
IS	.54	.45	.18	.12	.06	.30
	.001	.001	.08	>.05	>.05	.05
D	.49	.53	.27	.02	.11	.27

	.001	.001	.02	>.05	>.05	.06
A	.36	.56	.23	.05	.21	.33
	.002	.001	.04	>.05	>.05	.03
H	.17	.37	.17	.02	.16	.37
	>.05	.001	>.05	>.05	>.05	.02
PA	.27	.32	.17	.21	.32	.37
	.02	.01	.09	>.05	.03	.02
PI	.52	.50	.29	.01	.01	.18
	.001	.001	.01	>.05	>.05	>.05
P	.58	.61	.21	.06	.03	.28
	.001	.001	.05	>.05	>.05	.06
GSI	.57	.65	.26	.04	.12	.24
	.001	.001	.02	>.05	>.05	>.05

	BDI	Self-Esteem	Social Adjust.	S	OC	IS
Self-Esteem	.61					
	.001					
Social Adjust.	.64	.50				
	.001	.001				
S	.42	.34	.46			
	.001	.003	.001			
OC	.59	.59	.65	.54		
	.001	.001	.001	.001		
IS	.57	.71	.61	.42	.66	
	.001	.001	.001	.001	.001	
D	.79	.74	.68	.45	.72	.74
	.001	.001	.001	.001	.001	.001
A	.52	.49	.53	.59	.69	.53
	.001	.001	.001	.001	.001	.001

AH	.58 .001	.41 .001	.44 .001	.33 .003	.47 .001	.46 .001
PA	.28 .01	.47 .001	.33 .003	.56 .001	.55 .001	.39 .001
PI	.56 .001	.54 .001	.63 .001	.49 .001	.66 .001	.71 .001
P	.67 .001	.62 .001	.62 .001	.46 .001	.72 .001	.72 .001
GSI	.73 .001	.71 .001	.72 .001	.69 .001	.87 .001	.82 .001

	D	A	AH	PA	PI	P
A	.62 .001					
AH	.52 .001	.38 .001				
PA	.48 .001	.64 .001	.19 .07			
PI	.59 .001	.55 .001	.47 .001	.38 .001		
P	.72 .001	.59 .001	.41 .001	.47 .001	.75 .001	
GSI	.85 .001	.80 .001	.62 .001	.65 .001	.81 .001	.84 .001

Abbreviations

MPMW - Mean population matched weight
Weight Dissat. - Weight dissatisfaction
Dur. Binge. - Duration of bingeing
Freq. Binge. - Frequency of bingeing over the past month
Freq. Vomit. - Frequency of vomiting over the past month
Freq. Lax. - Frequency of abusing laxatives over the past month
Freq. Exerc. - Frequency of exercise for weight and shape over the past month
DT - EDI *Drive for Thinness* subscale
B - EDI *Bulimia* subscale
BD - EDI *Body Dissatisfaction* subscale
I - EDI *Ineffectiveness* subscale
P - EDI *Perfectionism* subscale
ID - EDI *Interpersonal Distrust* subscale
IA - EDI *Interoceptive Awareness* subscale
MF - EDI *Maturity Fears* subscale
Diet. Rest. - *Dietary Restraint* subscale of the Three Factor Eating Questionnaire
Disinh. - *Disinhibition* subscale of the Three Factor Eating Questionnaire
Perc. Hung. - *Perceived Hunger* subscale of the Three Factor Eating Questionnaire
Social Adjust. - Social Adjustment Scale
S - *Somatization* subscale of the SCL-90
OC - *Obsessive-Compulsive* subscale of the SCL-90
IS - *Interpersonal Sensitivity* subscale of the SCL-90
D - *Depression* subscale of the SCL-90
A - *Anxiety* subscale of the SCL-90
H - *Hostility* subscale of the SCL-90
PA - *Phobic Anxiety* subscale of the SCL-90
PI - *Paranoid Ideation* subscale of the SCL-90
P - *Psychoticism* subscale of the SCL-90
GSI - *Global Severity Index* of the SCL-90

Appendix 28

Reliability of body size perception : bulimia nervosa patients

The reliability and validity of the image distortion method used to measure body size perception for the sample of 32 patients with bulimia nervosa reported in Section 2 of Chapter 5 was established as follows:

Test re-test reliability

Table 1 shows that for perceived size the two estimations made from a narrowly distorted image were significantly related, as were the two estimations made from a widely distorted image. This applied also to estimations of desired size.

Table 1
The reliability of two successive trials of body size perception

	Perceived size		Desired size	
	r	P	r	P
Image adjusted from narrow	.87	.001	.89	.001
Image adjusted from wide	.83	.001	.83	.001

Similar to the women in the community described in Appendix 23, despite the satisfactory degree of test re-test reliability for this group of patients, there was a considerable range in estimations across trials. Table 2 shows the mean differences between estimations made from the same direction of distortion.

Table 2
Differences between successive estimations

	Perceived size		Desired size	
	$\bar{X}$	sd	$\bar{X}$	sd
Narrow-narrow mean difference	12.68	11.73	1.32	6.84
Wide-wide mean difference	3.74	11.18	1.52	8.68

Thus, the image distortion method used to measure body size perception in patients with bulimia nervosa was deemed to show a satisfactory degree of test re-test reliability, despite variation between successive estimations.

Directional differences

Similar to the women in the community reported in Appendix 23, for the patients with bulimia nervosa the estimations made from widely and narrowly distorted images were significantly different, as shown in Table 3.

Table 3
Differences between estimations made from widely and narrowly distorted images

	Narrow image[1]	Wide image[1]	t	df	P
Perceived size	111.1 21.1	124.0 18.1	5.14	31	.001
Desired size	74.1 14.2	80.0 14.4	4.22	31	.001

1 Mean of 2 trials

Despite these directional differences, there was no reason to believe that they were problematic for interpreting estimations since it is relative rather than absolute estimations which are important in studies of body size perception.

Validity

Table 4 shows that perceived size, desired size and body size dissatisfaction were all significantly related to score on the BSQ which measures concern with shape, and to score on the body dissatisfaction subscale of the Eating Disorder Inventory (Garner et al,1983) which measures dissatisfaction with specific body parts (these measures were described in Chapter 2).

Table 4
Relationships between body size perception and concern with body shape

	BSQ		Body Dissatisfaction Subscale	
Perceived Size	.53	.001	.35	.04
Desired Size	-.68	.001	-.73	.001
Body size Dissatisfaction	.75	.001	.66	.001

Thus, for patients with bulimia nervosa the image distortion method used to measure body size perception was considered to show a satisfactory degree of test re-test reliability and concurrent validity.

Appendix 29

Information on patients with Bulimia Nervosa (N=32)

	N	% of sample	$\bar{X}$	sd
Age			22.8	4.1
MPMW			99.1	10.5
Desired MPMW			87.0	5.0
Weight Dissatisfaction				
lb			19.8	11.9
%			11.7	7.0
Highest MPMW			113.1	15.9
History of Obesity[1,2]				
No history	21	66		
History	11	34		
Lowest MPMW			82.0	12.2
History of Anorexia Nervosa				
No history	12	38		
Broad Criteria	20	63		
Narrow Criteria	11	34		
Duration of Bingeing (years)			4.3	3.9
≤year	10	31		
> year ≤5 years	12	38		
> 5 years	10	31		
Frequency of Bingeing[3]			26.7	21.3
<daily	19	59		
≥daily	13	41		

	N	% of sample	$\bar{x}$	sd
Frequency of Vomiting[3]			39.5	42.7
None	5	15		
< daily	12	38		
≥daily	15	47		
Frequency of Laxative abuse[3]			6.1[2]	9.6
None	19	59		
< daily	12	38		
≥daily	1	3		
Exercise[3]				
None	13	41		
< daily	19	59		
≥daily	0	0		
BSQ			134.0	33.8
EAT			47.8	16.6
EDI				
Drive for Thinness			14.3	5.8
Bulimia			11.1	3.5
Body Dissatisfaction			17.2	8.6
Ineffectiveness			12.5	7.8
Perfectionism			6.4	4.7
Interpersonal Distrust			7.2	4.8
Interoceptive Awareness			10.6	6.9
Maturity Fears			3.4	4.9
Three Factor Eating Questionnaire				
Dietary Restraint			13.8	4.2
Disinhibition			13.4	2.1
Perceived Hunger			7.2	3.5
BDI			20.9	8.9
Self-Esteem			20.5	4.6
Social Adjustment			2.49	0.38

	N	% of sample	$\bar{X}$	sd
SCL-90				
Somatization			1.13	0.74
Obsessive-Compulsive			1.55	0.79
Interpersonal Sensitivity			2.03	0.84
Depression			2.05	0.89
Anxiety			1.44	0.79
Hostility			1.24	0.95
Phobic Anxiety			0.78	0.71
Paranoid Ideation			1.20	0.83
Psychoticism			1.00	0.74
Global Severity Index			1.43	0.63

1 The data for one patient is missing on these measures

2 Previous MPMW $\geq$120%

3 Frequency over past month

Appendix 30

Body size perception and concern with shape during weight gain in anorexia nervosa: single case studies

Introduction

Perhaps the most striking feature of anorexia nervosa is the extreme importance placed on achieving and maintaining a slim body shape. Similar to bulimia nervosa, Russell's (1970) criteria for anorexia nervosa include *a morbid fear of becoming fat* as necessary for a diagnosis. Indeed, this aspect of the psychopathology of anorexia nervosa is very similar to that found in patients with bulimia nervosa, in that fatness is viewed as odious and reprehensible. In addition to a marked fear of fatness, patients with anorexia nervosa also pursue extreme thinness and derive great pleasure from an emaciated body. This feature is also included in formal diagnostic criteria for the disorder (Feighner et al,1972; American Psychiatric Association,1980), and distinguishes the typical psychopathology of anorexia nervosa from that of bulimia nervosa since few patients with bulimia nervosa pursue extreme thinness (Fairburn and Cooper,1984a). Indeed, a pathological pursuit of thinness may be regarded as a pathognomic feature of anorexia nervosa in that no other patients derive pleasure from an emaciated body.

Despite the recognised importance of these concerns with shape among patients with anorexia nervosa, there has been little study of such concerns in relation to weight gain during treatment for the disorder. Morgan and Russell (1975) reported that in a sample of 41 patients a high level of concern with fatness persisted long after weight gain, but they used no standardised measure of this concern. Garner et al (1983) used a validated measure, ie. the *Body Dissatisfaction* subscale of the Eating Disorder Inventory or EDI, to measure dissatisfaction with specific body parts in relation to weight gain in anorexia nervosa. It was reported that a sample of 17 recovered patients were significantly less dissatisfied with their body compared with a large sample of currently ill patients, and were no more dissatisfied than normal young women. Thus, this study suggests that dissatisfaction with body parts may diminish following recovery from anorexia nervosa. However, the results were presented as part of a validation study for the measure of dissatisfaction, and the findings regarding the recovered patients are severely limited. These patients were not studied prospectively, the size of the group was small, their clinical features were not presented, it was not clear how long they were rated to have been recovered, and their current weight status was not reported. If body dissatisfaction does indeed decrease during or following weight gain in anorexia nervosa it is important to know when this change occurs. It may take a patient with anorexia nervosa a long time to become satisfied with a normal body size. Perhaps the greatest limitation of the study was that body dissatisfaction was the only aspect of concern with shape assessed, and while dissatisfaction is an important aspect of such concern, it is only one of many

aspects, as was discussed in Chapter 2.

In Chapters 3 and 5 changes in concern with shape were found to be associated with concurrent changes in mood among women in the community and patients with bulimia nervosa. In Chapter 5 it was suggested that mood and concern with shape may co-vary also among patients with anorexia nervosa who, similar to patients with bulimia nervosa, are characterised by a high level of depressive symptoms which have been observed to improve during treatment for the eating disorder (Eckert et al,1982).

In addition to extreme concerns with shape, some patients with anorexia nervosa have been reported to show disturbances in body size perception. Some studies have found that patients with anorexia nervosa overestimate their body size more than normal young women (eg. Slade and Russell,1973; Garner et al,1976; Wingate and Christie,1978), and are satisfied with their very thin body size (eg. Garner et al,1985). Four studies have measured body size perception before and after weight gain among patients with anorexia nervosa. One reported that overestimation decreased when weight was restored to a more normal level (Slade and Russell,1973), whereas three found that estimations were similar before and after weight gain (Button et al,1977; Garfinkel et al,1979; Strober et al,1979). Only one study has measured body size perception during the course of weight gain among these patients (Button,1986), and found that for most patients overestimation decreased after one week of hospitalisation, but found no consistent pattern to subsequent changes. However, this study used a method of measuring body size perception whose test re-test reliability and concurrent validity are questionable (ie. the moveable calliper technique) as was discussed in Chapter 1, and therefore findings should be interpreted with caution.

Although no study has reported body size dissatisfaction (in terms of the discrepancy between perceived and desired size) before and after weight gain among patients with anorexia nervosa, it is possible to derive this index of dissatisfaction from the data reported in one study (Garfinkel et al,1979). Patients with anorexia nervosa were more satisfied with their body size compared with controls both before weight gain and at follow-up one year later, but at follow-up they still weighed significantly less than the controls. This suggests that patients with anorexia nervosa may be satisfied with a thin size even one year after treatment for the disorder. No study has measured desired size and dissatisfaction with body size during the course of weight gain among these patients.

The aim of the present study was to make an intensive assessment of concern with shape and body size perception over the course of weight gain in patients with anorexia nervosa. Two single case studies were conducted.

Method

Both patients were admitted to a psychiatric hospital in Cambridge with a diagnosis of anorexia nervosa. They satisfied Russell's (1970) criteria, the diagnostic criteria of Feighner et al

(1972) and DSM III (1980) criteria for anorexia nervosa. Both suffered from the restricting subtype of the disorder ie. they did not experience bulimic episodes. Treatment involved re-feeding with supportive nursing care, and attitudes towards weight and shape were not formerly addressed.

Both patients were weighed regularly and completed a number of formal assessments before weight gain and shortly before discharge from hospital when their weight had stabilized at a near normal level. The first patient was allowed two weeks to settle into hospital before being asked to complete the assessments, during which time she did not receive formal treatment and she lost weight. The second patient was assessed one day before admission. The assessments were:

(i) The Body Shape Questionnaire or BSQ (see Chapter 2). The time scale of this questionnaire referred to feelings over the past week, and the patients completed this questionnaire on the same day of each week during their stay in hospital.

(ii) The Beck Depression Inventory or BDI (Beck et al,1961). Again, the time scale of this questionnaire referred to feelings over the past week and the patients completed this questionnaire every week. The 18-item version of this questionnaire was used, as was described in Section 1 of Chapter 5.

(iii) Body size perception was assessed using the image distortion method described in Section 2 of Chapter 4. The patients estimated their size and indicated their desired size. An index of body size dissatisfaction was derived by subtracting desired size from perceived size. The assessment of body size perception was completed at three-weekly intervals on the same day of each week, at the same time of day, ie. mid-morning.

(iv) The Eating Attitudes Test or EAT (Garner and Garfinkel,1979), which measures disturbed eating attitudes and behaviour. This measure was completed before weight gain and again shortly before discharge.

(v) The Eating Disorder Inventory or EDI (Garner et al,1983) which has eight subscales measuring psychopathological disturbance characteristic of the eating disorders, and is described in detail in Section 1 of Chapter 5. This measure was completed before weight gain and again shortly before discharge.

(vi) The Rosenberg Self Esteem Scale (Rosenberg,1965) which measures self-esteem. This measure was completed before weight gain and again shortly before discharge.

Study 1

The patient

Ms. A. was admitted to hospital at the age of 17 weighing five stone and eight pounds or 64.7 percent of average weight. Prior to developing anorexia nervosa she had had no psychiatric history. The home life of Ms. A. was not a happy one. Her parents had divorced a few years

previously and there was still marked animosity between them which caused Ms. A. considerable distress. She had never had a boyfriend, had one close girlfriend and enjoyed little social life. Despite being an intelligent girl with nine O'levels, she had been unemployed since leaving school one year previously and was anxious to find work. During the year preceding admission Ms. A.'s mood had become increasingly depressed and she was very concerned about her family situation. She had been treated with clomipramine. Her feelings of hopelessness had led to an overdose, following which she spent three weeks in a private nursing home where she gained some weight. After discharge she rapidly lost this weight and was admitted to a National Health Service hospital seven months later.

At the time of admission Ms. A. had had amenorrhoea for eighteen months. She had induced vomiting in the past but was not currently doing so, and did not experience bulimic episodes. She admitted that she was underweight but described feeling very fat, said that she saw herself as fat and hated her body. She also had feelings of hopelessness.

During the first week of hospitalisation Ms. A. lost weight, but by the third week she responded well to treatment and was highly motivated to overcome anorexia nervosa. Before admission she had been eating a very restricted diet but by the third week she had re-introduced more varied foods and expressed a desire to eat normally, to put on weight and for menstruation to return. In addition, her mood was improved.

This excellent response to treatment was not maintained. Depressive symptoms gradually returned and she developed panic feelings about becoming too fat. Although she realised that she was still thin she described feeling very fat. Ms. A. began exercising on the ward, ate fewer calories and ate a less varied diet. After a week-end visit home which was not a happy one she induced vomiting, although this did not become a regular habit. She was discharged 15 weeks after admission, after which she became an outpatient.

Results from the assessments

In terms of weight gain, Ms. A.'s progress in treatment was satisfactory, as illustrated in Figure 1. After settling into hospital her weight steadily increased so that by the time of discharge she had gained 27 pounds and her weight had stabilized at 87 percent of average, ie. almost within the normal range (±10%). Nevertheless, she was still underweight.

Table 1 shows her scores on the BSQ and BDI over the course of weight gain. At the first assessment Ms. A. showed an extreme level of concern with her shape. Her score of 168 on the BSQ is comparable to the high scores shown by many patients with bulimia nervosa (Chapter 5). By the third week of admission her score on this questionnaire was markedly decreased to a normal level of concern comparable to the general population mean (Chapter 2). However, from this time onwards her score on the BSQ gradually increased, so that by the time of discharge her level of concern with her shape was similar to her level of concern shortly after admission. One striking aspect of change in her BSQ score is how closely it co-varied with change in her mood as measured by the BDI, illustrated in Figure 2. Since the BSQ and BDI are measured on

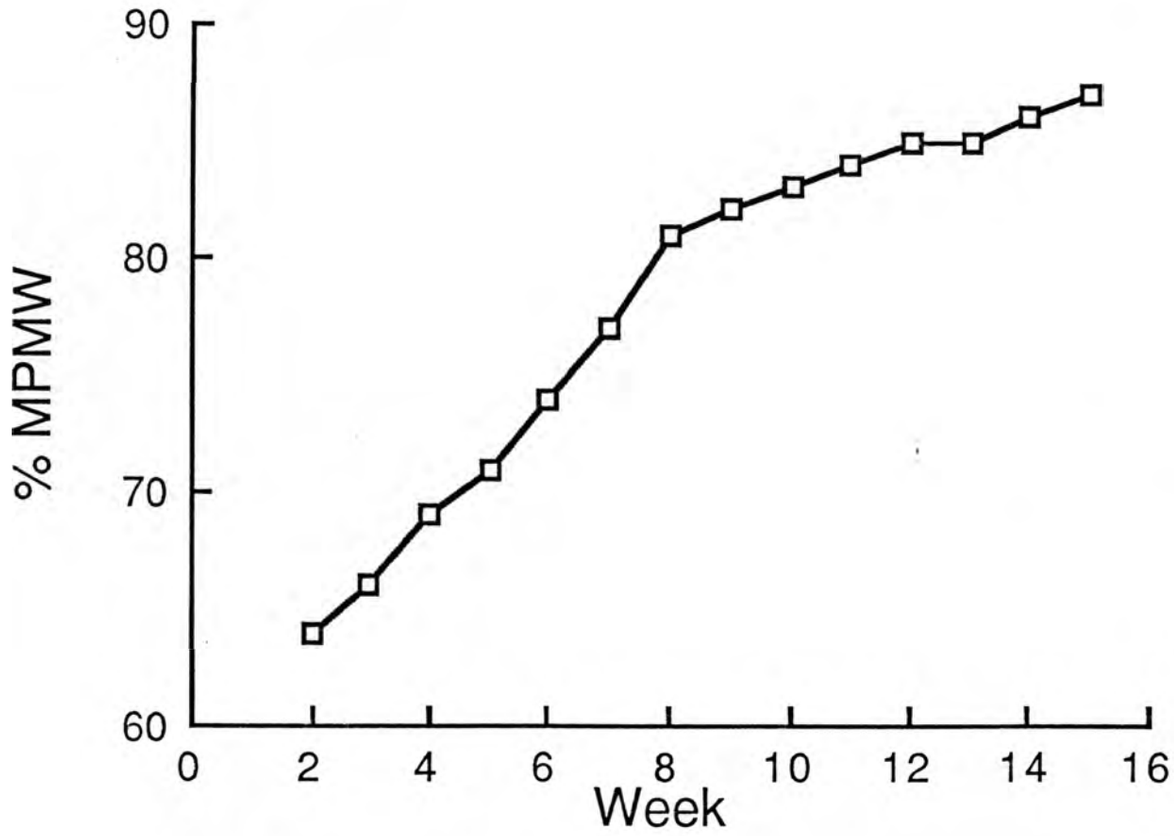

Figure 1

Weight gain during treatment for anorexia nervosa: Ms.A.

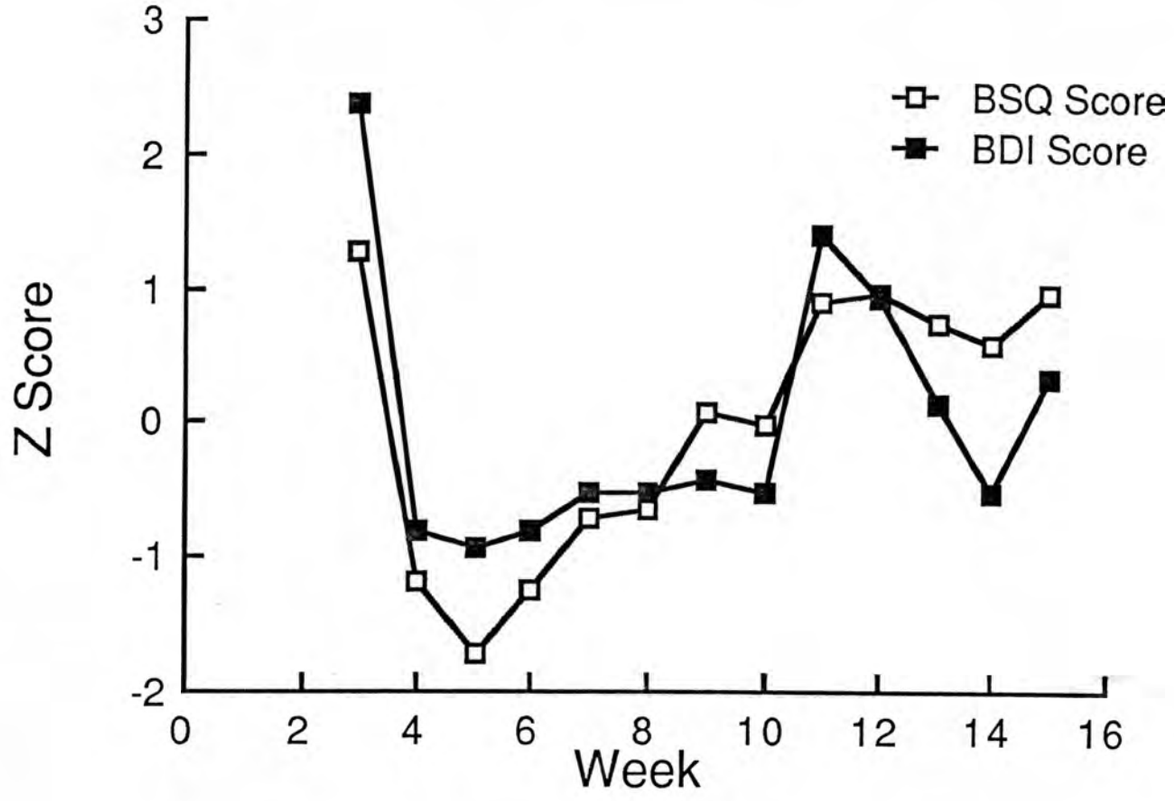

Figure 2

Concurrent changes in concern with shape and mood: Ms.A.

different scales, scores are plotted as standardised or Z scores. Scores on the two measures were highly correlated (Spearman's r=.95, P<.001). Thus, just as her BSQ score showed a marked decrease from a high level followed by a gradual increase, level of depression showed a similar trend.

Table 1
Weight, depression and concern with shape during treatment: Ms.A.

	% MPMW	BSQ	BDI
Week 1	64.7	-	-
Week 2	64.0	-	-
Week 3	66.3	168	40
Week 4	68.8	79	7
Week 5	71.1	59	6
Week 6	74.2	77	7
Week 7	76.9	96	10
Week 8	80.6	98	10
Week 9	81.8	125	11
Week 10	82.7	121	10
Week 11	83.5	154	30
Week 12	85.1	157	25
Week 13	85.3	149	17
Week 14	86.2	143	10
Week 15	86.7	157	19

Table 2 shows Ms. A.'s perception of her body size over the course of weight gain, and Figure 3 illustrates changes in her perceived size and desired size. She overestimated her size more than the mean for the group of normal young women described in Section 2 of Chapter 5, but was not markedly dissatisfied with her perceived size. During the first half of treatment Ms. A.'s perceived size remained approximately constant, but during the latter half she increasingly overestimated her size. Her desired size remained unchanged relative to her actual size. Since her actual size increased her desired size increased likewise. In view of her change in actual size it is not particularly useful to discuss change in desired size. Figure 4 shows that similar to perceived size, Ms. E's dissatisfaction with her body size remained largely unchanged during the first half of treatment, and then showed a considerable increase.

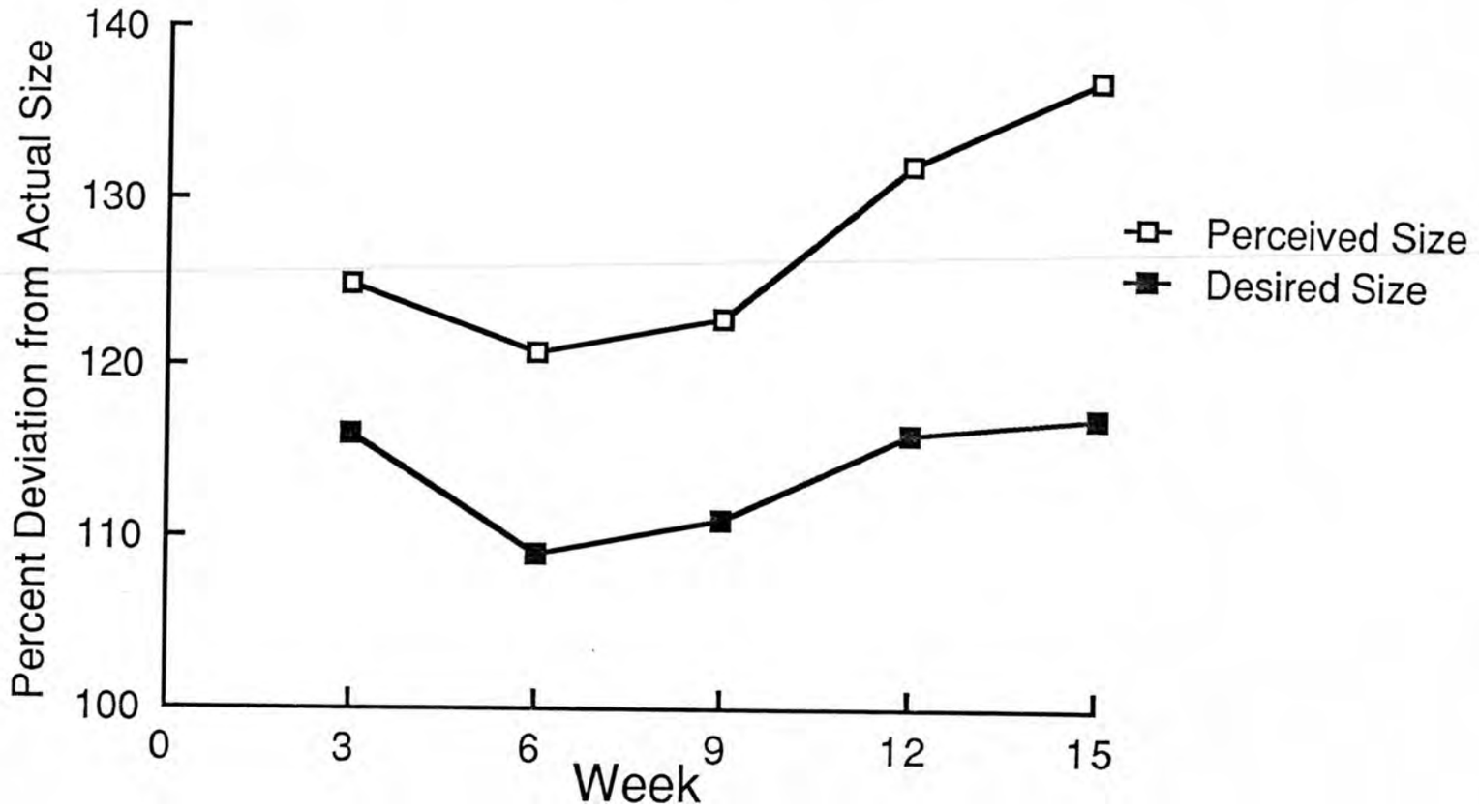

Figure 3
Body size perception during weight gain: Ms.A.

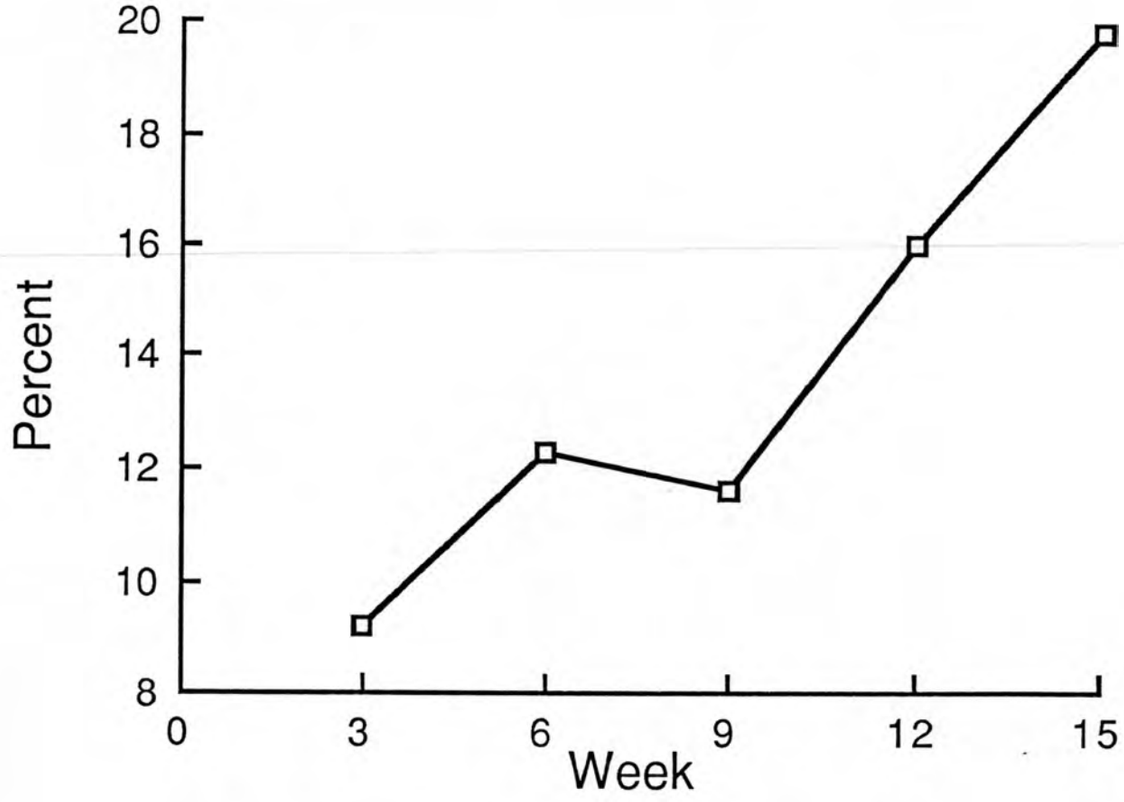

Figure 4

Body size dissatisfaction during weight gain: Ms.A.

Table 2
Body size perception during weight gain: Ms.A.

	Percent		
	Perceived Size	Desired Size	Body size Dissatisfaction
Week 3	124.8	115.6	9.2
Week 6	121.4	109.1	12.3
Week 9	122.7	111.1	11.6
Week 12	131.6	115.6	16.0
Week 15	137.2	117.4	19.8

Table 3 compares results from the assessments of body size perception and the self-report measures completed before and after weight gain. It is apparent that, with the exception of her mood, Ms. A.'s responses on these measures were considerably more disturbed after weight gain compared with before. Even her mood, which showed some improvement, was still depressed.

Table 3
Assessments before and after weight gain: Ms.A.

	Before weight gain	After weight gain
MPMW	66.3	86.7
Perceived size (%)	124.8	137.2
Desired size (%)	115.6	117.4
Body size dissatisfaction (%)	9.2	19.8
BSQ	168	157
BDI	40	19
EAT	68	80
Self-Esteem	28	15
EDI		
Drive for Thinness	9	21
Bulimia	1	0
Body Dissatisfaction	16	27
Ineffectiveness	12	26
Perfectionism	4	5
Interpersonal Distrust	1	17
Interoceptive Awareness	22	29
Maturity Fears	5	24

Thus, despite satisfactory weight gain, Ms. A. showed greater disturbance in her perception of her body size, was still highly concerned with her shape and, with the exception of her mood, her psychological state had deteriorated over the course of her treatment.

Study 2

The patient

Ms. B was a 20 year old married lady. She had left school at 16 with six O'levels and she and her husband had worked intermittently as artists. They were both currently unemployed. They had met when both were patients at a psychiatric hospital and they had currently been married for 18 months. Ms. B's mother was described as *unstable* and she had a psychiatric history. Ms. B. had one brother and one sister, and the latter had a psychiatric history of many overdoses.

Ms. B. had a disturbed weight history. She described herself as a fat child up to the age of 13 when she had weighed 15 stone. Her childhood had been marred by other children teasing her about her weight. It was at the age of 13 that Ms. B. first dieted, when she lost five stone. Her weight oscillated between the ages of 13 and 16. At the age of 16 she first experienced amenorrhoea, when she weighed eight and a half stone. At the age of 18 she was admitted to

hospital with a diagnosis of anorexia nervosa and at this time weighed six stone and three pounds. Ms. B. was discharged at the weight of eight and a half stone and she continued to see a psychologist for a year. Six months after discharge she spent six weeks as a psychiatric in-patient with a diagnosis of depression.

At the time of her current admission to hospital Ms. B. weighed six stone and six pounds, or 66 percent of average weight. She said that she did not feel thin but rationally accepted that she was. She did not appear very depressed or agitated, and displayed no suicidal ideation, but reported feeling desperate to change her current condition. Prior to admission she ate very little. She did not experience bulimic episodes and did not vomit. Ms. B. was highly motivated to gain weight and had been greatly in favour of admission. Her motivation to gain weight lasted throughout her stay in hospital. Midway during her admission she decided to separate from her husband. She reached her target weight of eight and a half stone after 16 weeks, shortly after which she was discharged and became a day patient.

Results from the assessments

Ms. B.'s response to treatment was highly satisfactory. As illustrated in Figure 5, her weight steadily increased so that by the time of discharge she had gained 32 pounds and her weight was 89.3 percent of average weight, ie. almost within the normal range (±10%). It is noteworthy that the two weeks midway during her stay in hospital when she did not gain weight coincided with her decision to separate from her husband.

Table 4 shows her scores on the BSQ and BDI over the course of weight gain. Compared with before weight gain, after weight gain she showed much less concern with her shape and her mood had markedly improved. Despite these changes, scores on the two measures showed some fluctuation during weight gain. Figure 6 illustrates that her mood and level of concern with her shape largely co-varied (Spearman's $r=.70$, $P<.01$). Again, BSQ and BDI scores are plotted as Z scores. Both measures are ellevated midway during admission which corresponds with the time Ms. B. decided to separate from her husband and when her mood became very depressed.

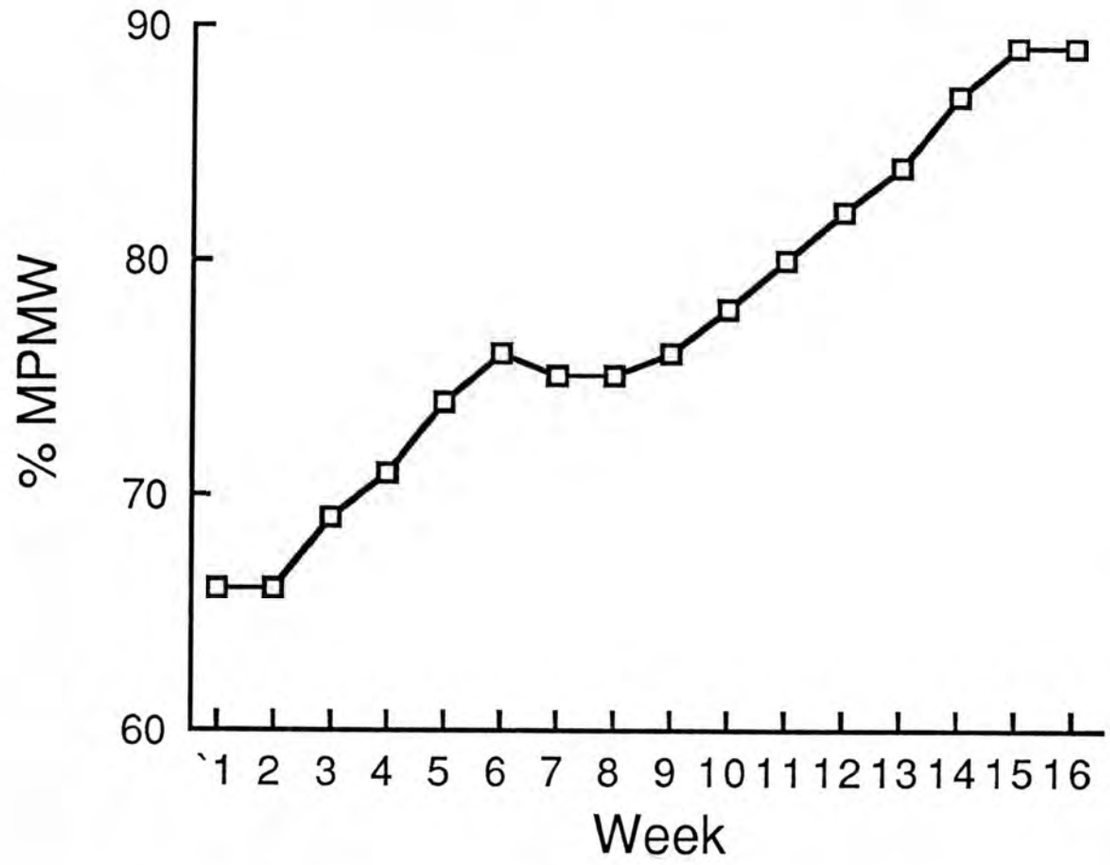

Figure 5

Weight gain during treatment for anorexia nervosa: Ms.B.

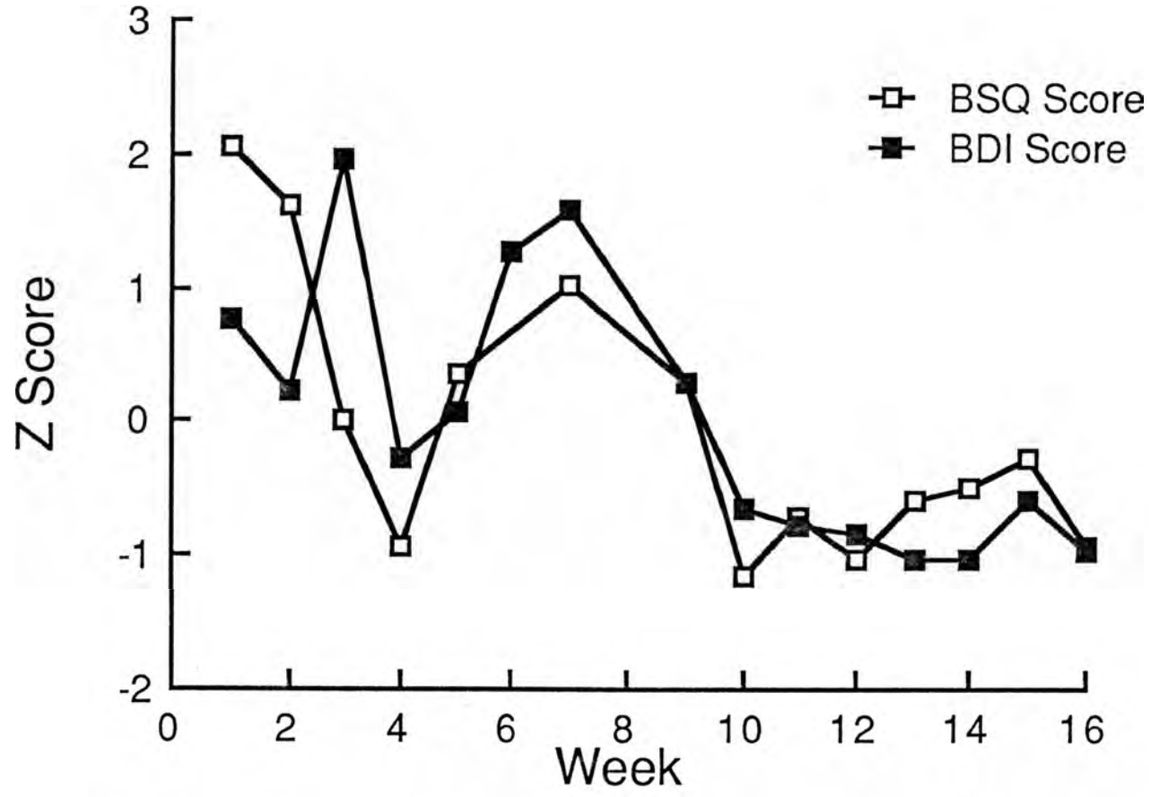

Figure 6

Concurrent changes in concern with shape and mood: Ms.B.

Table 4
Weight, depression and concern with shape during treatment: Ms.B.

	% MPMW	BSQ Score	BDI Score
Week 1	66.1	108	31
Week 2	65.8	102	22
Week 3	68.9	80	50
Week 4	70.7	67	14
Week 5	74.2	85	20
Week 6	76.3	90	39
Week 7	74.8	94	44
Week 8	74.8	*	*
Week 9	76.1	84	23
Week 10	78.3	64	8
Week 11	80.4	70	6
Week 12	82.1	66	5
Week 13	83.9	72	2
Week 14	87.2	73	2
Week 15	88.8	76	9
Week 16	89.3	67	3

* Ms. B.'s scores on the BSQ and BDI are missing for 1 week since the nursing staff did not give her the questionnaires on the day requested.

Table 5 shows Ms. B.'s perception of her body size over the course of weight gain. Changes in perceived size and desired size are illustrated in Figure 7. It is clear that both measures fluctuate, and that they inversely co-varied (Spearman's r=-.83, P<.02). Figure 8 illustrates her level of dissatisfaction with her body size. Despite fluctuations, before weight gain she was dissatisfied with her body size being too large, but after weight gain she was dissatisfied with her size being too small.

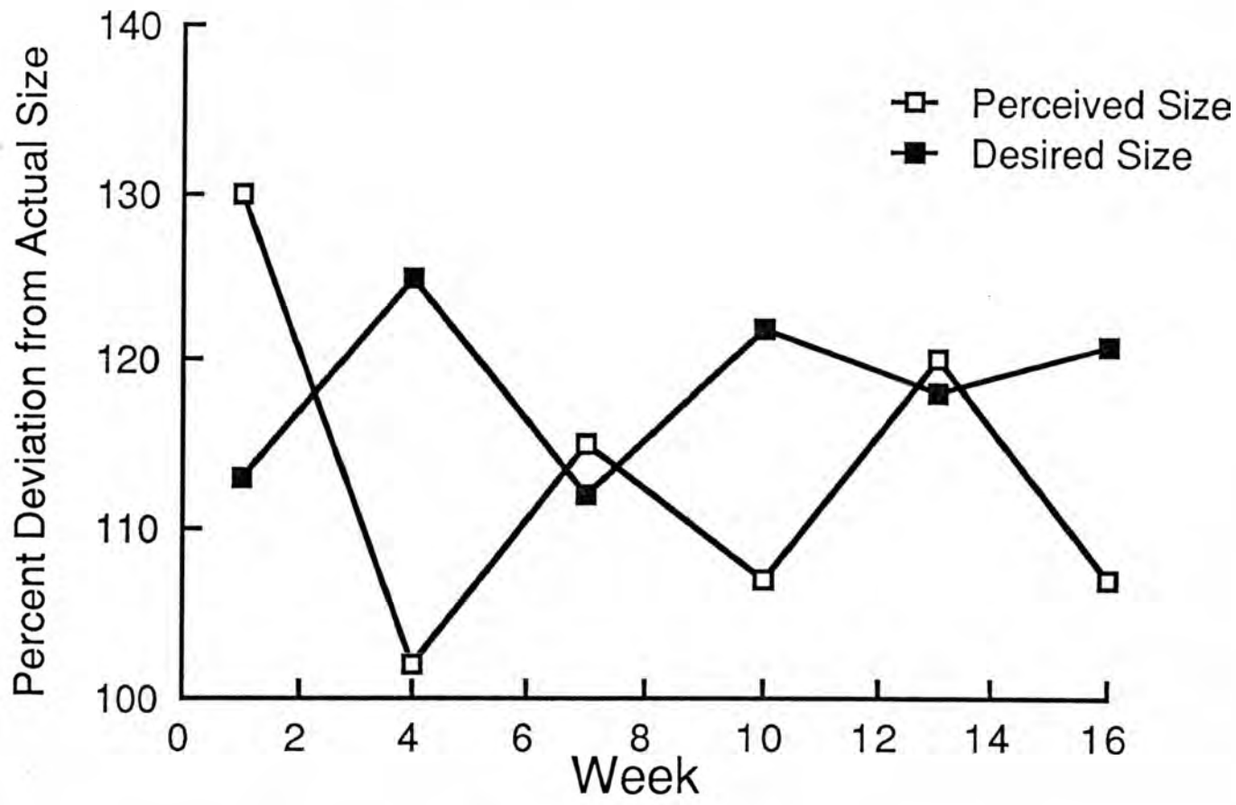

Figure 7

Body size perception during weight gain: Ms.B.

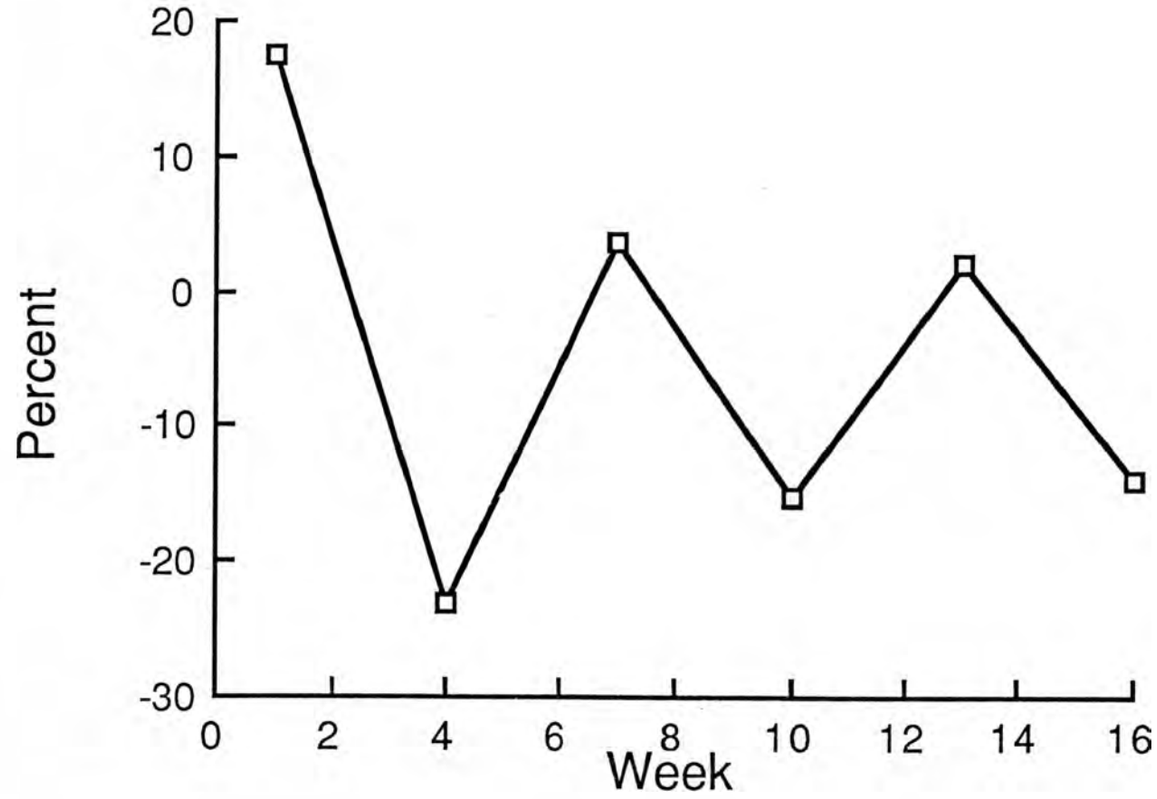

Figure 8

Body size dissatisfaction during weight gain: Ms.B.

Table 5
Body size perception during weight gain: Ms.B.

Percent

	Perceived Size	Desired Size	Body size Dissatisfaction
Week 1	130.2	112.8	17.4
Week 4	101.6	124.6	-23.0
Week 7	115.4	111.9	3.5
Week 10	106.5	121.6	-15.1
Week 13	120.4	118.2	2.2
Week 16	107.1	121.0	-13.9

Table 6 shows self-report measures and body size perception before and after weight gain. It is apparent that, in addition to a marked improvement in Ms. B.'s weight, her mood also markedly improved, her concern with her shape decreased, she overestimated her body size less, showed a larger desired size, was dissatisfied with her body being too thin rather than too large, her attitudes and behaviour towards eating had improved, and she showed less disturbance on other indices associated with anorexia nervosa. Thus, compared with before weight gain, after weight gain Ms. B. showed less perceptual disturbance in relation to her body size, less concern with her shape, and her psychological state was greatly improved.

Table 6
Assessments before and after weight gain: Ms.B.

	Before weight gain	After weight gain
MPMW	66.1	89.3
Perceived size (%)	130.2	107.1
Desired size (%)	112.8	121.0
Body size dissatisfaction (%)	17.4	-13.9
BSQ	108	67
BDI	31	3
EAT	76	8
Self-Esteem	19	30
EDI		
Drive for Thinness	18	0
Bulimia	2	0
Body Dissatisfaction	16	5
Ineffectiveness	18	1
Perfectionism	5	1
Interpersonal Distrust	9	2
Interoceptive Awareness	19	0
Maturity Fears	2	2

Discussion

This study reports intensive assessment of body size perception and concern with shape in relation to weight gain during treatment for anorexia nervosa. Although findings from two single case studies are limited in that it is not clear how typical individual cases are of cases in general, the findings are nevertheless interesting and have implications for interpreting results from larger scale published studies. Miller and Morley (1986) have argued that the problem of generalization from single case studies is not a particularly serious one, since the assumption of single case studies is that the patients are similar to other patients in the nature of their disturbance and response to treatment, which is an assumption also made by larger studies.

The single case studies had a number of favourable points. First, the patients were consecutive admissions to a National Health Service hospital and were therefore not selected on demographic variables. The hospital did not specialise in treating eating disorders, and the patients were not referred as chronic cases difficult to treat. Therefore, there is no reason to believe that the two patients were dissimilar from the majority of cases of anorexia nervosa. Second, serial prospective assessments were made to plot the course of change during treatment. While it may not be meaningful to interpret an estimation of 130 percent as representing a disturbance in body

size perception, it is informative to compare an estimation of 130 percent before weight gain with an estimation of 107 percent after weight gain. Third, it is meaningful to compare results from individuals with those from larger groups of subjects who completed the same assessments under the same testing conditions. Thus, comparing a score of 168 on the BSQ with the mean score for women in the community (Chapter 2) indicates that this score represents marked concern with shape. Fourth, by examining single cases so intensively it is possible to relate particular changes in the data to significant factors in the individual. For example, Ms. B. grew very depressed midway during her admission, and this appeared to correspond to a stressful personal experience aside from her illness. In the absence of knowledge about the individual it may be difficult to explain changes in the data.

This report presents two individuals with anorexia nervosa who responded differently to weight gain in terms of their perception of their body size and their concern with their shape. Both had a history of anorexia nervosa lasting for many months although neither could be considered a chronic case, and for both patients it was their second admission to hospital for the disorder. They showed a satisfactory rate of weight gain, and by the end of treatment their weight was considerably improved, although it is noteworthy that by the time of discharge both were maintaining a body weight which was still relatively low.

Findings regarding concern with shape showed that both patients began treatment showing some concern with their shape, and for one patient this concern was very high. Both showed a marked decrease in this concern after they began putting on weight, but for one patient the level of concern returned to and remained at a very high level. More importantly, despite different levels of concern with shape between the patients and despite very different changes in the level of such concern, for both patients changes in concern with shape co-varied with changes in mood. Thus, when concern with shape was high, level of depression was also high. The relationship between changes in concern with shape and mood was similar to that described for women in the community reported in Section 6 of Chapter 3 and patients with bulimia nervosa reported in Section 3 of Chapter 5. In contrast with concern with shape, findings regarding body size perception were quite different between the patients. One overestimated her size increasingly more with weight gain, while the other's estimations fluctuated. One patient became increasingly more dissatisfied with her body size with weight gain, while the other again showed fluctuation in her level of dissatisfaction and then became dissatisfied with her body size being too thin. These differences between patients must be considered in relation to differences in their mental state and attitudes to weight and eating. The patient whose concern with her shape declined to a mild level, who did not overestimate her body size more with weight gain and who became dissatisfied with her body size being too thin, showed a marked improvement in her mood and her attitudes to body shape, weight and eating. Thus, improvement on one factor was associated with improvement on all other factors measured. In contrast, the patient who overestimated her size more with weight gain, who became increasingly more dissatisfied with her size, and who showed

a very high level of concern with her shape after weight gain showed a deterioration in her mental state and her attitudes to eating and weight. Compared with before weight gain, after weight gain her mood was little improved and she showed greater disturbance in her attitudes to weight and eating. The differences between the patients at the end of treatment was not incompatible with studies of treatment for anorexia nervosa. The disorder in well known as one which has a variable outcome (Hsu,1980).

One important and obvious implication from this study is that weight gain should form only one part of treatment for anorexia nervosa, since weight gain did not necessarily lead to a significant improvement on the other clinical features of the disorder. It seems probable that in the absence of change in attitudes towards shape a patient's prognosis may be poor. In contrast with Ms. B., Ms. A. overestimated her body size increasingly more, became increasingly more dissatisfied with her larger size and continued to show a very high level of concern with her shape. It is conceivable that these disturbances may motivate future dietary restraint. Ingrained beliefs about shape may be resistent to change despite an improvement in weight.

The results from these two single case studies have implications for larger scale published studies. Compared with before weight gain, after weight gain one patient showed less disturbance on measures of body size perception and concern with her shape while the other tended to show greater disturbance. However, both patients showed considerable change during weight gain. Thus, although some published studies of body size perception in anorexia nervosa have reported that estimations of body size are unchanged by weight gain while others have reported a significant decrease in estimations after weight gain, measuring body size perception before and after weight gain may mask considerable change during weight gain.

The case studies raise questions which may be addressed in future research. The first concerns whether changes in body size perception and concern with shape vary in relation to type of treatment. It is possible that treatment involving cognitive restructuring may induce greater changes in concern with shape and body size perception compared with the treatment involving supportive nursing care reported in this study. The second question concerns change in relation to time. The patient who after weight gain showed a high level of concern with her shape and a high level of dissatisfaction with her body size may show an improvement on these factors given time to adjust to her larger body size.

To conclude, perhaps the most important finding from the case studies presented was that despite very different outcomes from anorexia nervosa in terms of concern with shape, body size perception and attitudes towards weight and eating, for both patients concern with shape and mood closely co-varied over the course of weight gain. Indeed, aside from satisfactory weight gain, concurrent changes in mood and concern with shape was the only consistent finding between these two patients. The association between concern with shape and mood was correlational, and does not indicate whether a high level of disturbance on one factor may give rise to a high level of disturbance on the other; or whether the level of disturbance on both

factors may be influenced by some other factor. Nevertheless, the association between changes in mood and concern with shape is consistent with ideas in Beck's cognitive model of depression and the hypothesis outlined in Chapter 1 that depressed mood may exacerbate a high level of concern with shape.