Chapter 3

Concern With Shape Among Women In The Community

Section 1

Relationships between concern with shape, demographic factors, weight history and eating behaviour

Introduction

There have been many suggestions that a slim body shape is important to most women (eg. Rodin et al,1984), and that *feeling fat* appears to be the norm (Wooley and Wooley,1984), as was reviewed in Chapter 1. Dissatisfaction with body shape is common, and it has been suggested that such dissatisfaction may be associated with a young age and a high body weight (Berscheid et al,1973), dieting (Dwyer et al,1967; Nylander,1971; Dent,1981), and disturbed eating behaviour (Dent,1981; Striegel-Moore et al,1986), particularly with bingeing and purging (Cash et al,1986) which are characteristic of the eating disorder bulimia nervosa. Although marked body shape disparagement appears to be quite rare, such extreme concern with shape has been associated with a history of a very high weight (Stunkard and Burt,1961; Stunkard and Mendelson, 1961,1967; Stunkard,1976).

While concern with shape appears to be prominent among women, there is very little empirical evidence to support this view, probably because there has been no satisfactory measure of such concern. The published reports on concern with shape are limited in that they provided no supportive data (eg. Stunkard and Mendelson,1961,1967), or were based on dissatisfaction with body parts not specifically associated with shape (eg. Berscheid et al,1973). Although body part dissatisfaction is undoubtedly an important aspect of concern with shape, it forms only one aspect of this concern, as was discussed in Chapter 2.

In Chapter 2 a new measure of concern with shape was reported, and it was found that the majority of women show some concern, ranging from a mild level experienced by many women in the community to a very marked level experienced by most patients with bulimia nervosa. Since concern with shape is so common among women it is important to assess its significance in terms of factors associated with such concern.

The aim of the present study was to examine the significance of concern with shape among women in the community, in terms of its association with age, weight and weight history, and eating behaviour. Based on the suggestions made by other studies described above, it was predicted that a high level of concern with shape would be associated with a young age, a high weight and a history of a high weight, dieting and disturbed eating behaviour.

Method

Subjects

Three groups of women provided the data for this study: 331 consecutive attenders at two family planning clinics, 119 occupational therapy (O.T.) students, and 85 undergraduate students, a total of 535 women from the community. The recruitment of these subjects was described in Chapter 2.

Assessments

The measures taken were as follows:

(1) The Body Shape Questionnaire or BSQ (see Chapter 2), which measures concern with shape.

(2) The Eating Attitudes Test or EAT (Garner and Garfinkel,1979) which measures disturbed eating attitudes and behaviour.

(3) A demographic schedule of questions on age, height, weight and weight history (Appendix 13).

(4) An eating schedule of questions on whether the women were currently dieting to control their weight,[1] whether they currently experienced episodes of uncontrollable and excessive overeating, whether they currently induced vomiting to control their weight, and whether they currently used laxatives to control their weight (Appendix 13).

Not all the measures were taken on all the subjects. For logistical reasons truncated versions of the full set of assessments were sometimes used. The information obtained on each group is shown in Table 3.1.1

[1] A diet was defined as distinct rules surrounding eating, intended to either reduce or control weight. Examples of such rules are: eat less in quantity; eat fewer calories; omit specific meals.

Table 3.1.1

Undergraduate Students	O.T. Students	Clinic Attenders
BSQ score	BSQ score	BSQ score
Age	Age	Age
MPMW	MPMW	MPMW
Dieting	Dieting	Dieting
	Desired MPMW	
	Weight Dissatisfaction	
	Highest MPMW	Highest MPMW
	Lowest MPMW	Lowest MPMW
	Previous Anorexia nervosa	Previous Anorexia nervosa
	Overeating	Overeating
	Vomiting	Vomiting
	Laxative abuse	Laxative abuse
	EAT[1]score	

1 Eating Attitudes Test (Garner and Garfinkel,1979)

Results

Results from the measures for the three samples combined are shown in Table 3.1.2.

Table 3.1.2
Results from the measures

	N	% of sample	Mean	sd	N who completed the assessment
BSQ score			81.5	28.4	535
Age			22.7	5.4	530
MPMW			98.3	11.0	524
Highest MPMW			106.3	13.1	494
Lowest MPMW			91.2	10.9	438
Desired MPMW			91.5	7.3	322
Weight Dissatisfaction[1]					
lb			10.5	11.7	321
%			6.2	6.9	321
History	64	13.0			494
Of Obesity[2]					
Dieting	119	22.5			528
Previous Anorexia nervosa					
Broad[3]	14	3.2			438
Narrow[4]	7	1.6			438
Overeating	98	22.8			430
Vomiting	9	2.0			447
Laxative	4	0.9			446
Abuse					

1 Current MPMW minus desired MPMW
2 Previous MPMW $\geq$120%
3 Lowest MPMW < 85% plus concurrent amenorrhoea
4 Lowest MPMW < 75% plus concurrent amenorrhoea

Age

Age was significantly negatively related to the BSQ (r=-.13, P<.001), indicating that younger women were more concerned with their shape than older women. The undergraduate students were significantly younger than the family planning clinic attenders (20.0, sd=1.1 versus 23.8, sd=6.3; t=10.6, df=383.9, P<.001), and scored significantly higher on the BSQ (88.5, sd=29.2 versus 81.0, sd=28.4; t=2.15, df=414, P<.04). This difference between groups was attributable to differences in age and not other group differences: controlling for age using analysis of covariance, the undergraduate students scored similarly on the BSQ compared with the clinic attenders (adjusted means=86.8 versus 81.4 respectively; F=2.23, df=1,410, P>.05).

Thus, women in their late teenage years or early twenties were more concerned with their shape compared with slightly older women.

Current weight

Current body weight was significantly related to the BSQ, a high weight being associated with a high level of concern with shape (r=.47, P<.001). To examine further this relationship the women were divided into three groups according to weight: those who were underweight (ie. MPMW[2] < 85%), those who were of average weight (ie. MPMW=85-115%) and those who were overweight (ie. MPMW > 115%). Table 3.1.3 shows that using a one-way analysis of variance, BSQ scores significantly increased with each category of weight.

Table 3.1.3
The relationship between concern with shape and weight

	MPMW					
	< 85 (N=461)	85-115 (N=443)	> 115 (N=46)	F	df	P
BSQ[1]	59.6	81.8	100.4	26.0	2,532	.001
sd	21.4	27.7	27.6			

1 All groups significantly different (P<.05: Scheffe's multiple range test)

Thus, a high level of concern with shape was associated with a high body weight.

Desired weight

A high score on the BSQ was associated with a high desired weight[3] (r=.21, P<.001). However, women who showed a high desired weight also had a high current weight (r=.83, P<.001); and the relationship between a high BSQ score and a high desired weight was mediated by current weight. Using a partial correlation to control for the relationship between current weight and BSQ score, a *low* desired weight was significantly associated with a high BSQ score (r=-.45, P<.001).

Thus, allowing for current weight, a low desired weight was associated with a high level of concern with shape.

2 Weight in pounds expressed as a percentage of average weight, matched for age, height and sex (Geigy,1962).

3 Desired weight in pounds expressed as a percentage of average weight, matched for age, height and sex (Geigy,1962).

Weight dissatisfaction

Weight dissatisfaction (ie. current MPMW minus desired MPMW) was significantly related to the BSQ (r=.65, P<.001). It was not possible to examine the independence of this relationship controlling for current weight, since weight dissatisfaction was in part derived from current weight.

Thus, a high degree of dissatisfaction with weight was associated with a high level of concern with shape. This relationship was stronger than the relationship between weight *per se* and concern with shape reported above.

Highest body weight

The relationship between a history of a high body weight and score on the BSQ was examined in two ways. First, the womens' highest reported weight was found to be significantly associated with a high score on the BSQ (r=.43, P<.001). Even though current weight was significantly related to highest weight (r=.85, P<.001), the relationship between the BSQ and highest weight was independent of current weight (Partial r=.09, P<.03), although allowing for current weight the association was small. Second, Table 3.1.4 shows that women with a history of obesity[4] (ie. previous MPMW $\geq$120%) scored significantly higher on the BSQ compared with women with no such history (ie. previous MPMW < 120%). However, Table 3.1.4 also shows that women with a history of obesity had a significantly higher current weight, and the relationship between a history of obesity and a high BSQ score was found to be mediated by current weight. Controlling for the relationship between current weight and score on the BSQ using analysis of covariance, women with a history of obesity scored similarly on the BSQ compared with women with no such history (adjusted means=82.3 versus 77.5 respectively; F=2.34, df=1,521, P>.05).

[4] Throughout this thesis obesity is defined according to the criterion of Stunkard (1984): a mean body weight of at least 20 percent above average, matched for age, height and sex.

Table 3.1.4
The relationship between a history of obesity and concern with shape

	History of Obesity (N=102) $\bar{x}$/sd	No History of Obesity (N=433) $\bar{x}$/sd	F	df	P
BSQ	90.5 30.4	79.4 27.6	12.90	1,533	.001
MPMW	108.4 14.6	96.0 8.4	127.2	1,522	.001

Thus, compared with women who had never been obese, those with a history of obesity showed greater concern with their shape, although this association was not independent of current weight.

Low body weight

A history of a low body weight was examined in relation to the BSQ in two ways. First, lowest reported weight since puberty was found to be associated with a low score on the BSQ ($r=.21$, $P<.001$). However, lowest weight was also significantly related to current weight ($r=.77$, $P<.001$); and controlling for the relationship between current weight and BSQ score, lowest reported weight was associated with a *high* score on the questionnaire ($r=-.20$, $P<.001$). Second, women with and without a history of probable anorexia nervosa were compared on the BSQ. In this study where only self-report information was available, a history of probable anorexia nervosa was defined in two ways:

(i) A previous weight of less than 75 percent MPMW with concurrent amenorrhoea, ie. *narrow* criteria;

(ii) A previous weight of less than 85 percent MPMW with concurrent amenorrhoea, ie. *broad* criteria.

Table 3.1.5 compares the BSQ scores of women with a history of probable anorexia nervosa using the narrow criteria (N=7) with those with no such history (N=431). Due to the marked differences in the number of subjects in each group the Mann-Whitney U-test was used to compare these women. Those with a history of probable anorexia nervosa scored significantly higher on the BSQ. The two groups were of similar current weight.

Table 3.1.5
The relationship between a history of probable anorexia nervosa (narrow criteria) and current concern with shape

	Previous Probable Anorexia Nervosa (N=7)	No History (N=431)	Z	P
BSQ				
$\bar{X}$	105.0	79.4		
sd	32.2	28.0		
Mean ranks	316.7	217.9	2.05	.04
MPMW				
$\bar{X}$	91.9	98.1		
sd	13.4	10.9		
Mean ranks	160.4	218.3	1.12	>.05

Table 3.1.6 compares the BSQ scores of women with a history of probable anorexia nervosa using the broad criteria (N=14) with those with no such history (N=424). Although those with a history of probable anorexia nervosa tended to show greater concern with their shape, the difference between the two groups failed to reach statistical significance. Again, the groups were of similar current weight.

Table 3.1.6
The relationship between a history of probable anorexia nervosa (broad criteria) and current concern with shape

	Previous Probable Anorexia Nervosa (N=14)	No History (N=424)	Z	P
BSQ				
$\bar{X}$	93.9	79.4		
sd	33.4	28.0		
Mean ranks	271.8	217.8	1.57	>.05
MPMW				
$\bar{X}$	94.9	98.1		
sd	10.7	11.0		
Mean ranks	193.5	218.2	0.70	>.05

Thus, allowing for current weight, a history of a low weight was associated with a high BSQ score. Compared with women with no history of probable anorexia nervosa, those with a probable history of the disorder showed greater concern with their shape, particularly those who had appeared to suffer from a more serious form of the disorder.

Dieting

Table 3.1.7 shows a comparison between women who were currently dieting and women who were not dieting. The dieters scored significantly higher on the BSQ. Table 3.1.7 also shows that the dieters weighed significantly more. However, the association between dieting and a high BSQ score was independent of actual weight. Using analysis of covariance to control for the relationship between weight and the BSQ, women who were dieting still scored significantly higher on the BSQ compared with non-dieters (adjusted means=98.4 versus 76.4; F=73.7, df=1,516, P<.001).

Thus, the attempt to lose weight predicted a high level of concern with shape independent of actual weight.

Table 3.1.7
The relationship between dieting and concern with shape

	Dieters (N=119) $\bar{x}$/sd	Non-Dieters (N=405) $\bar{x}$/sd	F	df	P
BSQ	104.1 23.1	74.9 26.6	117.4	1,522	.001
MPMW	104.0 10.0	96.6 10.7	45.7	1,517	.001

Eating behaviour

Table 3.1.8 shows that episodes of uncontrollable and excessive overeating, self-induced vomiting and laxative abuse were all significantly related to the BSQ, a frequent occurrence of each being associated with a high level of concern with shape. Table 3.1.8 also shows that these factors were inter-related. Therefore the independence of these relationships with the BSQ was examined using partial correlations. Frequent episodes of uncontrollable and excessive overeating were significantly associated with a high BSQ score independent of vomiting and laxative abuse (Partial r=.30, P<.001). Frequent vomiting was significantly associated with a high BSQ score independent of episodes of excessive and uncontrollable overeating and laxative abuse (Partial r=.14, P<.01). Finally, frequent laxative abuse was significantly associated with a high BSQ score independent of episodes of excessive and uncontrollable overeating and vomiting (Partial r=.12, P<.01).

Thus, excessive and uncontrollable overeating, self-induced vomiting and laxative abuse were significantly and independently associated with a high level of concern with shape.

Table 3.1.8
Relationships between uncontrollable overeating, vomiting and laxative abuse with the BSQ

	BSQ	Over-Eating	Vomiting
	r / P	r / P	r / P
Overeating	.31 .001		
Vomiting	.20 .001	.10 .02	
Laxative Abuse	.15 .001	.02 >.05	.27 .001

For the 119 O.T. students a high score on the EAT was found to be associated with a high BSQ score (r=.61, P<.001).

Thus, a high level of concern with shape was associated with disturbed eating attitudes and behaviour.

Predicting concern with shape

Stepwise multiple linear regression analysis[5] was used to determine which combination of factors produced the best prediction of a high BSQ score. Since not all measures were available for each of the three groups of women, two separate regression analyses were conducted.

In the first analysis data available from the family planning clinic attenders was examined (ie. N=331). All factors significantly related to the BSQ (P<.05) were entered into the regression equation: namely, age, current weight, desired weight, dissatisfaction with weight, highest weight, lowest weight, history of probable anorexia nervosa, and frequency of episodes of excessive and uncontrollable overeating, vomiting and laxative abuse. Table 3.1.9 shows that a combination of five variables significantly predicted score on the BSQ: namely, marked dissatisfaction with weight, episodes of uncontrollable and excessive overeating, self-induced vomiting, laxative abuse, and a young age.

[5] With all regression analyses reported in this thesis the goodness of fit of the model was tested in at least two ways. First, observed values of the dependent variable were plotted against predicted values. When there was a marked discrepancy between these values the regression was deemed unsatisfactory. Second, predicted residuals were plotted against observed residuals. Where there was no observable pattern between these the regression model was deemed to produce a satisfactory and unbiased prediction of the dependent variable.

Table 3.1.9
Multiple linear regression analysis: clinic attenders

	Multiple R	F	P
Weight Dissatisfaction	.62	150.7	.001
Frequency of Overeating	.67	96.9	.001
Frequency of Vomiting	.70	76.6	.001
Frequency of Laxative abuse	.71	60.0	.001
Age	.72	49.6	.001

The second regression analysis was based on data available from the O.T. students (N=119). Again, all measures significantly (P<.05) related to the BSQ were entered into the equation: namely, age, current weight, highest weight, lowest weight, history of probable anorexia nervosa, score on the EAT, and frequency of overeating, vomiting and laxative abuse. Two variables significantly predicted score on the BSQ: namely, a high score on the EAT and a high current body weight (for score on the EAT Multiple R=.61, F=54.0, P<.001; and for score on the EAT with current weight Multiple R=.68, F=39.1, P<.001).

Thus, for the family planning clinic attenders a high level of concern with shape was predicted by marked weight dissatisfaction, disturbed eating behaviour and a young age. For the O.T. students a high level of concern with shape was predicted by disturbed eating attitudes and behaviour and a high body weight.

Discussion

This study examined relationships between concern with shape and demographic variables, eating behaviour, current weight and weight history among women in the community. A high level of concern with shape was associated with disturbed eating, a high body weight, marked dissatisfaction with weight, a history of both a low weight and a high weight, a history of probable anorexia nervosa, dieting and a young age. It is particularly noteworthy that the desire to lose weight predicted a high level of concern with shape independent of current weight.

Examining the association between a history of probable anorexia nervosa and a high BSQ score, it is possible that women with the disorder may show a high level of concern with their shape and continue to show such concern despite a satisfactory recovery in terms of weight. Alternatively, a high level of concern may arise during weight gain and recovery from the disorder. Clearly, the relationship between concern with shape and outcome from anorexia nervosa needs to be investigated further.

It is not clear at what age concern with shape first emerges since none of the women were under the age of 16. It is also not clear whether older women continue to be concerned with their shape, since most were under the age of 30. The association between age and the BSQ suggests that the level of concern with shape may diminish with increasing age, although a longitudinal study would be needed to establish this. Alternatively, the association may be attributable to a change in the sociocultural pressure to attain and maintain a slim body shape, ie. a period cohort effect, since there is evidence to suggest that the cultural preference for slimness is increasing (Garner et al,1980). The level of concern with shape experienced by girls under the age of 16 and women over the age of 30 needs to be examined.

One limitation of the study was that results from all measures were not available for all three groups of women. Information about desired weight and weight dissatisfaction were available only for family planning clinic attenders; and score on the EAT was available only for O.T. students. Weight dissatisfaction and score on the EAT featured prominently in regression analyses, but it was not possible to examine the inter-relationship between these two variables and their possible additive effects in predicting a high level of concern with shape.

The observed relationships between the BSQ and other factors were associations only. It is not clear whether factors related to the BSQ may influence concern with shape, or whether concern with shape may influence other factors. It is possible that both concern with shape and other factors may reinforce each other in a negative cycle of behavioural and psychological maladjustment. Studies observing change in concern with shape in relation to the temporal position of salient other factors are needed to clarify direction of causality.

Section 2

The relationship between concern with shape and age

Introduction

In Section 1 of this Chapter young women were found to be more concerned with their shape than slightly older women. However, most of the women studied (97%) were under the age of 30, and none was over the age of 52. It is therefore not known whether women over the age of 30 show less concern with their shape compared with women under this age. The association between increasing age and a decreasing level of concern with shape was consistent with a study conducted by the American magazine *Psychology Today* (Cash et al,1986), which reported that dissatisfaction with physical appearance was greater among women in their late teenage years and early twenties than among older women. However, an earlier study conducted by the same magazine (Berscheid et al, 1973), found no difference between different age groups in the level of dissatisfaction with specific body parts.

There has been some interest in the age at which concern with shape first arises among women. As was reviewed in Chapter 1, it has been suggested that dissatisfaction with body shape is widespread by the teenage years (Buvat-Herbaut et al,1983; Clifford,1971; Crisp,1977; Davies and Furnham,1986; Druss and Silverman,1979; Dwyer et al,1967; Guggenheim et al,1977; Huenemann et al,1966; Nylander,1971; Rodin et al,1984; Wardle and Beales,1986), and that *feeling fat* is common among young girls (Crisp,1977; Druss and Silverman,1979; Huenemann et al,1966; Nylander,1971; Wardle and Beales,1986). Among teenage girls such dissatisfaction appears to be focused on fleshy body areas, such as the waist, hips and thighs (Clifford,1971; Davies and Furnham,1986; Guggenheim et al,1977; Huenemann et al, 1966). It has also been suggested that concern with fatness may motivate dieting which is widespread among teenage girls (Crisp,1977; Davies and Furnham,1986; Druss and Silverman,1979; Dwyer et al,1967; Guggenheim et al,1977; Huenemann et al,1966; Nylander,1971; Wardle and Beales,1986), and may evoke feelings of guilt after eating (Wardle and Beales,1986). The prevalence of concern with body shape among teenage girls is unclear. Three studies (Huenemann et al,1966; Nylander,1971; Simmons and Rosenberg,1975) reported that these concerns became increasingly more common across the teenage years, whereas one study (Wardle and Beales,1986) found similarly high levels of concern among girls of 12 and 18. Koff et al (1978) suggested that menarche may be an important event influencing a girl's concern with her body shape. Since menarche is associated with a change in shape and an increase in body fat it is conceivable that concern with shape may increase at this time.

Despite the suggested association between concern with shape and age there is very little satisfactory evidence to support this association aside from the results presented in Section 1 of

this Chapter. The published reports examining concern with shape in relation to age are severely limited in that none used a standardised validated measure specifically designed to assess concern with shape, thereby making findings difficult to interpret. The studies either simply asked respondents whether they *felt fat* (eg. Nylander,1971), or examined perception of sexual attractiveness (eg. Cash et al,1986), or examined dissatisfaction with body parts not specifically associated with body shape (eg. Berscheid et al,1973), or simply asked respondents to rate their shape on a single ordinal scale (eg. Wardle and Beales,1986), or used a measure which is widely considered to be methodologically unsound (eg. the *Draw-A-Person Test*, Koff et al,1978). None of the studies examined the association between age and concern with shape using a satisfactory and validated measure of this concern.

The relationship between concern with shape and age merits further empirical investigation since such concern is maladaptive and has been found to be associated with behavioural and psychological disturbance (see Section 1 of this Chapter). It is therefore important to know the age at which such concern typically arises. The suggestion that girls as young as 12 are highly concerned with their shape (Wardle and Beales,1986) is striking. It is also important to know whether concern with shape diminishes with increasing age.

The aim of the present investigation was to examine further the relationship between concern with shape and age. Two studies were conducted.

Study 1: Concern with shape among schoolgirls

The first study investigated concern with shape among schoolgirls. The aims were:

(1) To determine at what age concern with shape first arises.

(2) To determine whether the level of such concern increases during the teenage years.

(3) To determine whether the onset of puberty is associated with an increase in concern with shape.

Method

Assessments

All girls attending two schools (ie. girls between the ages of 11 and 18) were asked to complete the Body Shape Questionnaire or BSQ (see Chapter 2). The girls were also asked to complete a short background information sheet indicating their age, height, weight, whether they had begun menstruating and the age at which menarche had occurred. Replies were anonymous.

Results

Two hundred and forty-seven girls were asked to complete the assessments. Two hundred and forty-two returned their questionnaires. Four of these were found to be incomplete and were

excluded from data analyses. The final sample of 238 represented a response rate of 96.4 percent.

Concern with shape in relation to age

Table 3.2.1 shows the age, weight and BSQ scores of the girls. Since it was not possible to calculate the MPMW of the girls aged 11 and 12 their body mass index (BMI) is shown (weight in Kg/height in metres squared). Compared with the older girls, the girls aged 11 and 12 showed less concern with their shape, and this difference was significant compared with the girls aged between 15 and 16. The BSQ scores of the girls between the ages of 13 and 18 were not significantly different, although girls aged between 15 and 16 tended to score higher than all the other girls.

Table 3.2.1
Concern with shape in relation to age

	11-12 Years (N=17) $\bar{X}$/sd	13-14 Years (N=80) $\bar{X}$/sd	15-16 Years (N=100) $\bar{X}$/sd	17-18 Years (N=40) $\bar{X}$/sd	F	df	P
BSQ	66.4[1]	89.4	101.7	92.5	5.23	3,233	.01
	27.4	33.8	40.6	31.8			
BMI	17.3[2]	20.7	21.5	21.0	10.48	3,230	.001
	2.67	3.22	2.88	2.07			
MPMW	–	100.7	103.1	98.8	1.48	2,214	>.05
		15.6	13.7	9.8			

1 Significantly different from 15-16 years: Scheffe's Multiple Range test (P<.05)
2 Significantly different from all other groups: Scheffe's Multiple Range test (P<.05)

Table 3.2.1 shows that the youngest girls had significantly less body fat compared with the older girls. Since the onset of puberty is associated with an increase in fatness it was not considered appropriate to control for the difference in fatness between the youngest and older girls.

Thus, pre-teenage girls showed significantly less concern with their shape compared with older girls, but the level of concern with shape did not significantly increase during the teenage years.*

Concern with shape in relation to puberty

Among the girls aged 11 and 12, 10 had not yet began menstruating and seven had. In Table 3.2.2 the BSQ scores, weight and age of pre-menarchal and post-menarchal girls are compared.

* In addition to there being no difference in mean BSQ scores between the three age categories, the proportion within each category with 'Marked' concern (ie. BSQ>140) was also no different (χ^2=3.96, P>.05).

Since the number of girls in each group was small the Mann-Whitney U-test was used to compare the groups. The two groups were of similar age and weight, but compared with the pre-menarchal girls, those who were post-menarchal scored significantly higher on the BSQ.

Table 3.2.2
Concern with shape in relation to puberty

	Pre-menarch $\bar{X}$/sd/$\bar{X}$ ranks (N=10)	Post-menarch $\bar{X}$/sd/$\bar{X}$ ranks (N=7)	Z	P
BSQ	54.1	83.9		
	24.8	21.8		
	6.8	12.1	2.15	.03
Age	11.7	12.0		
	0.5	0.0		
	8.0	10.5	1.55	>.05
BMI	17.1	17.7		
	3.1	2.1		
	7.50	11.14	1.46	>.05

Thus, compared with pre-pubertal girls, girls who had reached puberty showed significantly greater concern with their shape.

Discussion

This study investigated concern with shape among adolescent girls. The response rate to participation in the study was high, although one limitation of the study was that the number of girls aged between 11 and 12 was small, and therefore results from this age group should perhaps be interpreted with caution.

The results suggested that concern with shape may typically arise at around the age of 13, at a time of an increase in body fat. Girls of 11 and 12 were less concerned with their shape compared with girls of 13 and older. However, compared with girls of 13 and 14, concern with shape was no greater among the older girls. This suggests that after concern with shape is first experienced it does not increase uniformly throughout the teenage years but remains at a relatively constant level. This finding is consistent with a recent study of concern with fatness by Wardle and Beales (1986), which also found no increase in concern across the teenage years, although their study did not use a satisfactory validated measure of concern with shape and

simply asked girls to rate their shape on a scale of fatness. The findings of both the current study and that by Wardle and Beales are contrary to several earlier reports (Huenemann et al,1966; Nylander,1971; Simmons and Rosenberg,1975) which suggested that concern with shape was more common among older compared with younger teenage girls, although again these studies did not use validated measures of such concern. It is possible that the discrepant findings between the current study and earlier studies may be attributed to a change in the cultural preference for a slim shape (Garner et al,1980) which may have heightened the level of concern experienced by young girls.

Menarche and the onset of puberty appeared to be an important factor in relation to concern with shape. Pre-pubertal girls showed significantly less concern compared with girls who had reached puberty. The pre-menarchal and post-menarchal girls were of similar age and weight, and therefore different levels of concern with shape may not be attributable to different peer-group pressure or differences in fatness.

To conclude, this study found that pre-pubertal girls showed less concern with their shape compared with older girls, and girls of 13 and 14 showed a similar level of concern with their shape compared with girls of 17 and 18. These findings suggest that concern with shape appears to arise at the time of puberty, and once such concern is experienced it seems to remain at a relatively constant level across the teenage years.

Study 2: Concern with shape among older women

The aim of the second study was to investigate concern with shape among women over the age of 30 to determine whether concern with shape decreases with increasing age.

Procedure

All women (N=42) attending two meetings at two branches of the *Women's Institute* (WI) in Cambridge were asked to complete the BSQ and to indicate their age, height and weight. All replies were anonymous.

The data collected from these women were compared with the data from the three groups of women in the general population reported in Section 1 of this Chapter.

Results

Subjects

All the women returned satisfactorily completed questionnaires. Two were excluded from data analysis: one because she reported a medical thyroid complaint and weighed 152 percent of average weight; and one because she had recently given birth. It was considered inappropriate to examine these womens' concern with their body shape.

Only two of the WI women were under the age of 40, and all were over 30. Therefore, there was little overlap in terms of age between this sample and the general population sample reported

in Section 1.

Age and BSQ differences

Table 3.2.3 shows that the WI women were significantly older than the total sample of 535 women in the general population, but scored similarly on the BSQ.

Table 3.2.3
Comparisons between WI women and women in the general population

	WI Women (N=40)	General Population Women (N=535)	t	df	P
Age	56.5	22.7	18.99	39.4	.001
sd	11.0	5.4			
BSQ	78.3	81.5	0.69	573	>.05
sd	26.1	28.4			

The WI women were then compared with the sample of undergraduate students to examine differences in concern with shape between two markedly different age groups. The undergraduate students were all in their late teenage years or early twenties and thus there was no overlap between the two groups in terms of age. Table 3.2.4 shows that the WI women were considerably older and tended to show less concern (P<.06).

Table 3.2.4
Comparisons between WI women and undergraduate students

	WI Women (N=40)	Undergraduate Students (N=85)	t	df	P
Age	56.5	20.0	20.6	38.3	.001
sd	11.0	1.1			
BSQ	78.3	88.5	1.88	123	.06
sd	26.1	29.2			

Discussion

The association between age and concern with shape reported in Section 1 of this Chapter and the findings from this study suggest that level of concern with shape is slightly higher among women in their late teens and early twenties compared with older women. However, the relationship between increasing age and decreasing level of concern was not found to be linear since women in their mid twenties showed similar BSQ scores compared with women who were considerably older; and women who were much older scored nearly as high as younger women on the BSQ.

From the data presented it is not possible to say whether concern with shape decreases with increasing age. Compared with the older women, the higher level of concern with shape shown by the younger women may reflect a change in cultural pressures influencing concern with shape ie. a period cohort effect, as was suggested in Section 1 of this Chapter. It has been reported that the cultural preference for slimness has recently increased, as mentioned above, (Garner et al,1980), which suggests that cultural factors may account for the higher level of concern with shape shown by the younger women.

Section 3

Concern with shape among women concerned with their weight

Introduction

In Section 1 of this Chapter a high level of concern with shape was found to be associated with a high body weight and a history of obesity. These associations were consistent with reports by Stunkard and his colleagues (Stunkard and Mendelson,1961,1967; Stunkard and Burt,19767; Stunkard,1976; Rand and Stunkard,1978) based on severely overweight people, some of whom were found to show an extreme level of concern with their shape and experience intense disparaging feelings towards their appearance. In this series of studies on the obese, such disturbances were found only among those obese since childhood, and Stunkard and his colleagues concluded that disparaging feelings towards body shape may first emerge among the obese during adolescence. Among the obese who showed extreme concern with their shape, the degree of overweight was unrelated to the level of concern, and weight loss was not found to necessarily alleviate the extreme level of concern. However, despite the very detailed and informative observations by Stunkard and his colleagues, their reports on body shape disparagement in the overweight are limited. Their findings were based on severely overweight patients, and it is not clear whether less severely overweight people in the general population show similarly extreme levels of concern with their body shape. Some of their patients were being treated for neurotic problems aside from their weight, and it is possible that overweight people who are emotionally healthy may show little concern with their shape. Perhaps the greatest limitation is that their reports were based on clinical observation. There has been no empirical research into concern with shape among people who are overweight using satisfactory standardised measures.

Dieting is often associated with a high body weight (eg. Stunkard,1976) and a history of a high weight (Bruch,1973). In Section 1 of this Chapter women who were dieting were also found to be highly concerned with their shape. One limitation of this finding was that dieting was measured by a single question, and the women were simply classified into *dieters* and *non-dieters* based on their responses to this question. It is possible that a high level of dietary restraint may be associated with a high level of such concern.

The aims of the present study were to investigate further relationships between concern with shape, current weight, dieting, and weight and dietary history. The research was conducted on women who were particularly concerned with their weight, ie. attenders at the commercial slimming organisation *Weight Watchers*. Women are allowed to become members of Weight Watchers only if they are currently overweight or have been in the past. Weight is an important issue for all members. Although not all Weight Watchers consider themselves to be *dieting*, each

follows a strict eating programme with distinct dietary rules, and therefore all may be regarded to be dieters. Each Weight Watcher is assigned a *goal weight* to achieve and maintain, which is usually within the average weight range. The organisation provides financial and social rewards and punishments for changes in weight.

Three predictions were made:

(1) Weight Watchers would show a higher level of concern with their shape than women in the general population;

(2) Among Weight Watchers, level of dietary restraint and a history of dieting would be associated with a high level of concern with shape;

(3) Negative feelings towards body shape during adolescence would be associated with a high level of concern with shape during adulthood.

Subjects

Weight Watchers

Women attending seven meetings at one branch of *Weight Watchers* in September and October 1986 were asked to participate in a study of *Dieters and Dieting*. These months were chosen because the organisation holds national recruitment campaigns at this time. The weekly *Weight Watchers* meetings consisted of weighing members followed by a lecture. Not all members stayed for the lecture. Members who left before the lecture were given a letter asking them to participate in the study; and those who stayed were verbally asked to participate.

Women in the community

The Weight Watchers were compared with the sample of 535 women in the community described in Section 1 of this Chapter.

Procedure

The Weight Watchers were interviewed in their homes using standardised questions about their weight and dietary history, and about concerns with their body shape during puberty (Appendix 14). The women were then weighed and completed four self-report questionnaires:

(i) The Body Shape Questionnaire or BSQ (see Chapter 2), which measures concern with shape;

(ii) The Beck Depression Inventory or BDI (Beck et al,1961), which is a 21-item questionnaire measuring level of depression. A high score indicates marked depression;

(iii) The Rosenberg Self-Esteem Scale (Rosenberg,1965), which is a 10-item questionnaire measuring self-esteem. A low score indicates a low evaluation of self-worth;

(iv) The *Dietary Restraint* factor of the Three Factor Eating Questionnaire (Stunkard and Messick,1985). This factor consists of 20 questions which are concerned with cognitive control of food intake. A high score on this factor indicates a high level of dietary restraint.

Results

Weight Watchers

All the Weight Watchers were female. Nineteen members did not stay for the weekly lectures and were handed a letter asking them to participate. Four returned the reply form and were interviewed. Of the 61 members who were verbally asked to participate, 18 refused; 43 agreed to be involved in the study but 10 of these could not be contacted or were not available to be interviewed. A total of 37 women were included in the study. Information on these women is given in Table 3.3.1.

Table 3.3.1
Information on the Weight Watchers

	Mean	sd	Range
BSQ	104.7	29.1	54 - 176
Age	34.4	9.1	14 - 49
MPMW	116.1	17.6	89 - 166
Highest MPMW	132.1	20.0	97 - 184
Average Weight Loss[1]	11.8	10.1	-9 - 43
EAT	16.4	10.7	3 - 49
Dietary Restraint	13.1	3.9	1 - 20

1 Weight loss in pounds since joining *Weight Watchers* ($\bar{x}$ duration=10.5 months, sd=22.0, range=0-96 months)

Prediction 1

Current body weight

Compared with the sample of women in the community, the Weight Watchers weighed more and scored higher on the BSQ, as shown in Table 3.3.2.

Table 3.3.2
Weight and BSQ scores of Weight Watchers and Women in the community

	Weight Watchers (N=37)	Women in the Community (N=535)	t	df	P
MPMW	116.1	98.3	6.08	38.0	.001
sd	17.6	11.0			
BSQ	104.7	81.5	4.80	570	.001
sd	29.1	28.4			

Thus, prediction 1 was supported in that Weight Watchers showed greater concern with their shape compared with women in the community. The relationship between weight and concern with shape was explored further. Among the Weight Watchers a high current body weight was significantly associated with a high BSQ score ($r=.55$, $P<.001$), which replicated the association between weight and concern with shape among women in the community reported in Section 1 of this Chapter.

Five of the Weight Watchers were maintaining their goal weight; and although this group was too small to allow statistical analysis, their average BSQ score of 87.4 (sd=15.0) was considerably lower than the average score of 107.4 (sd=30.0) for the remainder of the group. Twelve of the Weight Watchers had reduced their weight to within 10 percent of average weight, and were compared on the BSQ with those who were currently above 10 percent of average weight and with women in the community. Table 3.3.3 shows that using a one-way analysis of variance, Weight Watchers who weighed within the normal range scored similarly on the BSQ compared with women in the community ($P>.05$); but did not score significantly lower compared with Weight Watchers who were overweight. Although Cochran's assumption of equal variance was satisfied (Cochran's $C=.36$, $P>.05$), due to the marked differences in sample size, these three groups were also compared using a Kruskal-Wallis non-parametric analysis of variance. Again, Weight Watchers who weighed within the normal weight range scored mid-way between overweight Weight Watchers and women in the community, as shown in Table 3.3.3.

Table 3.3.3
Normal weight Weight Watchers compared with overweight Weight watchers and women in the community

	Overweight Weight Watchers (N=25)	Normal Weight Weight Watchers (N=12)	Women in the Community (N=535)			
BSQ	110.1[1]	93.6	81.5	F=12.9	df=2,569	P<.001
	29.3	26.4	28.4			
Mean Ranks	430	354	278	χ^2=22.3		P<.001

1 Significantly different from women in the community (P<.05): Scheffe's multiple range test

Thus, among the Weight Watchers a high body weight was associated with a high level of concern with shape.

Highest weight

Highest reported body weight was significantly related to the BSQ (r=.57, P<.001); and this association was independent of current weight (Partial r=.30, P<.04).

Thus, a history of a high weight was associated with a high level of concern with shape.

Weight loss

It was possible that among the group of Weight Watchers who were above their goal weight, those who had nevertheless lost a considerable amount of weight would show less concern with their shape compared with women who had achieved little weight loss. The relationship between concern with shape and weight loss among women not at their goal weight (N=32) was examined in two ways. First, amount of weight lost (in pounds) since joining Weight Watchers was correlated with the BSQ: there was no significant relationship (r=.18, P>.05). Second, the average amount of weight lost by the overweight Weight Watchers since joining the organisation was 10.3 pounds: using a median split, women who had lost a lot of weight (ie.$\bar{X}$ weight loss=16.7lb, sd=9.3) scored similarly on the BSQ compared with women who had lost little weight (ie. $\bar{X}$ weight loss=3.9lb, sd=4.2) (BSQ=108.4, sd=27.0 versus 106.4, sd=33.5 respectively; t=0.19, df=30, P>.05).

Thus, weight loss was unrelated to level of concern with shape. At first inspection this finding is apparently contrary to finding that normal weight Weight Watchers scored similarly to women

in the community on the BSQ, since the latter suggests that Weight Watchers who had successfully reduced their weight to within the average range also showed an average BSQ score. However, Table 3.3.4 shows that the normal weight Weight Watchers had never been as overweight as the overweight Weight Watchers, and had not lost significantly more weight.

Table 3.3.4
Weight history of Weight Watchers

	Normal Weight Weight Watchers (N=12)	Overweight Weight Watchers (N=25)	t	df	P
% Highest Weight	119.6 17.7	138.2 18.4	2.90	35	.01
Weight (lb) at Joining Weight Watchers	155.2 15.2	175.3 24.9	2.57	35	.02
Weight Loss (lb)	14.8 9.7	10.3 10.2	1.26	35	>.05

Thus, weight loss was unrelated to concern with shape.

Dissatisfaction with weight

Dissatisfaction with weight (ie. desired MPMW subtracted from current MPMW) was highly related to the BSQ ($r=.61$, $P<.001$). It was not possible to examine this relationship controlling for current weight since the measure of weight dissatisfaction was in part derived from current weight.

Thus, a high level of dissatisfaction with weight was associated with a high level of concern with shape; and this association was stronger than the association between concern with shape and weight *per se*. This finding was similar to that reported in Section 1 of this Chapter for women in the community.

Prediction 2: Dieting

There was no relationship between dietary restraint score and score on the BSQ ($r=.16$, $P>.05$). Thus, prediction 2 was unsupported in that a high level of dietary restraint was not associated with a high level of concern with shape. However, most of the Weight Watchers were highly restrained eaters, and it is possible that there was insufficient variability in dietary restraint scores for there to be a relationship between restraint and concern with shape.

Concern with shape was then examined in relation to dietary history. Table 3.3.5 compares Weight Watchers who had dieted before puberty with those who first dieted as adults. Four of the Weight Watchers had dieted before puberty, and all scored highly on the BSQ. However, they also showed a high current body weight, and it is possible that the association between childhood dieting and a high BSQ score as an adult may have been mediated by current weight. Too few women had dieted during childhood to allow statistical analyses.

Table 3.3.5
Comparison between Weight Watchers who first dieted
During or after childhood

	Dieted Before Puberty (N=4)	First Dieted After Puberty (N=33)
BSQ	135.0	101.1
sd	22.9	27.8
MPMW	140.9	113.1
sd	22.1	14.6

Thus, childhood dieting appeared to be associated with a high level of concern with shape during adulthood, although this suggestion must be regarded as tentative.

Prediction 3: Concern with body shape at puberty

Attitudes towards body shape at puberty were examined in relation to the BSQ in two ways:

(i) Weight Watchers who recalled being upset by *puppyfat* at puberty were compared with those who had no such recollection. BSQ scores were not significantly different between the two groups (BSQ=112.2, sd=16.0, N=11 versus BSQ=102.9, sd=33.9, N=23 respectively; t=1.08, df=32, P>.05).

(ii) Weight Watchers were classified into those who recalled being distressed by the development of their hips and breasts at the time of puberty (N=7), and those who were pleased or indifferent about such changes (N=28). Due to the small number of subjects in the distressed group, a Kruskal-Wallis non-parametric analysis of variance was used to compare these women. Again, BSQ scores for the two groups were not significantly different (mean ranks for the unconcerned group=17.0, and for the distressed group=22.1; χ^2=1.43, P>.05).

Thus, prediction 3 was unsupported in that among the Weight Watchers, a high level of concern with body shape during adulthood was not associated with a high level of concern with shape during childhood or adolescence.

Discussion

This study investigated further the relationship between concern with shape, weight and dieting. The study had a number of limitations. Few of the women reported childhood obesity and dieting, and the response rate to participation in the study was low. The latter was largely due to women not replying to the recruitment letter, since willingness to participate was high among weight watchers who attended the weekly lecture.

Among women sufficiently concerned with their weight to be attending a commercial weight reducing programme, a high body weight was associated with a high level of concern with shape. Overweight Weight Watchers scored significantly higher on the BSQ compared with women in the general population, whereas normal weight Weight Watchers did not differ on the BSQ from women in the general population. Findings were consistent with the relationship between weight and concern with shape reported in Section 1 of this Chapter. However, these associations were contrary to the observations of Stunkard (1976), discussed above, that disparaging feelings towards body shape were independent of degree of overweight among the obese. The discrepancy may be due to differences between the populations studied. Stunkard's (1976) report was based on severely overweight patients, whereas most of the Weight Watchers in the current study were not markedly overweight. A threshold effect may exist whereby once a very high weight is exceeded factors aside from weight may influence the level of concern with shape.

Among the Weight Watchers a high level of concern with shape was associated with a high level of dissatisfaction with weight, which was consistent with a similar association observed among women in the community reported in Section 1 of this Chapter. Also in the present study, a high level of concern with shape was associated with a history of being markedly overweight, independent of current weight; and level of concern with shape was unrelated to weight loss. Both findings suggest that a high body weight has an enduring effect on level of concern with shape and that weight loss is insufficient to reduce this concern, although a longitudinal study is needed to confirm this. These findings are consistent with the observations of Stunkard and his colleagues (Stunkard and Burt,1967; Stunkard and Mendelson, 1961,1967; Stunkard,1976) who found that weight loss alone did not alleviate extreme concern with body shape.

Contrary to prediction, degree of dietary restraint was unrelated to concern with shape. However, nearly all Weight Watchers are highly restrained eaters since all follow a *programme of eating* consisting of strict dietary rules, as mentioned above. Consequently, there was little variability on the measure of dietary restraint which may explain its lack of association with the BSQ.

Childhood dieting appeared to be associated with a high BSQ score during adulthood, although this suggestion must be regarded as tentative since very few of the Weight Watchers had dieted as children. The association may have been spurious since obese children usually become obese adults (Stunkard and Burt, 1967). Nevertheless, the relationship between childhood dieting and adult concern with shape was consistent with the observation by Stunkard and Mendelson (1961,1967) that body shape disparagement during adulthood is associated with childhood onset obesity.

The prediction concerning an association between negative feelings towards body shape during adolescence and a high level of concern with shape during adulthood was unsupported. This was contrary to the observations of Stunkard and Mendelson (1961,1967) who found that among markedly obese patients, marked body shape disparagement during adulthood was associated with derogatory feelings towards body shape during adolescence. However, most of the Weight Watchers were not severely overweight and it may be that only among severely obese people does an association exist between disparaging feelings towards body shape during adolescence and adulthood.

Thus, overweight women attending a commercial dieting organisation were found to be highly concerned with their shape. Level of dietary restraint was unrelated to the level of concern with shape; and a high level of concern with shape during adulthood was not associated with memories of concern with shape during adolescence. The principal finding from this study was that, as in Section 1 of this Chapter, weight unexpectedly predicted concern with shape.

Section 4

Sex differences in concern with shape

Introduction

In Chapter 2 it was found that the majority of a sample of young women showed some concern with their shape and few showed no concern. It is unclear how specific this concern is to women. Although it has frequently been claimed that the sexes differ markedly in the degree of dissatisfaction with body shape (eg. Huenemann et al,1966; Garner et al,1983), and that *feeling fat* and worry about appearance are more common among women (Rodin et al,1984), there is little empirical evidence to support these contentions. Indeed, only one study (Garner et al,1983) used a standardised validated measure of concern with shape (ie. the *Body Dissatisfaction* subscale of the Eating Disorder Inventory, as was described in Chapter 2), and reported that a sample of men were less dissatisfied with parts of their body compared with a group of normal young women. The study was limited in that this finding was presented as a part of the validation of the measure and therefore no details were given about the men; and the study did not examine other aspects of concern with shape aside from dissatisfaction.

The general aim of this study was to examine concern with shape among men. There were two specific aims:

(1) To compare the level of concern with shape shown by men with the level shown by women in the community. It was predicted that men would show less concern;

(2) To examine among men relationships between a relatively high level of concern with shape and other factors, in particular the factors found to be associated with a high level of concern among women in the community, described in Section 1 of this Chapter: namely, a young age, a high body weight, a history of a high weight, dieting and disturbed eating behaviour.

Procedure

Fifty-five men, the total number attending a vocational course for graduate research students were asked to complete the Body Shape Questionnaire or BSQ (see Chapter 2). The questionnaire was slightly amended, with the word *men* substituted for *women*. The men were also asked to complete questions about age, height, weight and past weight, whether they currently experienced episodes of uncontrollable and excessive overeating, whether they currently induced vomiting to control their weight, and whether they currently used laxatives to control their weight (Appendix 15). All replies were anonymous.

The men were compared with the sample of 535 women in the community described in Chapter 2.

Results

Sex differences in BSQ scores

Forty-two men returned completed questionnaires, a response rate of 76.4 percent. Table 3.4.1 shows comparisons between the men and the sample of women in the community. The mean score of the men on the BSQ was 48.3, which was markedly lower than the mean score of 81.5 for the women in the community. Indeed, only one male scored slightly above the mean for the women, scoring 85 on the questionnaire.

Table 3.4.1
Comparisons between men and women in the community

	Men (N=42)	Women (N=535)	t	df	P
BSQ	48.3	81.5	14.2	77.4	.001
sd	12.9	28.4			
Age	25.4	22.7	4.14	53.9	.001
sd	4.0	5.4			
MPMW	94.9	98.3	2.48	52.9	.02
sd	8.4	11.0			

Thus, the men were found to show considerably less concern with their shape than women in the community. Indeed, most showed *No Concern,* (ie. a score below 80, see Chapter 2). However, the men were slightly older and weighed less than the total sample of women in the community. Since, among the women a low BSQ score was associated with a low weight and older age (Section 1 of this Chapter), it was possible that differences in scores on the BSQ between the sexes may have been attributable to differences in age and weight. Therefore, women were selected if they were similar to the men in terms of age and weight (ie. within one standard deviation of the mean of the men on both these factors). This produced a sub-sample of 105 women. Table 3.4.2 shows that compared with this subgroup of women, the men still scored significantly lower on the BSQ, although the two groups were of similar age and weight.

Table 3.4.2
Comparison between men and matched women

	Men (N=42)	Women (N=105)	t	df	P
BSQ	48.3	72.2	7.69	134.2	.05
sd	12.9	24.4			
Age	25.4	24.7	1.04	53.2	>.05
sd	4.0	2.4			
MPMW	94.9	95.3	0.30	49.6	>.05
sd	8.4	4.2			

Thus, allowing for differences in age and weight, the men still showed considerably less concern with their shape than the women in the community.

Relationships between concern with shape and other factors

Among the group of men, score on the BSQ was examined in relation to age, weight and weight history, dieting, bingeing, vomiting and laxative abuse.

A relatively high level of concern with shape was associated with older age ($r=.26$, $P<.05$), and with a high body weight ($r=.26$, $P<.05$). Score on the BSQ was also significantly associated with highest reported body weight ($r=.50$, $P<.001$), and this relationship was independent of current weight (Partial $r=.49$, $P<.001$). Only three men reported a history of obesity, (previous MPMW $\geq$120%) and all three had relatively high BSQ scores (BSQ=63,69,85). Only two of the men were currently dieting, and they showed high scores compared with the other men (BSQ=75,85). Eight men reported dieting in the past and were compared with the remainder on the BSQ. Using the Mann-Whitney U-test, previous dieters showed significantly greater concern with their shape (mean ranks=33.4 versus 18.7 respectively; $Z=3.05$, $P<.002$). One male reported recent episodes of uncontrollable and excessive overeating, and showed a relatively high score of 70 on the BSQ. Two others had experienced episodes of uncontrollable overeating in the past, and similarly scored relatively highly on the BSQ (BSQ=75,78). Since none of the men vomited or abused laxatives it was not possible to examine scores on the questionnaire in relation to these variables. Scores on the BSQ were unrelated to height, desired weight and lowest reported weight since adulthood ($P>.05$).

Thus, among the men, a relatively high level of concern with shape was associated with older age, a high body weight, a history of a high weight, dieting and excessive and uncontrollable overeating.

Discussion

This study examined concern with shape among men and compared the level of concern shown by men with the level shown by women in the community. Two methodological considerations are relevant to this study. First, the questionnaire response rate for the men was quite low but was probably sufficiently satisfactory to conduct data analyses. The graduate school attended by the men was very intensive and it is likely that those who failed to respond to the questionnaire simply did not find sufficient time. Second, the sample of men were statistically below the mean in terms of weight. This was unexpected, and it may be that the population statistical averages used to calculate relative weight (ie. Geigy,1962) may be out of date or inappropriate for use with British samples of men.

It was found that few of the men were concerned with their shape, and that as a group they scored considerably lower on the BSQ than women in the community. Clearly, the men showed very few of the concerns with body shape measured by the questionnaire. After completing the questionnaire a number of respondents verbally reported that they were much more concerned with their height and how muscular their body was, as was also found by Wardle and Beales (1986); and any concerns the men had about fatness were verbally reported to be associated with health and not appearance, in contrast with many women.

Among factors found to be related to the BSQ, all but one (ie. age) were consistent with factors associated with a high score among women in the community (reported in Section 1 of this Chapter). Thus, a relatively high BSQ score among the men was associated with a current and previous high weight, dieting for weight loss, and episodes of uncontrollable and excessive overeating, although the latter finding must be interpreted with caution due to the few men who reported experiencing such episodes. The relationship between higher concern and increasing age was contrary to the association between higher concern and younger age for the women. It is possible that young women show a high level of concern due to sociocultural pressures to be slim, whereas men may develop greater concern as they age due to weight gain or loss of fitness. However, this speculation is based on cross-sectional data and longitudinal studies would be needed to verify this.

To conclude, compared with women, men were found to show considerably less concern with their shape, and this was true even when the men and women were matched for age and weight.

Section 5

The relationship between concern with shape and mental state

Introduction

There have been preliminary suggestions that a high level of concern with shape may be associated with depressed mood. Beck (1973) claimed that depression is commonly accompanied by a high level of concern with fatness, particularly among women, although he provided no empirical evidence to support this claim. Four studies (Goldberg and Folkins,1974; Berscheid et al,1973; Marsella et al,1981; Noles et al,1985) reported that, compared with women who were satisfied with their appearance, those who were dissatisfied were also more depressed. It is conceivable that feeling miserable may make a woman appear visually unattractive to other people. It is also conceivable that, compared with women who are satisfied with their appearance, those who feel miserable about their appearance may be less attractive. However, the suggested relationship between depressed mood and body dissatisfaction does not appear to be mediated by visual attractiveness since one study (Noles et al,1985) asked objective raters to rate the appearance of depressed and non-depressed subjects. Compared with those who were not depressed, those who were depressed rated themselves as less attractive, but depressed and non-depressed subjects were rated as being of similar attractiveness.

Despite the reported association between concern with shape and low mood, the studies cited were limited by the measures used to assess concern with shape. Only one (Noles et al,1985) used a standardised validated measure (ie. the Body Self Relations Questionnaire; Winstead and Cash,1984), and this measure mainly assesses perception of sexual attractiveness. The three other studies (Goldberg and Folkins,1974; Berscheid et al,1973; Marsella et al,1981) were concerned with body dissatisfaction not specifically associated with body shape, and did not examine relationships between depressed mood and aspects of concern with shape aside from dissatisfaction (as was discussed in Chapter 2). Thus, although there is some preliminary evidence to suggest that concern with shape may be associated with depressed mood, no firm conclusions may be drawn since inadequate measures of concern with shape have been used.

The suggested association between concern with shape and depressed mood is consistent with ideas in Beck's cognitive model of depression, as was outlined in Chapter 1. Beck (1973) observed that the distorted thinking which characterises depression commonly extends to concern about physical appearance, particularly among women. Beck stated that a depressed patient often becomes preoccupied with the thought of getting fat, and may even believe that they have grown fat. However, not all who are depressed are highly concerned with their shape. It is therefore possible that depressed mood may exacerbate concern with shape only when shape is important. It has been suggested that body shape is important to most women (Rodin et al,1984), although

clearly the level of this importance varies between women.

If the suggested association between concern with shape and depressed mood is supported it is relevant to examine whether a generally poor mental state is associated with a similar high level of concern. Three studies have reported an association between dissatisfaction with specific body parts and low self-esteem (Secord and Jourard,1953; Berscheid et al,1973; Lerner et al,1976); and two studies have reported an association between dissatisfaction with specific body parts and anxiety (Johnson,1956; Goldberg and Folkins,1974). However, again, the findings from these studies are limited because they were based on inadequate measures of concern with shape. Unvalidated measures were used (eg. Johnson,1956; Berscheid et al,1973; Lerner et al,1976), or the studies measured dissatisfaction with body parts not specifically associated with shape and did not examine aspects of concern with shape aside from dissatisfaction (eg. Secord and Jourard,1953; Goldberg and Folkins,1974).

The general aim of the present study was to investigate further the relationship between concern with shape and mental state. The specific aims were:

(1) To examine the relationship between concern with shape and mood. It was predicted that a high level of concern with shape would be associated with depressed mood;

(2) To examine the relationship between concern with shape and depressed mood among women for whom body shape is particularly important. It was predicted that the relationship between depressed mood and concern with shape would be greater among these women than among women in general;

(3) To evaluate possible relationships between concern with shape and general mental state.

Method

Subjects

Three groups of women provided the data for this study:

(i) 85 female undergraduate students, described in Chapter 2;

(ii) 59 student nurses, the total number in four training classes, were asked to participate in a study of *young womens' eating habits and attitudes towards weight.* 52 agreed. Information on these women is presented in Table 3.5.1;

(iii) 37 women who were particularly concerned about their weight ie. *Weight Watchers.* These women showed a higher than average level of concern with their shape, and are described in Section 3 of this Chapter.

Table 3.5.1
Information on student nurses

	Mean	sd	Range
Age	19.1	1.9	18 - 27
MPMW	99.6	11.3	84 - 133
BSQ Score	69.0	22.3	35 - 129

Assessments

The measures taken were as follows:

(1) A schedule of questions about age, height and weight;

(2) The Body Shape Questionnaire or BSQ (see Chapter 2);

(3) The Beck Depression Inventory or BDI (Beck et al,1961) (see Section 3 of this Chapter);

(4) The Rosenberg Self-Esteem Scale (Rosenberg,1965) (see Section 3 of this Chapter);

(5) A simple four-point scale measuring the importance of a slim body shape (Appendix 7);

(6) The Symptom Check List-90 or SCL-90 (Derogatis et al,1973), which is a 90-item questionnaire measuring symptoms typically found among psychiatric outpatients. The measure has nine subscales:

(i) *Somatization*, which measures distress arising from perceptions of bodily dysfunction, eg. gastrointestinal, paraesthenia, aches and pains;

(ii) *Obsessive-Compulsive*, which measures thoughts, impulses and actions experienced as unremitting and irresistible which are ego-alien;

(iii) *Interpersonal Sensitivity*, which measures feelings of personal inadequacy, inferiority, self-deprecation and acute self-consciousness;

(iv) *Depression*, which measures dysphoric mood;

(v) *Anxiety*, which measures symptoms associated with high manifest anxiety;

(vi) *Hostility*, which measures hostile thoughts, feelings and actions, eg. feelings of annoyance, frequent arguments, temper outbursts;

(vii) *Phobic Anxiety*, which measures symptoms associated with phobic anxiety states, eg. phobic fears including social phobic behaviour;

(viii) *Paranoid Ideation*, which measures paranoid thinking, eg. suspiciousness, centrality;

(ix) *Psychoticism*, which measures psychotic symptoms, eg. external thought control, feeling isolated, feeling that one should be punished, and feeling that something is wrong with ones body or mind.

A global index, the *Global Severity Index* or GSI is derived from the mean of all questions. High scores on all subscales indicate a high level of psychiatric disturbance.

For logistical reasons not all the measures were taken on all subjects. The information obtained on each group is shown in Table 3.5.2.

Table 3.5.2
Information obtained on the three groups of women

Students (N=85)	Weight Watchers (N=37)	Nurses (N=52)
BSQ	BSQ	BSQ
Age	Age	Age
MPMW	MPMW	MPMW
BDI	BDI	BDI
Self-Esteem	Self-Esteem	Self-Esteem
Importance of Slim shape		SCL-90

Results

Prediction 1 : Depressed mood and the BSQ

The prediction that depressed mood would be significantly associated with a high BSQ score was supported (for the 52 nurses r=.38, P<.001; and for the 85 students r=.43, P<.001).

Prediction 2 : Depressed mood, the BSQ and high importance placed on shape

Prediction 2 was tested in two ways:

(i) By examining the relationship between depressed mood and the BSQ among the Weight Watchers;

(ii) By selecting a subgroup of students who considered a slim body shape to be highly important. Seventy students rated slimness as *Moderately* or *Markedly* important.

Prediction 2 was unsupported. Although depressed mood was significantly related to the BSQ for the 37 Weight Watchers ($r=.39$, $P<.001$) and for the subgroup of 70 students ($r=.45$, $P<.001$), these relationships were no greater than those for the nurses and for the total sample of students, as reported above.

Thus, these findings suggest that although a high level of concern with shape is associated with depressed mood among women in general, the strength of the relationship is similar between women who place different importance on a slim shape.

Prediction 3 : General mental state and the BSQ

For the undergraduate students and nurses score on the BSQ was associated with low self-esteem (for the students $r=-.50$, $P<.001$; and for the nurses $r=-.23$, $P<.05$).

For the nurses score on the BSQ was examined in relation to the ten subscales of the SCL-90. Only the *Obsessive-Compulsive* subscale was significantly related, as shown in Table 3.5.3.

Table 3.5.3
Relationships between mental state and concern with shape

	r	P
Somatization	.12	>.05
Obsessive-Compulsive	.39	.01
Interpersonal Sensitivity	.14	>.05
Depression	.14	>.05
Anxiety	.20	>.05
Hostility	.02	>.05
Phobic Anxiety	.16	>.05
Paranoid Ideation	-.03	>.05
Psychoticism	.02	>.05
Global Severity Index	.18	>.05

Since level of depression as measured by the BDI, low self-esteem and the Obsessive-Compulsive subscale of the SCL-90 were all significantly related to the BSQ, stepwise multiple linear regression analysis was conducted to examine whether a combination of factors produced a greater prediction of BSQ scores compared with individual factors alone. This analysis was conducted on the data available for the 52 nurses.

Score on the BDI was the only factor to significantly predict a high BSQ score independent of other related factors. This suggests that other indices of general mental state do not predict a high

level of concern with shape allowing for depressed mood. This finding was explored further. Using a partial correlation, self-esteem and score on the Obsessive-Compulsive subscale were not significantly related to concern with shape controlling for level of depression (for self-esteem, Partial r=-.03, P>.05; and for the Obsessive-Compulsive subscale, Partial r=.22, P>.05).[1]

Thus, these findings show that, allowing for depressed mood, a high level of concern with shape was not associated with a poor mental state.

Discussion

Results from this study supported the prediction that a high level of concern with shape would be associated with depressed mood. Among women in the community a high BSQ score was associated with low mood as measured by the BDI but not as measured by the SCL-90. This suggests that these two measures of depression assess different aspects of low mood. Contrary to prediction, the association between depressed mood and concern with shape was not greater among women for whom shape was particularly important. This suggests that placing great importance on shape does not strengthen the relationship between the level of concern with shape and depressed mood. However, the measure used to assess the importance of a slim body shape was simple and was unvalidated. It is possible that this measure provided an inadequate assessment of the importance of a slim shape, which may explain why the relationship between depressed mood and concern with shape was similar across women who placed different importance on slimness.

One limitation of the study was that the association between concern with shape and depressed mood was correlational and did not indicate direction of causality. It is possible that low mood may exacerbate concern with shape; but it is also possible that if shape is important then a high level of concern with shape may lower mood. Alternatively, both depressed mood and concern with shape may be products of a third factor, and once exacerbated may reinforce each other in a negative cycle of self-deprecation. To resolve direction of causality it would be necessary to show a high level of disturbance on one factor preceding a high level of disturbance on the other.

With regard to general mental state, aside from mood, only low self-esteem and obsessive compulsive thoughts and behaviour were associated with a high level of concern with shape, and these relationships were not independent of depressed mood. Both low self-esteem and obsessive-compulsive thoughts are closely linked with depression. Low self-esteem is conceptually related to the self-depreciatory thoughts which typically accompany depressed mood (Beck,1973); and obsessive-compulsive thoughts commonly accompany depressed mood (Kendell and Descipio,1970). It would thus appear that low mood and feelings of self-depreciation are associated with a high level of concern with shape, but that such concern is unrelated to a poor mental state.

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[1] This finding provides a further measure of validation for the BSQ (ie. divergent validity), because it suggests that a high score on this questionnaire does not merely reflect general psychopathological disturbance but measures specific concerns with shape which are associated with depressed mood and disturbed eating.

To conclude, findings from this study suggest that a high level of concern with shape is associated with depressed mood, and that the association is relatively uniform across women who differ in the degree of importance they place on a slim shape. A more generally poor mental state was found to be unrelated to a high BSQ score, suggesting that the BSQ measures specific concerns about shape which are associated with low mood but not with more general psychopathological disturbance.

The relationships observed between depressed mood and concern with shape suggests that further research is needed. Since mood changes are common among women, such as with phase of the menstrual cycle (Moos,1968), it is important to know whether a change in mood is accompanied by a change in concern with shape. Such concern has been reported to fluctuate with mood among severely obese people who have marked body shape disparagement (Stunkard,1976), but the lability of concern with shape and its relationship with changes in mood has not been assessed among women in general.

Section 6

Change in concern with shape and its relation to mood and phase of the menstrual cycle

Introduction

In Section 5 of this Chapter a significant association was reported between concern with shape and depressed mood. However, the association was correlational and did not indicate whether a high level of disturbance on one of these factors may exacerbate a high level of disturbance on the other. Nevertheless, the observed relationship between concern with shape and mood suggests that these two factors may co-vary. There has been no empirical investigation into the lability of concern with shape and it is not known whether such concern changes over time. In contrast, studies of the menstrual cycle have shown that mood changes across time. For example, Moos (1968) reported that depression was greater in the days preceding and soon after the onset of menstruation compared with mid-cycle. Similarly, May (1976) found that 50 percent of a sample of normal young women experienced their lowest mood preceding the onset of menstruation, and another 40 percent during menstruation. Paige (1971) has suggested that cyclical variation in mood may have a hormonal link since comparable mood changes have not been found among subjects taking the contraceptive pill. The associations between mood and phase of the menstrual cycle, and between concern with shape and mood, suggest that low mood occurring premenstrually or early during menstruation may be associated with a concurrent increase in concern with shape.

In addition to mood, various other symptomatic changes have been associated with phase of the menstrual cycle, and have usually been subsumed under the general heading of *premenstrual tension*, or PMT. Beumont et al (1975) defined PMT as a cluster of physical and psychological symptoms which occur episodically in relation to phase of the menstrual cycle. Not all women report PMT, although the estimated proportion of women who suffer from this distress has varied considerably between studies (eg. 6-95%; May,1976). Aside from mood, two other factors suggest that concern with shape may vary with phase of the menstrual cycle. First, a slight increase in weight is common around the time of menstruation (Moos,1968). A high weight has been found to be significantly associated with a high level of concern with shape (Section 1 of this Chapter), and it is therefore conceivable that an increase in weight may lead to an increase in concern with shape. Second, feelings of bloatedness have been reported to be greater around the time of menstruation compared with intermenstrually (Moos,1968), and it is possible that feeling bloated may increase concern with shape.

The aims of this investigation were two-fold:

(1) To examine whether depressed mood may exacerbate concern with shape, using phase of the menstrual cycle as a means of studying change in mood;

(2) To examine whether other symptoms associated with phase of the menstrual cycle may exacerbate concern with shape, such as an increase in weight, feelings of bloatedness, and more general physical and psychological symptoms of PMT.

Two studies were conducted to answer these questions.

Study 1: A cross-sectional study of the menstrual cycle

The first study tested the prediction that level of concern with shape as measured by the BSQ would be greater around the time of menstruation compared with intermenstrually.

Method

Subjects

Eighty-five undergraduate students[1] were approached and asked to participate in a study *of particular relevance to women.* All agreed. The students were given no details about the study until after completing the assessments.

Assessments

The students were asked to complete the Body Shape Questionnaire or BSQ (see Chapter 2) which measures concern with shape. Their age, height and weight were recorded, and they completed a question indicating their current position in the menstrual cycle. All data were anonymous.

Results

All subjects satisfactorily completed the BSQ. Nineteen of the women expected to begin menstruating within the next week, and were labelled *pre-menstrual* subjects. Twenty were currently menstruating, and were labelled *menstrual* subjects. Forty-six were not menstruating and did not expect their period to begin within the next week, and were labelled *intermenstrual* subjects. None reported amenorrhoea.

Table 3.6.1 shows that the BSQ scores were similar for all three groups.

[1] These subjects are also reported in Chapter 2.

Table 3.6.1
BSQ in relation to phase of the menstrual cycle

	Premen-strual Subjects (N=19) $\bar{X}$/sd	Menstrual Subjects (N=20) $\bar{X}$/sd	Intermen-strual Subjects (N=46)	F	df	P
BSQ Score	79.7 31.3	97.0 29.8	88.5 27.6	1.75	2,82	>.05

Brief discussion

Results from this first study indicated that among a sample of young women, score on the BSQ was independent of phase of the menstrual cycle. This finding suggested that concern with shape does not co-vary with symptoms associated with PMT. However, no assessments were made of change in symptoms of PMT, and it is possible that the majority of the women did not experience such symptoms. If this were the case it may explain why concern with shape was unassociated with phase of the menstrual cycle. Furthermore, the design of the study was cross-sectional, and the assignment to phase of the menstrual cycle may have been unreliable, which may have masked differences in level of concern with shape between the three phases. Also, some subjects were taking the contraceptive pill which may have suppressed cyclical variation in mood and concurrent concern with shape.

Study 2a: A longitudinal study of the menstrual cycle

A second study was conducted to assess whether concern with shape co-varies with mood and other symptoms associated with phase of the menstrual cycle. This study aimed to overcome the methodological problems of the first study. Assessments were made of mood, weight, bloatedness and other symptoms of PMT; subjects were not taking the contraceptive pill; and the design of the study was longitudinal. It was predicted that increases in depressed mood, weight, feelings of bloatedness and other symptoms of PMT would be associated with an increase in level of concern with shape.

Subjects

All female students living in three halls of residence were approached and asked a number of questions under the guise of *a study of student health*. Subjects were asked about their weight, whether they were currently taking the contraceptive pill and the date of their last menstrual

period. These questions were asked along with a number of other questions (Appendix 16). Fifty-eight young women who weighed within 20 percent of average weight (self-report data) were asked to participate in the study. All agreed.

Procedure

Each subject began the study on the day of the week which coincided with the predicted start of menstruation. This prediction was based on information gained from the initial screening questions reported above. Every week for between four and six weeks subjects completed the BSQ. The time scale at the top of the questionnaire was amended to refer to feelings over the past week.[2] Subjects also completed six visual analogue scales each day, referring to the degree to which they had felt physical symptoms of tiredness, aching and bloatedness; and psychological symptoms of depression, irritability and tension (Appendix 17). The women were instructed to complete these measures at the same time each day, and that if they forgot they were to leave them blank and not fill them in retrospectively. Subjects were visited weekly to check compliance. During this visit subjects were asked whether they had began their menstrual period within the last week. This question was embedded among a number of other questions about health (Appendix 18). Subjects were weighed weekly at approximately the same time each week. Each subject ended the study when they had completed data for a full menstrual cycle.

Scoring the data

Defining phase of the menstrual cycle

The *premenstrual* phase was defined as the five days preceding the start of menstruation. The *menstrual* phase was defined as the five days following the start of menstruation, including the day menstruation started. The *intermenstrual* phase was defined as any time excluding the premenstrual and menstrual phases plus two days either side of each.

Scoring the BSQ

A BSQ score was derived for the three phases of the menstrual cycle according to the following rules:

(1) A BSQ score referred to the premenstrual phase when at least three days of the questionnaire's time scale covered the five days of the premenstrual phase. Therefore, score on the questionnaire for that week covered over half of the premenstrual phase.

(2) A similar rule was followed for scoring the BSQ for the menstrual phase. However, for 10 subjects, BSQ scores for the premenstrual and menstrual phases were derived from the same questionnaire. This was because the questionnaire referred to three days of one phase and four days of the other. For these subjects the questionnaire score which covered four days of

[2] The original questionnaire reported in Chapter 2 refers to feelings over the past month.

one phase was accepted; and the score for the other phase was coded as a missing value.

(3) For the intermenstrual phase score on the BSQ was taken as a score which did not overlap with the premenstrual or menstrual phases or the two days either side of each. When more than one questionnaire score met these criteria the average score was taken.

Body weight

Weight for the premenstrual phase was defined as weight recorded during those five days; or for subjects who were not weighed during this time, weight recorded during the two days before the premenstrual phase. Weight for the menstrual phase was defined as weight recorded during the first five days of menstruation; or for subjects who were not weighed during this time, weight recorded during the two days after this phase. For the intermenstrual phase weight was defined as the mean of all weights not recorded during the premenstrual or menstrual phases or the two days either side of each. An index of mean weight was derived for each subject by taking the mean of all weights recorded during the study.

The visual analogue scales

For each of the six visual analogue scales a score was derived for the premenstrual phase by averaging the scores for those five days; and similarly for the menstrual phase. For the intermenstrual phase, a mean score for each visual analogue scale was derived by averaging the scores which referred to any time not covered by the premenstrual or menstrual phases or the two days either side of each.

Data missing for the visual analogue scales

Some subjects forgot to complete the visual analogue scales every day. The average of their incomplete data for each phase was accepted when it covered at least two days. Examining incomplete data from the visual analogue scales, subjects forgot to complete the measures on an average of 1.7 days.

Results

Subjects

One subject did not remember to complete many of the daily visual analogue scales and was excluded from data analysis. A further six subjects were excluded because they did not begin menstruating within forty days of the start of the study; and three subjects were excluded because they were obese (mean MPMW of all weights recorded $\geq$120%). Information on the remaining 48 subjects is given in Table 3.6.2.

Table 3.6.2
Information on the women included in data analyses

	$\bar{x}$	sd	Range
Age	19.7	1.1	18 - 22
MPMW[1]	99.4	8.6	83 - 119
BSQ Score[2]	72.8	27.5	35 - 167

1 Mean of all weights recorded during the study
2 Mean of all BSQ scores recorded during the study

Prediction 1: Change across the menstrual cycle

The BSQ scores for the three phases of the menstrual cycle were compared using repeated measures analysis of variance. Table 3.6.3 shows that compared with the intermenstrual phase, subjects did not show greater concern with their shape during the premenstrual or menstrual phases.

Table 3.6.3
BSQ scores over phase of the menstrual cycle

	Premen-strual	Menstrual	Intermen-strual	F	df	P
BSQ	74.9	75.7	75.6	0.14	2,62	>.05
sd	32.8	30.3	31.1			

It was possible that, for the majority of subjects, BSQ scores for the premenstrual phase may have been higher compared with during the intermenstrual phase, but this trend may have been masked by examining group average scores for the phases; and similarly when comparing the menstrual phase with the intermenstrual phase. Therefore, a sign test was used to determine whether BSQ scores were usually higher premenstrually or menstrually compared with intermenstrually. BSQ scores were higher premenstrually compared with intermenstrually for 16 out of 38 women (the remaining cases had missing data for one of the phases), which was not statistically significant ($Z=0.34$, $P>.05$). Similarly, BSQ scores were higher menstrually compared

with intermenstrually for 18 out of 37 women, which again was not statistically significant (Z=0.35, P>.05). Thus, BSQ scores were not consistently higher during the premenstrual and menstrual phases compared with the intermenstrual phase.

These findings showed that for the complete sample of women concern with shape did not vary across phase of the menstrual cycle. However, it was possible that the women showed no cyclical changes in mood or other symptoms of PMT, which could explain why scores on the BSQ did not vary across the menstrual cycle. Therefore, results were re-examined in relation to changes in symptoms of menstrual distress.

Mood

Table 3.6.4 shows that the complete sample of women showed no significant cyclical changes in mood.

Table 3.6.4
Changes in mood across the menstrual cycle: all subjects

	Premen-strual	Menstrual	Intermen-strual	F	df	P
Mood	4.09	4.09	3.91	0.39	2,84	>.05
sd	1.65	1.46	1.20			

It was possible that, among women who showed lower mood either premenstrually or menstrually compared with intermenstrually, there may have been concurrent changes in scores on the BSQ. Therefore, BSQ scores were re-examined for subjects who showed cyclical changes in mood, by selecting two subgroups of women:

(i) Women who reported lower mood premenstrually compared with intermenstrually (N=22);

(ii) Women who reported lower mood menstrually compared with intermenstrually (N=18).

Examining the significance of these mood changes using a t-test for matched samples, the group showing low mood premenstrually showed significantly lower mood compared with intermenstrually (5.0, sd=1.52 versus 3.8, sd=1.32; t=6.60, df=23, P<.001); and the group showing low mood during menstruation showed significantly lower mood menstrually compared with intermenstrually (4.7, sd=1.54 versus 3.5, sd=1.22; t=5.63, df=20, P<.001).

For the group showing low mood premenstrually, BSQ scores were compared across the premenstrual and intermenstrual phases using a sign test. Thirteen out of 22 women showed a higher score premenstrually, which was not statistically significant (P>.05). Similarly, for the group showing low mood during menstruation 11 out of 18 subjects showed a higher BSQ score

menstrually compared with intermenstrually, which again was not statistically significant (P>.05). These results show that, among women who reported lower mood premenstrually or menstrually compared with intermenstrually, BSQ scores were not consistently higher in the premenstrual or menstrual phases.

Thus, low mood around the time of menstruation was not associated with a high level of concern with shape.

Weight

Table 3.6.5 shows that the complete sample of women showed no significant change in body weight across phase of the menstrual cycle.

Table 3.6.5
Changes in weight across the menstrual cycle: all subjects

	Premen-strual	Menstrual	Intermen-strual	F	df	P
MPMW	99.2	99.2	98.9	1.42	2,80[1]	>.05
sd	8.64	8.63	8.55			

1 Seven subjects were not available to be weighed at one of the weekly meetings: this data was coded as missing.

Two subgroups of women who showed changes in weight were selected as follows: i) women who weighed more during the premenstrual phase compared with the intermenstrual phase (N=27); and ii) women who weighed more during the menstrual phase compared with the intermenstrual phase (N=24). Although these changes were statistically significant, Table 3.6.6 shows that there were no significant changes in scores on the BSQ. Thus, level of concern with shape did not vary across the menstrual cycle even among women who showed small but significant changes in weight.

Table 3.6.6
Change in BSQ scores in relation to increases in weight

	Premen-strual	Menstrual	Intermen-strual	t	df	P	N
Weight	100.1		99.0	7.11	26	.001	27
sd	8.9		8.8				
BSQ	71.8		71.7	0.02	23	>.05	24
sd	32.2		30.0				
Weight		100.2	99.3	7.95	23	.001	24
sd		8.6	8.6				
BSQ		68.4	68.3	0.05	19	>.05	20
sd		31.9	31.5				

Thus, a change in weight across the menstrual cycle was not associated with a change in concern with shape.

Bloatedness

Although the complete sample of women showed no change in level of concern with shape across the menstrual cycle, this null finding was not attributable to these women not experiencing feelings of bloatedness at the time surrounding menstruation. Table 3.6.7 shows that using repeated measures analysis of variance, subjects reported feeling more bloated premenstrually and menstrually compared with intermenstrually.

Table 3.6.7
Cyclical changes in bloatedness: all subjects

	Premen-strual $\bar{X}$/sd	Menstrual $\bar{X}$/sd	Intermen-strual	F	df	P
Bloated-ness	3.01 2.55	3.15 2.58	2.46[1] 2.26	5.00	2,84	<.01

1 Significantly different from the menstrual phase: Tukey's HSD multiple range test.

Thus, feelings of bloatedness at the time of menstruation were not associated with a high level of concern with shape.

General symptoms of PMT

Change in scores on the BSQ were examined in relation to three general measures of PMT:

(i) For each subject a measure of physical symptoms was derived for each phase by taking the mean of the visual analogue scale scores for bloatedness, tiredness and aching;

(ii) For each subject a measure of psychological symptoms was derived for each phase by taking the mean of the visual analogue scale scores for depression, irritability and tension;

(iii) For each subject a measure of general symptoms was derived for each phase by taking the mean of all six visual analogue scale scores associated with menstrual symptomatology.

Table 3.6.8 shows that using repeated measures of analysis of variance, the complete sample of women showed no significant changes in symptoms of PMT across phase of the menstrual cycle.

Table 3.6.8
Cyclical changes in menstrual symptoms

	Premen-strual	Menstrual	Intermen-strual	F	df	P
Physical Symptoms	3.57 1.87	3.66 1.90	3.49 1.64	0.48	2,84	>.05
Psychological Symptoms	3.48 1.68	3.65 1.65	3.55 1.51	0.46	2,84	>.05
General Symptoms	3.52 1.60	3.66 1.54	3.52 1.47	0.64	2,84	>.05

Although the complete sample of women did not show symptoms of PMT, as shown in Table 4.6.8, subjects who showed cyclical changes on the three measures of PMT measures were selected.

A subject was considered to show premenstrual physical symptoms when these symptoms were greater premenstrually compared with intermenstrually; and was considered to show menstrual physical symptoms when these were greater menstrually compared with intermenstrually. Similar rules were followed for defining psychological and general symptoms. Table 3.6.9 shows that that among the sub-groups of subjects, symptoms of PMT were greater premenstrually or menstrually compared with intermenstrually.

Table 3.6.9
Changes in symptoms among subjects who showed PMT

	Premen-strual $\bar{X}$/sd	Menstrual $\bar{X}$/sd	Intermen-strual $\bar{X}$/sd	t	df	P	N
Psychological Symptoms	4.28 1.69		3.45 1.58	5.83	20	.001	21
Psychological Symptoms		3.45 1.78	2.48 1.53	4.92	9	.001	10
Physical Symptoms	4.12 1.79		3.39 1.77	3.57	14	.003	15
Physical Symptoms		3.98 1.99	3.12 1.69	3.56	15	.003	16
Overall Symptoms	4.00 1.72		3.32 1.65	4.69	19	.001	20
Overall Symptoms		3.53 1.52	2.93 1.57	5.07	15	.001	15

Table 3.6.10 shows that using a sign test, among subjects who showed physical, psychological and general symptoms associated with PMT, scores on the BSQ were not consistently higher during either the premenstrual or menstrual phases compared with the intermenstrual phase.

Table 3.6.10
Number of subjects whose BSQ score was higher during the Premenstrual or menstrual phases compared with the Intermenstrual phase

	Premenstrual versus Intermenstrual Phase	P	Menstrual versus Intermenstrual Phase	P
Physical Symptoms	11/22	>.05	11/24	>.05
Psychological Symptoms	7/19	>.05	12/19	>.05
General Symptoms	12/24	>.05	13/25	>.05

Thus, symptoms of PMT were not associated with a high level of concern with shape.

Summary

Concern with shape did not vary with phase of the menstrual cycle for the complete sample of young women, even though these women experienced significant feelings of bloatedness at the time surrounding menstruation. Similarly, concern with shape did not vary among subgroups of women who showed significant changes in mood, body weight and more general symptoms of PMT.

Preliminary discussion

This second study of concern with shape in relation to phase of the menstrual cycle was designed to overcome the methodological problems associated with the first study, but nevertheless had several limitations. First, score on the BSQ referred to a seven day period of time, and it was hoped that by estimating the start of menstruation for each subject the questionnaire would cover at least four days of the premenstrual or menstrual phases. However, since subjects were very poor at predicting the start of menstruation, score on the BSQ commonly referred to only three days of the premenstrual or menstrual phase; and although three days was over half the duration of these phases, it was less than half the period of time covered by the questionnaire. This may have masked possible small changes in level of concern with shape

experienced premenstrually or menstrually. Second, the complete sample of women did not show changes in mood or other symptoms associated with phase of the menstrual cycle, which may explain why this sample of women showed no change in concern with shape across the menstrual cycle. Furthermore, among the sub-group of women who showed changes in mood and other symptoms of PMT, the level of change across the three phases was not great, which may be attributable to the age of the women studied. All were young, and premenstrual symptoms have been reported to increase with age (Moos,1968). It is possible that changes in mood and other symptoms were insufficiently severe to be associated with a concurrent change in concern with shape.

Third, there has been debate about whether PMT is attributable to womens' expectations of symptoms reported to occur either premenstrually or menstrually (eg. Slade,1984). It was therefore important that subjects were ignorant of the aims of the study. Before de-briefing a randomly selected sub-group of 25 women were asked about their perceived aims of the study. Although none guessed that the study measured level of concern with shape in relation to mood and phase of the menstrual cycle, 10 thought the study was about the menstrual cycle. Since at least some subjects guessed that the study was about changes in symptoms in relation to menstruation they may have attributed minor fluctuations in mood and other symptoms to PMT, which in turn may have negated any concurrent increase in concern with shape.

Results from this study suggested that concern with shape does not vary across phase of the menstrual cycle with changes in mood, weight, feelings of bloatedness or more general symptoms of PMT. Thus, despite being related to mood, score on the BSQ appeared to be independent of slight changes in mood. However, it is possible that general and perhaps larger changes in mood independent of phase of the menstrual cycle may be associated with a concurrent change in level of concern with shape. Women may attribute low mood experienced at the time of menstruation to premenstrual symptoms and may therefore not experience concurrent changes in level of concern with shape; whereas it is possible that low mood experienced independent of phase of the menstrual cycle may not be attributed to premenstrual tension, and may lead to an increase in concern with shape. It is conceivable that under these circumstances mood and concern with shape may co-vary.

Study 2b: The lability of concern with shape and changes with mood

The data from Study 2 were re-examined to investigate whether concern with shape co-varies with mood independent of phase of the menstrual cycle. In addition, the lability of concern with shape was examined since this had never previously been investigated (as was discussed in Section 5 of this Chapter).

Scoring the data

(i) Scores for the mood visual analogue scale were averaged over each week, which yielded an index of mood corresponding with each BSQ score.

(ii) A mean BSQ score was obtained for each subject by averaging the four or five scores on the questionnaire completed over the course of the study.

(iii) An index of BSQ variability was derived by calculating the average difference between all BSQ scores for each person. For example, for subject number 1 the difference between the first and second BSQ scores was calculated, and the difference between the first and third, and so on. The sign of the differences was disregarded and the mean of the differences derived.

Results

Change in concern with shape in relation to change in mood

Change in BSQ score was examined in relation to change in mood in three ways:

(1) For each subject the four or five BSQ scores were correlated with mood scores corresponding to the same time periods. Due to the small number of data points for each person Spearman's Rank correlation coefficient was used. The mean correlation for the 48 subjects was low (r=.19, sd=.53). However, this mean correlation masks considerable variation between subjects, with some showing a very close relationship between changes in scores on the BSQ and mood (eg. r=.82); while others showed no relationship (eg. r=.00). 30 subjects showed a positive correlation, and 16 showed a negative correlation; and using a sign test, significantly more subjects showed a positive correlation (Z=2.17, P<.02, one-tailed test). Half the subjects showed a correlation above 0.40. Figure 3.6.1 illustrates differences in co-variation between mood and the BSQ for two markedly contrasting subjects. Since the BSQ and mood were measured on different scales, scores are plotted as standardised or *Z* scores. It is apparent that, compared with the low BSQ scorer, the high scorer tended to show a closer association between changes in mood and score on the BSQ. The significance of this finding was tested. Mean BSQ scores for individual subjects were divided by a median split. Using the Mann-Whitney U-test, compared with low BSQ scorers, high scorers tended to show a higher correlation between the BSQ and mood (mean ranks=21.1 versus 27.9 respectively; Z=1.68, P<.09).[3]

(2) For each subject their highest and lowest depression scores were selected and BSQ scores corresponding to the same periods of time were examined. Using the Wilcoxon matched-

[3] This finding may have spurious: ie. the correlation between the BSQ and mood may have been higher among the high BSQ scorers than among the low BSQ scorers simply because there was greater variability in high BSQ scores.

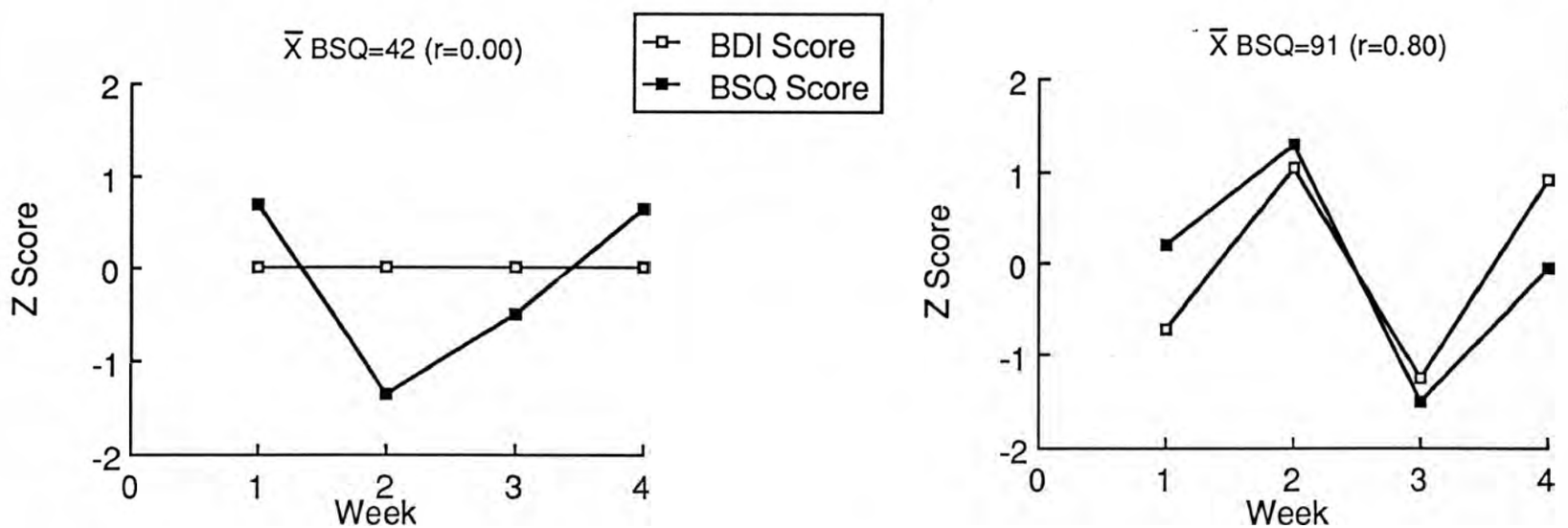


Figure 3.6.1

Changes in concern with shape and mood: two contrasting subjects

pairs signed-ranks test, BSQ scores were higher during the depressed mood period compared with the undepressed mood period for 30 of the 48 subjects, or 63 percent, which was statistically significant (Z=2.25, P<.03).

(3) Highest and lowest BSQ scores for each subject were selected, and mood scores corresponding to the same periods of time were examined. Using the Wilcoxon matched-pairs signed-ranks test, mood was significantly lower during the high BSQ period compared with the low BSQ period: 32 of the 48 subjects or 67 percent showed a lower mood during the high BSQ period compared with the low BSQ period (mean ranks=24.6 versus 22.7, Z=2.36, P<.02). This co-variation between mood and the BSQ was slightly higher among the high BSQ scorers. Dividing mean BSQ scores using a median split, among high scorers, 18 out of 24 subjects or 75 percent were more depressed during the high BSQ period compared with the low BSQ period (mean ranks=11.8 versus 12.9 respectively, Z=2.24, P<.03).

Thus, these findings suggest that concern with shape and mood co-varied independent of phase of the menstrual cycle.

Lability of concern with shape

The average BSQ variability score for the group of 48 women was 7.5 (sd=6.18), with a range from 0 to 33.2. The greatest difference between 2 consecutive BSQ scores for 1 subject was 52. Thus, some subjects showed remarkably stable BSQ scores over a four to five week period; while others showed markedly labile scores. Figure 3.6.2 illustrates markedly different changes in BSQ scores for two contrasting subjects.

Figure 3.6.2 suggested that high BSQ scores may have been more labile than low scores. The significance of this finding was tested. Mean BSQ scores for the 48 subjects were divided using a median split, and BSQ variability scores compared for the two groups. Since the index of variability was not normally distributed (skewness=2.23) with more women showing stable scores compared with variable scores, the Mann-Whitney U-Test was used. Compared with subjects who showed a low BSQ score, subjects who showed a higher score also showed significantly more variable scores (mean ranks=17.6 versus 30.7 respectively; Z=3.29, P<.001).

Thus, some subjects showed a very stable level of concern with their shape while others showed very labile concern, and this lability was associated with a high level of concern with shape.

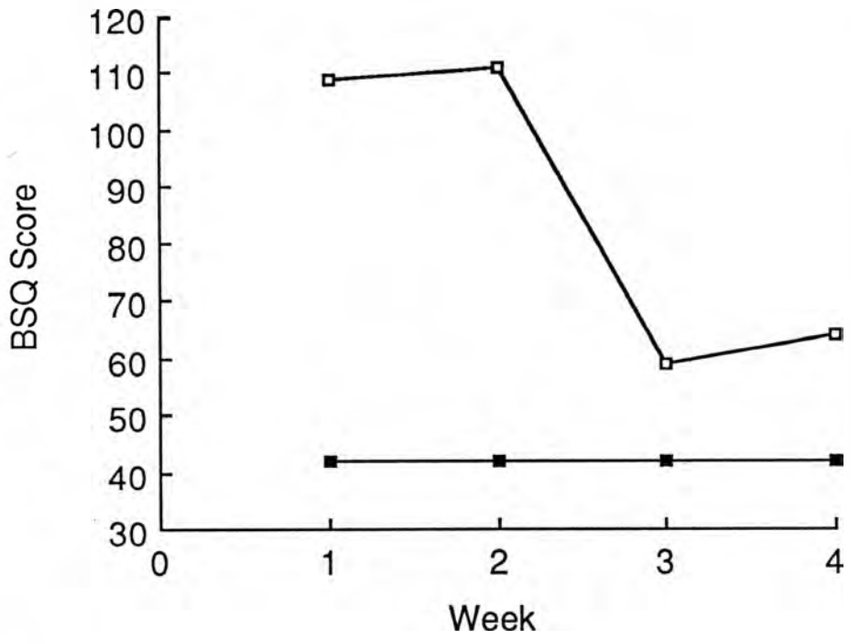
Discussion

This study examined the lability of concern with shape among normal women, and tested the prediction that a change in level of concern would be positively associated with a change in mood.

Some subjects showed remarkably stable BSQ scores over a four to five week period, while others showed markedly labile scores. Degree of lability was associated with level of concern

Figure 3.6.2

The lability of concern with shape: two contrasting subjects



with shape: low BSQ scorers were more likely to show consistently low scores, while high scorers showed more changeable scores. Although the small changes in mood occuring with phase of the menstrual cycle were unassociated with changes in concern with shape, larger mood changes occuring independent of the menstrual cycle were associated with concurrent changes in concern with shape. Thus, concern with shape and mood co-varied, but this was independent of phase of the menstrual cycle.

The observed relationships were associations and do not indicate direction of causality. Since a change on one factor may be closely followed by a change on the other factor, the frequency scale of the BSQ may render this measure unsuitable for measuring changes in level of concern with shape over a very short period of time.

It is important to know whether the observed relationship between changes in concern with shape and changes in depressed mood obtains among patients with eating disorders who are characterised by a high level of disturbance on both these factors. Mood changes are common among such patients (Cooper and Fairburn,1986), and an improvement in mood has been found to occur during treatment for an eating disorder (Eckert et al,1982; Fairburn et al,1985). It is therefore conceivable that a change in mood occuring during treatment would be accompanied by a concurrent change in concern with shape.