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**TO ESTABLISH THE PREVALENCE
OF EATING DISORDERS AND
COMPARE EFFECTIVENESS OF
TREATMENT OF EATING
DISORDERS IN KELANTAN
STUDENTS**

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PART 1

THE MALAY VERSION OF EATING DISORDER BELIEF QUESTIONNAIRE: PRELIMINARY DEVELOPMENT

Summary – This paper describes the development of a Malay version self-report questionnaire designed to assess assumptions and beliefs associated with eating disorders. Factor analyses suggested a replicable four factor structure consisting of the following dimensions: negative self-beliefs; weight and shape as a means to acceptance by others; weight and shape as a means to self-acceptance; and control over eating. The subscales possess good psychometric properties and significant correlations were found between the subscales and other measures of the specific and general psychopathology of eating disorders. The questionnaire also distinguished two groups of patients with eating disorders from normal controls. The usefulness of the measure and implications of the findings for cognitive theories of eating disorders are briefly discussed.

INTRODUCTION

Two main cognitive theories of eating disorder emphasize the importance of underlying assumptions about weight, shape and eating (Fairburn, Cooper & Cooper, 1986; Garner & Bemis, 1982). In both theories, assumptions are thought to have a causal role in the maintenance of disturbed eating behaviour. Assumptions are reflected in automatic thoughts or self-statements about weight, shape and eating which, in turn, support the value of dieting and which may also trigger bingeing. Clinically, assumptions are

frequently conditional beliefs, expressed in the form of "if... then" statements, or general cross situational rules (e.g. Padesky & Greenberger, 1995; Beck, 1996) In eating disorders example include "If I'm fat I won't have any friends", "If I'm fat it means I've failed" and "Eating means I've let myself get out of control" (Cooper, Todd & Wells, 1995).

Vitousek and Hollon (1990) have drawn attention to the role of self-schemata in eating disorders, and Guidano and Liotti (1983) have emphasized the importance of personal identity structures. The content of self-schemata and personal identity structures appears to refer to what Young (1990) has called core beliefs. These beliefs are superordinate beliefs that give rise to underlying assumptions. They are usually absolute and dichotomous (e.g. Padesky & Greenberger, 1995; Beck, 1996) and include negative self-beliefs. Examples of negative self-beliefs in eating disorders include "I'm unlovable", "I'm worthless" and "I'm all alone" (Cooper et al., 1995; Cooper, Todd & Cohen-Tovee, 1996).

Despite the theoretical importance of schemas (cognitive structures that include assumptions), few studies have explored the content of assumptions or the core beliefs in anorexia nervosa and bulimia nervosa. A survey of the literature revealed four empirical investigations of assumptions (defined as conditional beliefs or general, cross-situational rules) about weight, shape and eating in eating disorders. All the investigations used self-report questionnaires. One questionnaire appears to measure a mixture of styles of reasoning and assumptions (Schulman, Kinder, Powers, Prange & Glehorn, 1986). One assesses general as well as idiosyncratic assumptions (Scanlon, Ollendick & Bayer, 1986). A third measures assumptions relevant to self-efficacy, both in relation to bingeing

and in situations unrelated to weight, shape or eating (Reyna, McGlone, Ollendick & Hart, 1986). Little information on psychometric properties is available for the measure developed by Scanlon or ReynaMcGlone and colleagues, and none of these three measures provide a clear assessment of assumptions uniquely characteristic of eating disorders.

The fourth questionnaire (Mizes, 1988) has been researched in more detail, with studies providing data on reliability and validity (Mizes & Klesges, 1989; Mizes, 1990, 1991, 1992). It is designed to assess three dimensions: perception of weight and eating as a basis for approval from others; belief that rigid weight and eating control is fundamental to self-worth; and rigidity of weight and eating regulation efforts. However, the questionnaire does not provide separate subscales for the different domains (weight, shape and eating) of concern to patients with eating disorders, despite suggestions that it may be useful to separate them (Cooper & Fairburn, 1992). The ability to distinguish assumptions about weight and shape more clearly from assumptions about eating may be particularly important: it has been suggested that the core psychopathology of eating disorders lies in the personal meaning attached to weight and shape (Vitousek & Hollon, 1990) and that assumptions about eating are a secondary consequence of such concerns (Fairburn et al., 1986). We were unable to find a study that has assessed core beliefs (defined as superordinate, absolutistic beliefs) in-patients with eating disorders. There is a need, therefore, for the development of a multi-dimensional measure which will assess the different types of beliefs associated with eating disorders. This measure might usefully assess core beliefs as well as assumptions more clearly. Such a measure is likely to be useful for research and clinical practice. This paper describes the development of a

Malay version of a self-report questionnaire. It aimed to assess assumptions about weight, shape and eating as well as core beliefs.

STUDY 1

Item selection

Item for the questionnaire was generated from two sources: (1) open-ended interviews with eating disorder patients; (2) clinical experience. Detailed, semi-structured interviews were conducted with 4 female patients meeting DSM-III-R criteria for an eating disorder (American Psychiatric Association, 1987). Two of the patients met criteria for anorexia nervosa and two met criteria for bulimia nervosa. In each interview information was elicited about automatic thoughts, assumptions and beliefs. Three clinicians from University of Malaya and Universiti Kebangsaan, all with experience of assessing and treating patients with eating disorders, also provided items based on clinical experience. Four logical themes were derived from these two sources: (1) negative self-beliefs; (2) assumptions about eating; (3) assumptions about weight; (4) assumptions about shape. One hundred and four items were chosen to sample these four themes. Belief in each item was rated on a visual analogue (0-100) scale. End points were anchored at "Saya biasanya tidak percayanya sama sekali" and "Saya biasanya yakin yang ianya benar". Respondents were asked to base their replies on "what you emotionally believe or feel,

not on what you rationally believe to be true" and to "choose the rating that best describes what you usually believe or what you believe most of the time".

First factors analysis

The initial aim of the study was to see whether coherent, meaningful themes or factors would emerge. The questionnaire was, therefore, administered to 249 female university students and staff (mean age 20.9 yr., range 18-49). Subjects were all volunteers, recruited either while attending undergraduate lectures or individually. Factor Analysis was carried out on the completed questionnaires. A principal component method of factor extraction was used. On the basis of the Screen test (Cattell, 1978), five factors were extracted and rotated by the direct oblimin method. The five factors accounted for 61.8% of the total variance. Factor 5 contained only two items that loaded greater than 0.40 and was uninterpretable. The remaining four factors suggested that the beliefs assessed by the questionnaire were as follows: (1) negative self-beliefs; (2) weight and shape as a means to acceptance by others; (3) weight and shape as a means to self-acceptance; (4) control over eating. The name given to each factor reflects its item content. Eigen values for each factor were negative self-beliefs 43.9, acceptance by others 7.8, self-acceptance 4.9, and control over eating 2.9. Intercorrelations between factors ranged from 0.008 to 0.56.

Revised questionnaire

Item loading most highly on each factor was then chosen for a briefer questionnaire. Because the aim was to develop a multi-dimensional measure, items that loaded highly on more than one factor were excluded. All retained items loaded at least 0.45 on their respective factors. The revised questionnaire consisted of 33 items loading on factors 1, 10 items loading on factors 2, 7 items loading on factors 3 and 6 item loading on factor 4.

Alpha reliabilities

Cronbach coefficient alphas were computed for each factor, using the revised questionnaire, to assess internal consistency of the factors. These values were negative self-beliefs 0.94, acceptance by others 0.95, self-acceptance 0.90, control over eating 0.89. These coefficients indicate good homogeneity of subscales.

Subscales intercorrelations

All four subscales, on the revised questionnaire, were significantly correlated with each other (all P s < 0.01, two-tailed tests). Pearson correlations were: negative self-beliefs with acceptance by others, 0.71; negative self-beliefs with self-acceptance, 0.47; negative self-beliefs with control over eating, 0.52; acceptance by others with self-acceptance, 0.59; acceptance by others with control over eating, 0.64; self-acceptance with control over eating, 0.66.

STUDY 2

The initial aim of Study 2 was to determine whether the factor structure of the questionnaire could be replicated. The revised questionnaire was, therefore, administered to a new sample of 254 female university students and staff (mean age 23.5 yr., range 16-55). Subjects were recruited in exactly the same way as in Study 1.

In order to assess the construct validity of the questionnaire, Ss also provided information on height and weight and completed other self-report measures of symptoms associated with eating disorders, depression and self-esteem. These measures were: the Eating Attitudes Test (EAT: Garner & Garfinkel, 1979); Body Shape Questionnaire (BSQ: Cooper, Taylor, Cooper & Fairburn, 1987); Dutch Eating Behaviour Questionnaire-Restraint subscale (DEBQR: Van Strien, Fritjers, Bergers & Defares, 1986); Beck Depression Inventory (BDI: Beck, Ward, Mendelson, Mock & Erbaugh, 1961) and the Rosenberg Self Esteem Scale (RSE: Rosenberg, 1965).

In addition, to provide further information on the relationship between cognition and behaviour, a measure of behaviours, developed for this study by three clinicians experienced in the assessment and the treatment of eating disorders was also administered. This measure was a self-report questionnaire consisting of 32 items. It had three subscales sampling weight, shape and eating behaviours judged likely to be characteristic of patients with eating disorders who were concerned with acceptance by others, self-acceptance and control over eating. Subjects were asked to rate how often they engaged in each behaviour. Ratings were made using a visual analogue (0-100) scale

with end-points anchored at 'never' and 'always'. Sample items were "avoid communal changing rooms" (acceptance by others subscale), "check specific parts of your body to see if they are getting fatter or thinner" (self-acceptance subscale) and "try not to eat much during the day" control over eating subscale. Cronbach coefficient alpha values were computed to assess the internal consistency of each subscale. These values were acceptance by others 0.72, self-acceptance 0.76, control over eating 0.83. The three subscales were also correlated with the other measures of the specific and general psychopathology of eating disorders administered in other measures of the specific and general psychopathology of eating disorders administered in Study 2, i.e. EAT, BSQ, DEBQR, BDI and RSE, to assess convergent validity. Pearson correlations (two-tailed test) were all significant and ranged from 0.14 to 0.78.

Second factor analysis

As before, principal component analysis was carried out on the completed questionnaires. On the basis of the findings in Study 1, four factors were selected for oblique rotation. The four factors accounted for 21.6% of the total variance. They were identical to the four factors extracted from the first factor analysis, i.e. (1) negative self-beliefs; (2) weight and shape as a means to acceptance by others; (3) weight and shape as a means to self-acceptance; (4) control over eating. Items loaded in exactly the same way, confirming the factor structure. Eigen values for each factor was negative self-beliefs

14.1, acceptance by others 3.8, self-acceptance 2.2, and control over eating 1.5. Factor intercorrelations ranged from 0.29 to 0.47.

Second revision

One item loaded on two factors at greater than 0.40 and was, therefore, dropped from the questionnaire. This left a revised, 32-item questionnaire. All items loaded at greater than 0.42 with the appropriate factor and they loaded in the same way as on the first version of the questionnaire. The items making up the revised 32-item questionnaire and their factor loading can be seen in Table 1. The remaining findings reported in this article refer to the 32-item questionnaire.

Table 1. Items and factor loading of the Eating Disorder Belief Questionnaire: Second factor analysis (N=254), Study 2

Scale/Item	Loading on factors			
	1	2	3	4
Factor 1: Negative self-beliefs				
1. Saya tidak disayangi	0.87	0.05	-0.12	-0.08
2. Saya hodoh	0.87	0.06	-0.04	-0.01
3. Saya tidak berguna	0.84	-0.09	-0.01	0.12
4. Saya seorang yang gagal	0.82	-0.09	-0.09	0.20
5. Saya bersendiri/berseorangan	0.77	0.11	0.00	-0.06
6. Saya tidak bagus/baik	0.76	0.04	0.10	-0.12
7. Saya bukanlah orang yang disukai/digemari	0.74	0.09	0.04	-0.12
8. Saya tidak begitu menyukai diri sendiri	0.71	0.09	0.16	0.00
9. Saya membosankan	0.69	0.05	-0.01	-0.02
10. Saya bodoh	0.64	-0.18	0.18	0.16
Factor 2: Acceptance by others				
11. Jika saya kurangkan berat badan saya akan lebih berguna dalam dunia ini.	0.05	0.88	0.09	-0.09
12. Jika piggung saya kurus orang akan menyukai saya	0.02	0.85	0.00	-0.08
13. Jika saya kurangkan berat badan orang akan berbaik dan ingin mengenali saya	0.04	0.79	-0.07	0.03
14. Jika berat badan saya meningkat saya seorang yang jahat/tidak jahat	0.01	0.73	-0.04	0.16
15. Jika peha saya pejal bermakna saya adalah seorang yang lebih baik	0.16	0.72	-0.14	0.26
16. Jika berat saya meningkat saya seorang yang tidak bermakna	0.17	0.72	0.17	0.06
17. Jika piggung saya tirus bermakna saya adalah seorang yang berjaya	0.04	0.69	0.24	-0.01

18. Jika saya kurangkan berat badan orang akan mengambil berat tentang diri saya	0.20	0.61	0.08	0.10
19. Jika bentuk badan saya adalah seimbang orang akan menyayangi saya	0.13	0.57	0.00	0.29
20. Jika punggung saya kecil orang tidak akan mempermainkan saya	-0.02	0.56	0.16	0.22
Factor 3: Self acceptance				
21. Jika badan saya kurang kendur saya kelihatan lebih menarik	0.06	0.01	0.86	-0.02
22. Jika perut saya kempes saya akan lebih mengiurkan	0.05	0.06	0.83	-0.12
23. Jika saya makan manisan saya akan menjadi gemuk	0.02	0.10	0.81	-0.01
24. Jika saya makan makanan yang buruk seperti lemak, manisan, roti dan bijirin, itu semua akan menjadi lemak	0.00	0.00	0.61	0.26
25. Jika badan saya langsing saya akan lebih mengemari diri saya	0.12	0.22	0.59	-0.01
26. Lemak badan/ kegendulan adalah menjijikkan	-0.03	-0.01	0.55	0.30
Factor 4: Control over eating				
27. Jika saya makan makanan yang ditegah saya tidak akan dapat berhenti	0.08	0.04	0.02	0.80
28. Jika saya terus kelaparan saya boleh berjaya daripada hilang kawalan dan menjadi gemuk	0.04	0.12	-0.12	0.71
29. Jika saya makan seperti normal, saya akan tingkatkan berat badan	0.00	0.10	0.12	0.71
30. Jika saya makan 3 sajian sehari seperti orang lain saya menjadi gemuk	-0.04	0.16	0.19	0.66
31. Jika saya sudah makan sesuatu saya mestilah membuangnya serta merta	0.06	0.27	0.11	0.61
32. Jika saya loya dan memuntahkan makanan, saya lebih terkawal	0.08	-0.07	0.33	0.42

Table 2. Subscale intercorrelations for the Eating Disorder Belief Questionnaire, Study 2

Subscale	2	3	4
1) Negative self-beliefs	0.53	0.46	0.46
2) Acceptance by others		0.65	0.70
3) Self-acceptance			0.61
4) Control over eating			

P < 0.01, two-tailed tests.

Alpha reliabilities

Cronbach coefficient alphas were computed for each factor to assess internal consistency of the factors. These values were: negative self-beliefs 0.93, acceptance by others 0.94, self-acceptance 0.88, control over eating 0.86. Item total correlations ranged from 0.92 to 0.93 (factor 1), 0.93 to 0.94 (factor 2), 0.87 (factor 3) and from 0.82 to 0.87 (factor 4).

Subscale intercorrelations

All four subscales were significantly correlated with each other (all P s < 0.01, two-tailed tests). Pearson correlations can be seen in Table 2.

Descriptive statistics

A score was obtained for each individual on each subscale by dividing the total score by number of items. The mean score on each subscale and standard deviations for the total sample were: negative self-beliefs 16.4 (SD 15.8); acceptance by others 11.7 (SD 16.8); self-acceptance 26.6 (SD 16.0); control over eating 8.6 (SD 11.3).

Construct validity

Convergent and discriminant validity. To assess convergent validity, the four subscales were correlated with scores on other measures of the specific psychopathology of eating disorders. These measures were the EAT, BSQ and DEBQR. Correlations were also obtained with two general measures (the BDI and RSE) and to assess discriminant validity, with each S's Body Mass Index {BMI = weight (kg)/height (m²)}. Significant correlations were obtained between the four subscales and all these measures, with the exception of BMI (all P s < 0.01, two-tailed tests). Correlations are presented in Table 3.

In an additional test of convergent validity, scores on the four subscales were also found to be significantly correlated with scores on the three subscales of the measure of behaviours developed for this study (all P s < 0.01, two tailed tests). These correlations are also presented in Table 3.

Because scores on the EAT and BDI were significantly correlated ($r=0.26$, $P < 0.01$), partial correlations were performed to determine whether subscale scores were independently related to score on the EAT. When the score on the BDI was partialled out, all four subscales remained significantly correlated with score on the EAT (all correlations, $P < 0.01$, two tailed tests).

Criterion-related validity. We assessed the concurrent (criterion-related) validity of the questionnaire subscales using multiple regression analysis. For this purpose the sample from Study 1 and Study 2 were combined. Two multiple regression analyses were run. The first tested the ability of each of the questionnaire subscales to predict the score on the EAT, when common

Table 3. Correlations between the four subscales of the Eating Disorder Belief Questionnaire and Body Mass Index. Measures of the specific and general psychopathology of eating disorders and associated behaviours, Study 2

	BMI	EAT	BSQ	DEBQR	BDI - RSE	BAO	BSA	BCE	
Negative self-beliefs	-0.05	0.30	0.45	0.30	0.41	0.71	0.55	0.38	0.28
Acceptance by others	-0.11	0.40	0.58	0.48	0.43	0.45	0.42	0.52	0.46
Self-acceptance	0.03	0.51	0.66	0.62	0.35	0.36	0.49	0.66	0.61
Control over eating	-0.06	0.50	0.62	0.63	0.39	0.40	0.41	0.57	0.56

Table 4. Summary statistics for the Eating Disorder Belief subscales on EAT and BDI scores, Study 2

Predictor	<i>B</i>	<i>r</i>	<i>F</i>	Significance of <i>F</i>
BDI	0.17	0.18	4.2	<0.0001
Negative self-beliefs	-0.13	-0.13	2.8	0.005
Acceptance by others	0.01	0.00	0.1	NS
Self-acceptance	0.03	0.03	0.7	NS
Control over eating	0.67	0.46	14.7	<0.0001
EAT	0.19	0.14	4.2	< 0.0001
Negative self-beliefs	0.55	0.43	3.0	<0.0001
Acceptance by others	0.01	0.01	0.3	NS
Self-acceptance	0.05	0.04	1.2	NS
Control over eating	0.00	0.00	0.1	NS

Variance associated with depression was controlled. This analysis thus sought to provide information about the unique predictive power of the individual subscales, controlling for depression and co-variances between subscales. The score on the BDI was entered on the first step, followed by scores on the four subscales of the questionnaire on the second step. When the BDI score was entered, multiple *R* was 0.39 and adjusted *R*² was

0.15 [$F(1,501) = 92.5, P < 0.0001$]. When scores on the four subscales were entered multiple R was 0.72 and adjusted R2 was 0.52 [$F(5,497) = 107.7, P < 0.0001$]. Change in R2 was 0.36 ($F = 94.3, P < 0.0001$). Score on the control of eating subscale emerged as a significant predictor of score on the EAT ($F = 14.7, P < 0.0001$) together with score on the negative self-beliefs subscale ($F = 2.8, P < 0.003$). The latter was a negative association.

The second multiple regression analysis tested the ability of the subscales to predict the score on the BDI, when symptoms associated with eating disorders were controlled. Score on the EAT was entered on the first step and scores on the four subscales were entered on the second step. Because negative self-beliefs are likely to be characteristic of most emotional disorder it was hypothesized that, in this analysis, the score on the negative self-beliefs subscale was likely to be the best predictor of the score on the BDI, a generic measure of emotional distress. It was also hypothesized that scores on the more specific subscales would not predict the score on the BDI when symptoms associated with eating disorders and co-variances between subscales were controlled. When the EAT score was entered, multiple R was 0.39 and adjusted R2 was 0.15 [$F(1,501) = 92.5, P < 0.0001$]. When scores on the four subscales of the questionnaire were entered multiple R was 0.68 and adjusted R2 was 0.45 [$F(5,497) = 83.5, P < 0.0001$]. Change in R2 was 0.30 ($F = 68.8, P < 0.0001$). Score on the negative self-beliefs was the only questionnaire subscale that emerged as a significant predictor of the score on the BDI ($F = 13.0, P < 0.0001$). Summary statistics for these two analyses can be seen in Table 4.

STUDY 3

In a further test of the concurrent (criteria-related) validity of the questionnaire it was administered to three groups: (1) 12 female patients with a DSM-III-R diagnosis of anorexia nervosa (American Psychiatric Association, 1987); (2) 12 female patients with a DSM-III-R diagnosis of bulimia nervosa (American Psychiatric Association, 1987); (3) 12 female, non-dieting controls without an eating disorder and without a psychiatric history. Patients were recruited through their primary doctors. Control Ss were recruited by requesting volunteers from amongst university and hospital staff and other colleagues. All Ss were screened with the Axis 1 eating disorder modules of the Structured Clinical Interview for DSM-III-R (Spitzer, Williams & Gibbons, 1987) to confirm or exclude a diagnosis of an eating disorder. Control Ss were also asked about any psychiatric history and whether they were trying to lose weight. The interviews were conducted by clinicians experienced in the assessment and treatment of eating disorders. The three groups were similar in mean age and mean socio-economic status. The patients with bulimia nervosa and control Ss were similar in mean BMI scores while the mean of the patients with anorexia nervosa was significantly lower than that of both these groups. Mean scores on the EAT were significantly greater for the two patient groups than the mean for the control group. In the control group the mean restraint score (DEBOR) was similar to that of a sample of randomly selected women and lower than expected for women concerned

with dieting (Van Strien et.al.,1986). Mean scores and standard deviations for the three groups on the four subscales of the questionnaire can be seen in Table 5.

Four separate Kruskal-Wallis one way analyses of variance were carried out with scores on the four subscales of the questionnaire as dependent variables. Chi-square values were as follows: negative self-beliefs, $X^2 = 19.5$, $P < 0.0001$; acceptance by other, $X^2 = 20.5$, $P < 0.0001$; self-acceptance, $X^2 = 16.3$, $P < 0.0003$; control over eating, $X^2 = 23.1$ $P < 0.0001$. Post hoc comparisons indicated that, on all four subscales, the two patient groups had significantly greater scores than the control group ($P < 0.01$, all comparisons).

Table 5. Mean scores on the four subscales of the Eating Disorder Belief Questionnaire for patients with anorexia nervosa, patients with bulimia nervosa and non-dieting controls, Study 3

	<u>Normal controls</u>		<u>Bulimia nervosa</u>		<u>Anorexia nervosa</u>	
	Mean	SD	Mean	SD	Mean	SD
Negative self-beliefs	20.4	16.3	60.4	18.3	71.0	23.7
Acceptance by others	7.1	10.1	61.2	23.2	49.3	31.2
Self-acceptance	40.9	25.7	86.5	15.0	82.2	18.2
Control over eating	10.0	13.9	81.5	17.7	74.0	19.1

DISCUSSION

The three studies described here report the development of a self-report questionnaire designed to assess assumptions and beliefs relevant to eating disorders. Preliminary findings suggest a replicable four-factor structure with promising psychometric properties. The four factors measured by the present scale were: (1) negative self-beliefs; (2) weight and shape as a means to acceptance by others; (3) weight and shape as a means to self-acceptance; and (4) control over eating.

Correlational data and evidence from a small sample of patients with eating disorders indicates that these types of assumptions about weight, shape and eating and negative self-beliefs are associated with eating disorders. The negative self-beliefs subscale appears to measure generic beliefs associated with depression while the assumptions assessed by the remaining subscales appear to be more specifically characteristic of eating disorders. Unlike existing self-report measures the Eating Disorder Belief Questionnaire measures both assumptions and beliefs. In addition, the content of assumptions covered by individual subscales is rather different from that assessed by other questionnaires. It is likely that questionnaire measures of belief will assist clinicians in developing a cognitive formulation for individual patients as well as provide a useful outcome measure for the process of cognitive therapy with eating disorder patients.

Further work is clearly needed. In particular, validity needs to be established with a larger sample of patients with eating disorders. The factor structure needs to be replicated in a clinical sample and the ability of the questionnaire to distinguish patients with eating

disorders from dieters, restrained eaters and patients with other psychiatric diagnoses also needs to be investigated. The findings, using multiple regression, that a low score on the negative self-beliefs subscale predict a high score on the EAT needs further investigation. One possibility is that, when common variance associated with other subscales of the questionnaire is controlled, the deeper level core beliefs are relatively inaccessible to those whose eating disorder symptoms are most severe. Although further work is needed, the findings reported here are promising and suggest that the Eating Disorder Belief Questionnaire may be a useful additional measure in the assessment of patients with eating disorders.

For population of school students;

When this scale was applied to school students (full methodology will be given in another study report by my post graduate student as part of her thesis), there was no one with full diagnosis of Eating Disorder but there were cases with beliefs consistent with mild forms of the disorder. Initially there were 30 possible cases but when reviewed using DSM 1V criterias they were found to be non cases.

Changes to study protocol;

Changes were thus made to the protocol to study cases of actual Eating Disorder from different groups of subjects and Effectiveness of our behavioural program made from case studies instead of comparison due to small number of cases and short duration of study.

REFERENCES

- American Psychiatric Association (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev). Washington, DC: American Psychiatric Association
- Beck, A. T. (1996). Beyond belief: A theory of modes, personality and psychopathology. In P.M. Salkovskis (Ed), *Frontiers of cognitive therapy* (pp.1-25). New York: Guilford Press.
- Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.
- Cattell, R.B (1978). *The scientific use of factor analysis in behavioural and life sciences*. New York: Plenum Press.
- Cooper, M.J., Fairburn, C.G. (1992). Thought about eating, weight and shape in anorexia nervosa and bulimia nervosa. *Behaviour Research and Therapy*, 30, 501-511.
- Cooper, P.J., Taylor, M.J., Cooper, Z., & Fairburn, C.G. (1987). The development and validation of the Body Shape. Questionnaire, *International Journal of Eating Disorders*, 6, 485-494.
- Cooper, M.J., Todd, G. & Cohen-Tovee, E. (1996). Core beliefs in eating disorders. *International Cognitive Therapy. Newsletter*, 10 (2), 2-3.
- Cooper, M.J., Todd, G. & Wells, A. (1995, July). *Content, origins and consequences of dysfunctional beliefs in anorexia nervosa and bulimia nervosa*. Paper presented at the World Congress of Behavioural and Cognitive Therapies, Copenhagen.
- Fairburn, C. G., Cooper, Z., & Cooper, P.J. (1986). The clinical features and maintenance of bulimia nervosa. In K.D. Brownell & J.P. Foreyt (Eds.), *Physiology, psychology and treatment of the eating disorders* (pp.389-404). New York: Basic Books.
- Garner, DM, & Bemis, K. M. (1982). A cognitive – behavioural approach to anorexia nervosa. *Cognitive Therapy and Research*, 6, 123-150.
- Garner, DM, Garfinkel, PE (1979). The Eating Attitudes Test: An index of the symptoms of anorexia nervosa. *Psychological Medicine*, 9, 273-279.
- Guidano, V. F., & Liotti, G. (1983). *Cognitive processes and emotional disorders: A structural approach to psychotherapy*. New York: Guilford Press.
- Mizes, J.S. (1988). Personality characteristic of bulimia and non-eating disordered female controls: A cognitive – behavioural perspective. *International Journal of Eating Disorders*, 7, 541-550.

- Mizes, J.S. (1990). Criterion-related validity of the Anorectic Cognitions Questionnaire. *Addictive Behaviours*, 15, 153-163.
- Mizes, J.S. (1991). Construct validity and factor stability of the Anorectic Cognitions Questionnaire. *Addictive Behaviours* 16. 89-93.
- Mizes, J.S. (1992). Validity of the Mizes Anorectic Cognitions Scale: A comparison between anorectics, bulimics and psychiatric controls. *Addictive Behaviours*, 17. 283-289.
- Mizes, J.S. & Klesges, R.C. (1989). Validity, reliability, and factor structure of the Anorectics Cognitions. Questionnaire. *Addictive Behaviours*. 14. 589-594.
- Padesky, C.A., & Greenberger, D. (1995). *Clinicians guide to mind over mood*. New York: Guilford Press.
- Pedhazur, H.J. (1982). *Multiple regression in behavioural research* (2nd ed.). New York: Holt, Rhinehart & Winston.
- Reyna McGlone, CL, Ollendick, TH, & Hart, kJ (1986, November). *Self-efficacy and bulimia: Development and validation of the Self-Assessment Scale*. Poster presented at the Association for the Advancement of Behaviour Therapy, Chicago.
- Rosenberg, M. (1965). *Society and the adolescent self image*. Princeton: Princeton University Press.
- Scanlon, E., Ollendick, T.H.& Bayer, K. (1986, November). *The role of cognitions in bulimia: An empirical test of basic assumptions*. Paper presented at the Association for the Advancement of Behaviour Therapy, Chicago.
- Schulman, R. G., Kinder, B. N., Powers, P.S., Prange, M., & Gleghorn, A. (1986). The development of scale to measure distortions in bulimia. *Journal of Personality Assessment*. 50. 630-639.
- Spitzer, R.L., Williams, J. B. W., & Gibbons, M. (1987). *Instructional manual for the Structured Clinical Interview for DSM-III-R (SCID, 4/1/87 Revision)*. New York: New York State Psychiatric Institute.
- Van Strien, T., Frijers, J.E.R., Bergers, G.P.A., & Defares. P.B. (1986). The Dutch Eating Behaviour Questionnaire (DEBQ) for assessment of restrained, emotional and external eating behaviour. *International Journal of Eating Disorders*, 5, 295-315.
- Vitousek, K. B., & Hollon, S. D. (1990). The investigation of schematic content and processing in the eating disorders. *Cognitive Therapy and Research*, 14, 191-214.

Young, J. E. (1990). *Cognitive therapy for personality disorders. A schema focused approach*. Sarasota, FL: Professional Resource Exchange, Inc.

PART 2

SELECTIVE MEMORY BIAS IN WOMEN WITH BULIMIA NERVOSA AND WOMEN WITH DEPRESSION

Introduction

Clinical observations that individuals with bulimia nervosa hold extreme beliefs about weight and shape, by which they evaluate their self-worth, have led to the development of cognitive models of bulimia nervosa (e.g. Fairburn, Z. Cooper, & P. Cooper, 1986; Vitousek & Hollon, 1990). Fairburn and colleagues propose that these beliefs or attitudes to weight and shape are of primary importance in the disorder, while attitudes to food and eating, which are commonly observed, are secondary. Vitousek and Hollon (1990) further suggest that these beliefs, particularly those organized around issues of weight and shape, and its implications for the self, have schematic qualities. Once activated, they guide the cognitive processes of attention, memory and interpretation, all of which operate to favour schema congruent information (Blackburn & Davidson, 1990). Such information processing biases serve to maintain the schemata and may explain the persistence of symptoms in bulimia nervosa.

The most extensively researched aspect of information processing in eating disordered patients is attentional allocation (e.g., M. Cooper & Todd, 1997; Formea & Burns, 1996; and M. Cooper, Anastasiades, & Fairburn, 1992). Overall, this research suggests that women with bulimia nervosa demonstrate attentional biases towards information congruent with their concerns about weight and shape, food and eating related information.

However, to date few studies have investigated other aspects of information processing in women with bulimia nervosa; for example, only two studies were found that have investigated memory bias in this group. In one study (King, Polivy, & Herman, 1991) eating disordered women, we compared with restrained and unrestrained eaters, and with obese women, on recall for weight, food and appearance related information. The eating disordered participants demonstrated enhanced recall for food related information. However, only six eating disordered participants were included in the study, most of whom had a diagnosis of anorexia nervosa. It is not clear if the bias is also found in bulimia nervosa. In addition, the study did not control for the possible effect of differences between the groups in levels of hunger.

More recently, Sebastian, Williamson & Blouin (1996) compared a mixed group of eating disordered patients, high body dysphoric women and normal controls, on recall of fat related words, neutral body words and neutral control words. The eating disordered participants demonstrated a recall bias towards fat related words when compared with neutral body and neutral control words. The high body dysphoric and normal controls did not demonstrate this bias. However, the eating disordered participants had elevated levels of depression and as M. Cooper (1997) notes all the fat words were negatively toned, it is thus not clear if the observed recall bias reflects biases specific to fat related words or a general negative bias due to depression. The study also did not examine the relative contribution of thin related words to selective recall; these may be equally as important as fat related words in bulimia nervosa (Vitousek & Hollon, 1990).

The aim of the present study was therefore to investigate selective recall of weight and shape related words, and food related words, in women bulimia nervosa. In particular, the study sought to determine whether recall bias is specific to negatively toned emotional information in general. In order to investigate the role of depression in recall bias a depressed control group was included in the study. The relationship between hunger and recall of food related words was also investigated. Finally, an additional aim was to replicate the findings of Sebastian et al. (1996) that recall bias is specific to weight and shape related words and not to body words in general.

Method

Participants

Clinical Participants. *Twelve participants with a primary diagnosis of bulimia nervosa and 12 with a primary diagnosis of depression were recruited through their responsible clinician. All were female, aged 18-35 years and had a Body Mass index (BMI: Weight kgs/ Height m²) within the range 19-25 (National Research Council, 1989). All participants fulfilled DSM-IV criteria (American Psychiatric Association, 1994) for bulimia or for major depression at the time they took part in study. Women with depression who also had eating disorder symptoms or a history of eating disorder were excluded from the study. Women with depression, who had been dieting for a period of 4 weeks or more were also excluded. Dieting was defined as following a standard reducing diet and/or setting rigid rules about what should be eaten (M. Cooper & Faiburn, 1992).*

Nonclinical female controls. *Eighteen nonclinical controls were recruited by requesting volunteers from amongst hospital employees and University students. All were aged 18-35 years, and had a BMI within the range 19-25. Women with a diagnosis or history of eating disorder or who had a psychiatric history were excluded. Women who had been dieting for a period of 4 weeks or more, were also excluded.*

Self-report questionnaires

Eating Attitudes Test (EAT; Garner & Garfinkel, 1979), Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), Rosenberg Self Esteem Scale (RSE; Rosenberg, 1965), Mill Hill Vocabulary Scale (Mill Hill; Raven, 1965), Hunger Rating Scales (Channon, Hemsley, & de Silva, 1988). Based on the measures of Channon and colleagues a subjective rating of hunger at time of the experiment was obtained using a 7-point Likert Scale. The amount of food that could be eaten was obtained using a 6-point Likert Scale. Time since last meal and time until the next meal was also recorded. These scales do not have established validity and reliability.

Materials

A pool of 120 stimulus words was generated. This consisted of three categories of 24 positively and negatively toned words: weight/shape words (e.g., thin, bulging), food words (e.g., salad, cakes), emotional word (e.g., happy, useless), and 24 neutral body words (e.g., knee, finger), and 24 neutral filler words (e.g., college, flower). For the weight/shape and food words, positively toned is defined in terms of thin-related words and negatively toned in terms of fat related words. The weight/shape, food and body words were mostly drawn from previous published research (e.g., Sebastian et al., 1996; Huon & Brown, 1996; Markus, Hamill, & Sentis, 1987; Channon et al., 1988). The emotional words were generated through examination of self-report inventories and were randomly generated. The neutral filler words were randomly selected nouns and did not form a specific category.

All 120 words were categorized for word type and rated for emotional tone by 14 female post-graduates. Any words that were highly ambiguous for category or emotional tone were discarded. Stimulus words were matched for word frequency across word categories. In addition, within the word categories negatively valenced and positively valenced words were also matched for word frequency (Carroll, Davies, & Richman, 1971).

Procedure

Participants were seen individually. Demographic data were collected and all participants were then screened for depression and bulimia nervosa using the Structured Clinical Interview for DSM-IV (Spitzer, Williams, & Gibbons, 1996) in order to ensure patient participants met DSM-IV criteria for either disorder. The nonclinical controls were additionally interviewed about any psychiatric history, or current psychiatric treatment.

Prior to starting the cognitive task, participants were asked to complete Hunger Rating Scales (Channon et al., 1988). Participants were then presented with a practice trial of six words on audiotape to ensure they understood the instructions; they were instructed to listen to the words and to imagine a scene involving the word and themselves. The 120 experimental words were then presented in a fixed random order on audiotape at the rate of one word every 10 seconds. Following completion of the word task participants were given a distraction task, in which they were required to count backwards in three from 100 for 20 seconds. Participants were then given a blank sheet of

paper and asked to write down all the words that they could remember hearing on the tape, indicating when they had finished. On completion of the experimental task participants completed the self-report questionnaires.

Results

Participant characteristics

The mean age, Body Mass Index (BMI) and number of years in full-time secondary higher education for the three groups is presented in Table 1. The data for the participant characteristics did not meet assumptions necessary for parametric statistics. Kruskal-Wallis Analysis of Variance was therefore used to assess group differences. There was no difference significantly in age ($X(2) = 6.19, p < .04$), and numbers of years in education ($X(2) = 13.3, p < .001$). The mean scores for the self-report questionnaires are presented in Table 2.

Table 1. Demographic data for the three groups

Group	Bulimia nervosa (N=12)	Depressed controls (N=12)	Female controls N=18
Mean age in years	23.8 (4.2)	27.6 (4.9)	26.6 (3.3)
BMI-kg/m	22.3 (2.3)	23.2 (2.4)	22.4 (1.6)
Mean years in education	8.9 (2.6)	8.2 (2.8)	11.9 (1.1)

Standard deviation in parentheses; Mean years in education = the mean number of years in full-time education from the age of 11 years upwards.

Table 2. Mean scores and standard deviations for each self report questionnaire

Scale control	Bulimia nervosa	Depressed control	Female
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	(N=12)	(N=12)	(N=18)
BDI	25.5 (8.6)	25.3 (11.2)	5.4 (3.8)
EAT	30.1 (10.5)	5.9 (4.5)	2.4 (2.0)
RSE	20.1 (3.3)	18.6 (5.3)	31.3 (5.0)
Mill Hill	27.0 (4.9)	28.3 (5.1)	30.7 (3.7)

Standard Deviation in parentheses, BDI= Beck Depression Inventory; EAT= Eating Attitudes Test; RSE= Rosenberg Self Esteem Scale, this has been scored in a positive direction such that a higher score indicates higher self esteem; Mill Hill Vacabulary Scale, Synonym Section.

Table 3. Mean and standard deviation of words recalled in each category

Word type	Valence	Bulimics <i>N</i> = 12	Depressed <i>N</i> = 12	Female controls <i>N</i> = 18
Weight/shape	positive	3.7 (1.8)	1.8 (1.8)	4.1 (2.0)
	negative	3.0 (1.3)	1.9 (1.1)	4.0 (1.4)
	total	6.7 (2.4)	3.7 (2.6)	8.1 (2.9)
Emotional	positive	1.8 (1.6)	1.6 (1.4)	3.6 (1.7)
	negative	1.8 (1.3)	2.3 (1.8)	3.7 (1.8)
	total	3.6 (2.6)	3.9 (3.0)	7.3 (2.9)
Food	positive	3.4 (1.6)	2.9 (2.4)	3.8 (2.2)
	negative	3.1 (1.8)	2.3 (1.9)	3.8 (2.1)
	total	6.4 (2.5)	5.3 (3.8)	7.4 (3.8)
Body	neutral	6.8 (3.8)	7.1 (4.5)	11.1 (2.8)
Nouns	neutral	3.5 (2.4)	2.9 (2.6)	6.4 (2.9)

Standard deviation in parentheses

One-way analyses of variance with post hoc Tukey tests were used to assess group differences. A significant difference was found between groups on the EAT ($F(2,39) = 77.2, p < .0001$). The bulimic group scored significantly higher than the female control group and depressed group (both comparisons, $p < .05$), indicating that the bulimic group

had more disturbed eating attitudes. As expected, a significant difference was found between groups in scores on the BDI ($f(2,39)= 32.8, p <.0001$). Post hoc tests indicated that the bulimic and depressed groups both scored significantly higher than the female controls (both comparisons, $p < .05$). A significant difference was found in scores on the RSE between the three groups ($F(2,39)= 33.9, p < .0001$). The female controls had significantly higher self-esteem than both the depressed and bulimic groups (both comparisons, $p < .05$). There was no significant difference between groups on the Mill Hill Vocabulary Scale ($F(2,39) = 2.7, NS$).

Analysis of selective recall measures

The selective recall data met the assumptions necessary for parametric statistics. Analyses of variance with post hoc Tukey tests were therefore used to assess group differences. The mean of each word type recalled by the three groups is presented in Table 3.

Analysis of recall for weight/shape words

Comparison with neutral words. A two-way analysis of variance [group x word type (weight/shape vs neutral nouns)] with repeated measures on the second factor was carried out. There was a main effect of word type ($F(1,39)=14.6 p < .0001$), indicating that more words related to weight and shape than neutral nouns were

recalled. There was also a main effect of group ($F(2,39) = 11.7, p < .0001$). No significant two-way group by word type interaction was found ($F(2,39) = 1.93, NS$). Post hoc tests showed that the control group recalled significantly more words overall than the depressed and bulimic groups (both comparisons, $p < .05$).

Comparisons with neutral body words. A two-way analysis of variance [group x word type (weight/shape vs neutral body)] with repeated measures on the second factor was carried out. There was a main effect of word type ($F(1,39) = 16.3, p < .0001$) and a main effect of group ($F(2,39) = 9.3, p < .001$). However, these main effects were modified by a significant group by word type interaction ($F(2,39) = 3.54, p < .04$). Between group analyses using post hoc tests indicated that the bulimic group recalled significantly more weight/shape words than the depressed group ($p < .03$), as did the female controls ($p < .0001$), but that the bulimic group did not differ significantly from the female control group in recall for weight/shape words. Furthermore, the female control group recalled significantly more the body related words than both the depressed and bulimic groups (both comparisons, $p < .05$), but there was no significant difference in recall of body words between the depressed and bulimic groups. Within group analyses using post hoc tests indicated that both the female controls and the depressed group recalled significantly more neutral body words than weight/shape words (both comparisons, $p < .05$). However, the bulimic group did not demonstrate a significant difference between recall of neutral body words and weight/shape words.

Comparison with emotional words. A two-way analysis of variance [group x word type (weight/shape vs emotional)] with repeated measures on the second factor was carried out. Again, there was main effect of group ($F(2,39) = 8.8, p < .0001$), and a main effect of word type ($F(1,39) = 15.1, p < .0001$). However, these main effects were modified by a two-way interaction of group by word type ($F(2,39) = 17.8, p < .0001$). Between group analyses using post hoc tests indicated that the female control group recalled significantly more weight and shape related words than the depressed group ($p < .0001$), but not the bulimic group. The female control group also recalled significantly more emotion words than both the depressed and bulimic groups (both comparisons, $p < .0001$). The bulimic group recalled significantly more weight and shape related words than the depressed control group ($p < .02$).

Within group analysis using post hoc tests indicated that the bulimic group recalled more weight/shape words than emotion words ($p < .01$). However, the depressed and female control groups showed no significant difference in recall between weight/shape words and emotion words.

A three-way analysis of variance [group x word type (weight/shape vs emotional) x valence (positive vs negative)] with repeated measures on the second and third factors was carried out. There were no significant findings (all comparisons, $F < 1, NS$).

Analysis of recall for food words

Hunger ratings. Prior to the analysis of recall for food related words the relationship between this and hunger was assessed. Data from the hunger scales provided information on subjective ratings of hunger at the time of the experiment, how much participants thought they could eat, time the last meal, and time until the next meal. Kruskal-Wallis Analysis of Variance found that there was not difference in hunger between the three groups ($X(2) = 1.09$, NS), or in amount of food that could be eaten ($X(2) = .871$, NS). A new variable "time" was computed, by adding time from last meal to time until next meal in order to obtain total time without food. Using one-way analysis of variance no significant difference in "time" was found between the three groups ($F(2,38) = 1.18$, NS).

Sperman rho correlation analysis of hunger ratings and number of food words recalled found that recall of food words was significantly correlated with hunger in the bulimic group ($r = .682$, $p < .02$), and in the depressed group ($r = .643$, $p < .02$), but in not the female control group. It was therefore not appropriate to use hunger ratings as a covariate, because the assumption of homogeneity of regression would not be met. Quantity of food that could be eaten was not significantly correlated with recall of food words between the three groups. Pearson correlation analysis of "time" (total time without food) with recall of food words between the three groups was also not significant.

Comparison with neutral nouns. A two-way analysis of variance [group x word type (food vs neutral nouns)] with repeated measures on the second factor was carried

out. There was a main effect of word type ($F(1,39) = p < .0001$), which showed that overall more food words were recalled than neutral nouns. There was also a main effect of group ($F(2,39) = 4.6, p < .02$). The interaction of group by word type was not significant ($F(2,39) = 1.44, NS$). Post hoc tests of the main effect of group indicated that the female controls recalled significantly more words than the depressed and bulimic groups (both comparisons, $p < .05$).

Comparison with emotional words. A second two-way analysis of variance [group x word type (food vs emotional)] with repeated measures on the second factor was carried out. There was a main effect of word type ($F(1,39) = 11.6, p < .002$), and a main effect of group $F(2,39) = 4.2, p < .02$). The main effects were modified by a significant two way interaction of group by word type ($F(2,39) = 4.04, p < .025$). Between group post hoc tests indicated that the female controls recalled significantly more emotional words than the bulimic and depressed groups (both comparisons, $p < .01$). Within group post hoc tests demonstrated that both the depressed and bulimic groups recalled significantly more food than emotional words (both comparisons, $p < .05$).

A three- way analysis of variance [group x word type (food vs emotional) x valence (positive vs negative)] with repeated measures on the second and third factors was carried out. There were no significant findings (all comparisons, $F < 1, NS$).

Discussion

Analysis of memory biases for weight/ shape related words produced mixed findings. The bulimic group demonstrated enhanced recall for weight/shape related words compared to emotional words, but not compared to neutral nouns or neutral body words. However, the depressed and female control groups demonstrated enhanced recall for neutral body words, which was not demonstrated by the bulimic group. These findings provide only partial support for those of Sebastian et al. (1996), who found significantly enhanced recall for weight and shape words compared to neutral nouns and body words in women with eating disorders. The differences in the findings may be accounted for by differences in the stimuli used, and Sebastian et al. (1996) also used a mixed group of eating disordered women.

The finding that women with bulimia nervosa demonstrate enhanced recall for weight/shape words compared to emotional words suggests that they do not have a general bias towards all emotionally toned information. More specifically, the fact that the bulimic group did not demonstrate enhanced recall only for negatively valenced weight and shape related words suggests that they have a bias to recall both negative and positive weight and shape related words equally. Cognitive processing in women with bulimia nervosa may be specific to weight and shape related words and not similar to the memory bias towards negatively toned information associated with depression, as was suggested by Sebastian et al. (1996).

According to the cognitive model of Williams, Watts, MacLeod and Mathews (1997) memory for schema congruent information reflects a process of elaboration, in which associative links between representations in memory are strengthened. Enhanced recall for weight and shape related words is therefore consistent with the proposition of Fairburn et al. (1986) and Vitousek and Hollon (1990) that weight and shape related schemata, containing implications for the self, are key structures in the psychopathology of bulimia nervosa. The finding that bulimic women demonstrate recall biases towards positive weight and shape related words suggests that positive information about weight and shape as well as negative information is more elaborately encoded and readily retrieved, and may also therefore be important in the maintenance of bulimia nervosa. Alternatively, it may be argued that memory biases for weight and shape related words are partially due to more exposure to this type of information, in women with bulimia. However, these findings are consistent with research indicating that women with bulimia demonstrate greater concern with weight and shape related information, compared to non-symptomatic dieters (M. Cooper & Fairbairn, 1992).

The hypothesis that women with bulimia nervosa would demonstrate a bias to recall food related words, and that this bias would not be accounted for by hunger, was not supported. Although analysis of the data suggested that the bulimic group recalled significantly more food related words than the female control groups, this finding was not specific to the bulimic group; the depressed control group also demonstrated a significant bias to recall food related words. In addition, in both groups recall of food related words was correlated with levels of hunger. No difference was found between or within the

three groups in recall of negative (fat related) food words and positive (thin related) food words in women with bulimia nervosa.

Observations that hunger was correlated with recall of food related words in the bulimic and depressed groups suggests that enhanced recall for food related information may be a state dependent processing bias. However, it was not possible to determine from the study the relative contribution of hunger and possible schema driven memory biases for food related words. The finding that recall biases for food related words was also demonstrated in women with depression supports the suggestion that concerns with food may be secondary to concerns about weight and shape in bulimia nervosa, as proposed by Fairburn et al. (1986). However, this is not to say that food and eating related attitudes are not important in bulimia nervosa. According to M. Cooper, Todd and Wells (1998), eating attitudes and behaviour may be important in the maintenance of weight and shape related schemata and may represent types of schema compensation.

Previous research has demonstrated that women with bulimia nervosa demonstrate attentional biases towards food related information (e.g., M. Cooper & Todd, 1997). Such research suggests that information processing of food related stimuli may be important in the maintenance of bulimia nervosa. However, to date, this research has not accounted for levels of hunger at the time of testing. One study (on anorexia nervosa) that did account for levels of hunger is that of Channon and colleagues (Channon et al., 1988). Contrary to the findings of the current study, Channon and colleagues found that attentional biases towards food related words were not due to hunger. These results, combined with the

results presented here, raise the intriguing possibility that different processing biases may be demonstrated for different type or categories of stimuli in women with different eating disorders. According to the model of Williams et al., (1997), attention is associated with the automatic process of integration, which facilitates the detection of threat. Attentional biases towards food related words may therefore reflect integration processes of the detection of threat. However, it remains to be established whether or not attentional biases to food related stimuli, like recall biases, in women with bulimia nervosa are not simply due to levels of hunger. It also remains to be established whether or not attentional biases towards food related stimuli are found in other-relevant psychiatric control groups including, as in the current study, young women with a diagnosis of depression.

In summary, the findings of the current research are consistent with the suggestion that bulimia nervosa is characterized by schemata concerned with weight and shape and its implications for the self. However, due to the small sample sizes the findings of this study have limited generalizability and reliability. It is therefore important that these findings are replicated by further research. Furthermore, the overall design would be enhanced by the inclusion of an anorexic group in order to establish whether the memory bias for weight/shape related words but not food related words is specific to women with bulimia nervosa. As suggested by Vitousek ((1996), differences between eating disorder subtypes may be represented at the level of cognitive schemata. Overall, the findings of this study provide support for cognitive approaches to bulimia nervosa, which emphasize attitudes to weight and shape. Furthermore, the findings are consistent with outcome research. Fairburn, Peveler, Jones, Hope and Doll (1993) found that at post-treatment, the

likelihood of relapse was associated with residual degree of attitudinal disturbance concerning weight and shape and its implications for the self.

REFERENCES

AMERICAN PSYCHIATRIC ASSOCIATION (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

BECK, A., WARD, C., MENDELSON, M., MOCK, J., & ERBAUGH, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.

BALCKBURN, I., & DAVIDSON, K. (1990). *Cognitive therapy for depression and anxiety*. Oxford: Blackwell.

CARROLL, J., DAVIES, P., & RICHMAN, B. (1971). *Word frequency book*. New York: American Heritage Publishing Company.

CHANNON, S., HEMSLEY, D., & DE SILVA, P. (1998). Selective processing of food words in anorexia nervosa. *British Journal of Clinical Psychology*, 27, 259-260.

COOPER, M. (1997). Cognitive theory in anorexia nervosa and bulimia nervosa: A review. *Behavioural and Cognitive Psychotherapy*, 25, 113-147.

COOPER, M., ANASTASIADES, P., & FAIRBURN, C. (1992). Selective processing of eating-shape-, and weight-related words in persons with bulimia nervosa. *Journal of Abnormal Psychology*, 101, 352-355.

COOPER, M., FAIRBURN, C. G. (1992). Thoughts about eating, weight and shape in anorexia nervosa and bulimia nervosa. *Behaviour Research and Therapy*, 30, 501-511.

COOPER, M., & TODD, G. (1997). Selective processing of these types of stimuli in eating disorders. *British Journal of Clinical Psychology*, 36, 279-281.

COOPER, M., TODD, G., & WELLS, A. (1998). Content, origins and consequences of dysfunctional beliefs in anorexia nervosa and bulimia nervosa. *Cognitive Psychotherapy*, 12, 213-230.

19

FAIRBURN, C. G., COOPER, Z., & COOPER, P. J. (1986). The clinical features and maintenance of bulimia nervosa. In K. Brownell & J. Forety (Eds.), *Physiology, psychology and treatment of the eating disorders*. New York: Basic Books.

- FAIRBURN, C. G., PEVELER, R., JONES, R., HOPE, R., & DOLL, H. (1993). Predictors of 12-month outcome in bulimia nervosa and the influence of attitudes to shape and weight. *Journal of Consulting and Clinical Psychology*, 61, 696-698.
- FORMEA, G., & BURNS, L. (1996). Selective processing of food, weight and body-shape words in nonpatient women with bulimia nervosa: Interference on the stroop task. *Journal of Psychopathology and Behavioural Assessment*, 18, 105-118.
- GARNER, D., & GARFINKEL, P. (1979). The eating attitudes tests: An index of the symptoms of anorexia nervosa. *Psychological Medicine*, 9, 273-279.
- HUON, G., & BROWN, L. (1996). Task dependence in colour naming latency among dieters. *International Journal of eating Disorders*, 19, 405-410.
- KING, G., POLIVY, J., & HERMAN, P. (1991). Cognitive aspects of dietary restraint: Effects on person memory. *International Journal of Eating Disorders*, 10, 313-321.
- MARKUS, H., HAMILL, R., & SENTIS, K. (1987). Thinking fat: Self schemata for body weight and the processing of weight relevant information. *Journal of Applied Social Psychology*, 17, 50-72.
- NATIONAL RESEARCH COUNCIL (1989). *Diet and health: Implications for reducing chronic disease risk*. Washington, DC: National Academy Press.
- RAVEN, J. (1965). *Guide to using the Mill Hill Vocabulary Scale with the Progressive Matrices Scale*. London: H. K. Lewis.
- ROSENBERG, M. (1965). *Society and the adolescent self image*. Princeton, NJ: Princeton University Press.
- SEBASTIAN, S., WILLIAMSON, D., & BLOUIN, D. (1996). Memory bias for fatness stimuli in the eating disorders. *Cognitive Therapy and Research*, 20, 275-286.
- SPITZER, R., WILLIAMS, J., & GIBBONS, M. (1996). *Instructional manual for the structured clinical interview for DSM-IV*. New York: New York State Psychiatric Institute.
- VITOUSEK, K. (1996). The current status of cognitive-behavioural models of anorexia nervosa and bulimia nervosa. In P. Salkovskis (Ed.), *Frontiers of cognitive psychology*. New York: Guilford Press.
- VITOUSEK, K., & HOLLON, S. (1990). The investigation of schematic content and processing in eating disorders. *Cognitive Therapy and Research*, 14, 191-214.
- WILLIAMS, J., WATTS, F., MACLEOD, C., & MATHEWS, A. (1997). *Cognitive psychology and emotional disorders*. Chichester: Wiley.

- FAIRBURN, C. G., PEVELER, R., JONES, R., HOPE, R., & DOLL, H. (1993). Predictors of 12-month outcome in bulimia nervosa and the influence of attitudes to shape and weight. *Journal of Consulting and Clinical Psychology*, 61, 696-698.
- FORMEA, G., & BURNS, L. (1996). Selective processing of food, weight and body-shape words in nonpatient women with bulimia nervosa: Interference on the stroop task. *Journal of Psychopathology and Behavioural Assessment*, 18, 105-118.
- GARNER, D., & GARFINKEL, P. (1979). The eating attitudes tests: An index of the symptoms of anorexia nervosa. *Psychological Medicine*, 9, 273-279.
- HUON, G., & BROWN, L. (1996). Task dependence in colour naming latency among dieters. *International Journal of eating Disorders*, 19, 405-410.
- KING, G., POLIVY, J., & HERMAN, P. (1991). Cognitive aspects of dietary restraint: Effects on person memory. *International Journal of Eating Disorders*, 10, 313-321.
- MARKUS, H., HAMILL, R., & SENTIS, K. (1987). Thinking fat: Self schemata for body weight and the processing of weight relevant information. *Journal of Applied Social Psychology*, 17, 50-72.
- NATIONAL RESEARCH COUNCIL (1989). *Diet and health: Implications for reducing chronic disease risk*. Washington, DC: National Academy Press.
- RAVEN, J. (1965). *Guide to using the Mill Hill Vocabulary Scale with the Progressive Matrices Scale*. London: H. K. Lewis.
- ROSENBERG, M. (1965). *Society and the adolescent self image*. Princeton, NJ: Princeton University Press.
- SEBASTIAN, S., WILLIAMSON, D., & BLOUIN, D. (1996). Memory bias for fatness stimuli in the eating disorders. *Cognitive Therapy and Research*, 20, 275-286.
- SPITZER, R., WILLIAMS, J., & GIBBONS, M. (1996). *Instructional manual for the structured clinical interview for DSM-IV*. New York: New York State Psychiatric Institute.
- VITOUSEK, K. (1996). The current status of cognitive-behavioural models of anorexia nervosa and bulimia nervosa. In P. Salkovskis (Ed.), *Frontiers of cognitive psychology*. New York: Guilford Press.
- VITOUSEK, K., & HOLLON, S. (1990). The investigation of schematic content and processing in eating disorders. *Cognitive Therapy and Research*, 14, 191-214.
- WILLIAMS, J., WATTS, F., MACLEOD, C., & MATHEWS, A. (1997). *Cognitive psychology and emotional disorders*. Chichester: Wiley.

PART 3

A PATHOPHYSIOLOGICALLY CONTROLLED EXPOSURE TREATMENT OF SEVERE BODY IMAGE DISTORTION IN EATING DISORDERS

Introduction

It is accepted that Body Image is the mental representation of physical appearance, that is mouldable set of information that someone has regarding their body. Body size overestimation and body dissatisfaction are the two clinically recognizable features traditionally associated with body image problems. Both seem to be only slightly correlated. While body size overestimation is not necessarily followed by anxiety and no studies have shown an association between body size overestimation and avoidant attitudes, body dissatisfaction is generally associated with high levels of social uneasiness and avoidance.

Body image problems are a major prognostic factor in the short-term course of eating disorders. No long-term data are available but body dissatisfaction is known to be the only symptom resistant to the general treatment of eating disorders and it remains present as a predisposing factor for relapse in most recovered and unrecovered anorectics up to 20 years after the onset of the condition. There are reasons to think that relapse is too often a consequence of unsolved body image problem. Body image problems seem to be an undervalued and therefore undertreated symptom in eating disorders.

There have been many different programmes proposed ranging from multimodal, personal growth, analytic, gestalt and bioenergetic therapies, to different confrontation techniques. Unfortunately, there are to our knowledge only three controlled studies

(Butters and Cash, 1987; Rosen, Cado, Silberg, Srebnik and Wendt, 1990; Dworkin and Kerr, 1987). Vandereycken has been the one that has most enthusiastically advocated the use of video-confronting techniques with, unfortunately, no published results.

There are no published studies of guided exposure treatment of body image problems in eating disorders, although Rosen et al. included self-exposure as a homework suggestion. Exposure therapy has been used in the treatment of dysmorphophobia. Gómez-Pérez, Marks and Gutierrez-Fisac (in press) have recently presented a series of 30 cases, some of them with delusional features. Eating disordered patients were explicitly excluded. Pre-post treatment assessment was performed by the Main Problem Rating, an 8-point Likert-scale rated both by patient and therapist. Complete data are reported for 21 patients: 43% were much improved, 28% slightly improved, and 28% unimproved.

Here, we present two eating disordered patients with severe body overestimation and body disparagement (i.e. with Body Dysmorphic Disorder features) not responding to the general treatment of the eating disorder and treated with a programme of exposure.

Subjects

Case 1

RAG, a 21-year-old female, developed a pure restrictive anorexia nervosa, according to DSM-III-R criteria when she was 16. Her maximum weight had been 72 kgs when she was 15 (Body Mass Index (BMI) 30.7). She relates the onset to a period of depression and jokes and teasing during childhood and adolescence. With a radically restrictive diet, she lost 30 kgs within very few months, reaching 41 Kgs (BMI 17.9) when she entered treatment. There were no episodes of bulimia, vomiting. Use of laxatives or diuretics. Occasional hyperactivity and continuous monitoring of food and calories were her main problems. She improved quickly with short term individual psychotherapy for two years. She never needed hospitalization. When she was finally proposed for discharge, she refused. She felt that she would probably relapse because she was still very anguished over her body shape. At that time her BMI was 19.5. She could not look at herself in a mirror and avoided sitting in public places because everybody would look at her legs. She spent most of her salary as a secretary in anticellulitic treatments (cream, vibrating belts and pillows, cold bandages, and very expensive laser session). She had tried once to have her things surgically corrected but the surgeon refused.

Case 2

SMA is a 21-year-old man with anorexia and bulimia beginning at 17. After 3 years of treatment there was very little improvement. He maintained an anomalous dietary pattern based on a small amount of bread with cheese and jam and, occasionally, a boiled egg. He had 2-3 weekly episodes of bingeing and vomiting and was a heavy abuser of laxatives. His maximum BMI had been 20.5 when he was 16. He had remained at a BMI of 17.7 during the previous two years despite weekly individual therapy sessions. When confronted with his unchanged situation he complained of awkward appearance. He compared himself with a pig, and expressed negative feelings related to his belly, legs and face. He noted fat in his cheeks and felt he had to check himself constantly in the mirror. He had a longstanding relationship with an understanding and caring girlfriend.

Method

Programme of exposure

1. *Baseline.* For each patient: (1) A hierarchy of persons, objects, words, clothing and situations rated in SUDS was constructed (see Table 2 for case 1). (2) The patient choose ten photographs of herself, which she specially hated. The patient had to make an A4-size colour photocopy of each, ranking them in SUDS. (3) The patients were asked to choose and bring two feared sweets.

2. *Schedule.* 10 daily sessions were schedule from Sunday to Wednesday (two and a half weeks), lasting between 90 and 120 minutes each. Half the time was devoted to imaginal exposure, and the rest, in-vivo.

3. *Contents.* (a) *Imaginal exposure.* (1) One feared experience or situation was introduced according to the hierarchy. The patient had to describe it in a very detailed manner, with closed eyes and trying to imagine it as vividly as possible. (2) The patients were given a feared word (“gemuk”, “kasar”, “lembek”, “bergoyang”...). Using it they had to build and repeat a sentence that suitably would fit them. Statements like “I am (Saya...)...”. (b) *In-vivo exposure.* (1) The A4-size photographs were introduced one by one, following the hierarchy. We encouraged the patients not to resist negative automatic thoughts, but to verbalize them. (2) Case 1 had to stare at herself in a full-length mirror from different angles and positions wearing a sarong in session 1 and 2, short sarong in session 3 onwards. (3) Focused attention: we used a tilting table and chair without arms to focus attention on the most feared areas of the body. For case 2, a compulsive checker (see below), points (2) and (3) were replaced by response prevention of checking. (4) Role-playing of feared situations with the therapist (swimming-pool, gymnasium, asking a male shop-assistant for a long skirt...). (5) Photographs were taken from session 7 on, which were later used in session 9 and 10. (6) From session 8 on, they had to eat a chocolate bar from time to time. (c) *Homework.* They had to listen to the tape recorded during imaginal exposure.

Monitoring of exposure sessions

The following measures were recorded during sessions: a) SUDS. The patient was previously trained and SUDS were recorded every five minutes. b) Cardiovascular Response. Heart response and blood pressure variation were monitored.

In accordance with Kozak, Foa and Steketee (1988), we computed the peak response for each session. Peak response for a given session was defined as the difference between the baseline minute and the highest value recorded. There was no chance to measure habituation *within a session*, as there were so many peaks as new items were introduced. We expected peak responses to decrease *across sessions* once habituation and generalization were reached.

Assessment measures

- a) Body size estimation was measured using the Body Image Assessment Technique (BIAT). Originally developed by Gila in Barcelona, it consists of two-metre high bar with six movable horizontal bars, calibrated in millimeters at the back, which can be adjusted for each patient so that it corresponds to shoulders, chest, waist, hips, thighs and calves. Each bar has a double set of small rings with a thread passing through them. The first set of rings is placed on predetermined sites on each bar, so that the thread draws a moderately enlarged human figure. The patient, positioned two metres from the apparatus, is instructed to search for his own correct figure by giving instructions to the experimenter, who stand at the side of the BIAT. He move the rings following the patient's instructions. There is no time limit. Once the patient finishes, he is asked to approach the apparatus and to stand with his back to it while the experimenter adjust the second set of rings and it corresponding thread to his true measures. A photograph is then taken

which can be used for psychotherapeutic purposes. This apparatus was not available but a similar non-ring structure was used to create a similar impact using similar principles purported by Gila.

b) Psychometric measures. The pre-treatment scoring of aversive stimulus in SUDS and the psychometric assessment were repeated 2 days, 6 and 12 months after treatment (Table 1 and 2 for case 1), including the Eating Attitudes Test (EAT), Eating Disorders Inventory (EDI), Body Shape Questionnaire (BSQ), Body Image Avoidance Questionnaire (BIAQ), Body Image Anxiety Scale (BIAS), Eysenck Personality Inventory (Neuroticism scale) and Montgomery-Asberg Rating Depression Scale.

Pre-post treatment results

Case 1

She had a Body Distortion Index (BDI) of 213.8, reaching a maximum of 268 in the waist measurement. The psychometric assessment is shown in Table 1. Table 2 shows the hierarchy of stimuli and SUDS. Therapy was effective in reducing fear and avoidance. No patterns of decrease response are observed across sessions for any of the variables.

measured, suggesting that after 10 sessions habituation had not appeared. Body size overestimation had slightly decrease in all the follow-up measures, but it was still severe problem. In the long-term follow-up interview, her fianceé stated that she had continued with self-exposure for all activities except mirror confrontation.

Case 2

In the hierarchy of stimuli, case 2 emphasized from “Being joked by a friend of my father who used to touch my stomach” (SUDS 50) or “ My neighbours tell me that I look better” (SUDS 52) to “eating a box of biscuits and then looking at my stomach” (SUDS 96) or “ Crossing the road in front of the supermarket with all the people staring at me” (SUDS 99). He had a mean BDI of 165, reaching a maximum of 174 for his thighs. Although he scored high SUDS, the neurophysiological recording was usually low. When discrepancy was discussed with him he acknowledged not making any effort to concentrate on the images. He only felt moved to tears when it was said that he would be discharged if he was not willing to work and he was told to imagine himself five years later if all treatment had failed and he remained in the same situation. When guiding the

TABLE 1. Psychometric evaluation (case 1)

	4-month pre-treatment	1 week pre-treatment	1 week post-treatment	6-month post-treatment	12-month post-treatment
EAT	78	46	42	-	43
BDS (EDI)	17	17	9	8	6
BIAS	25	25	13	12	12
BIAQ		44	32	10	9
• Clothing		14	13	2	2
• Social activities		11	4	0	0
• Dietetic restrictions		10	4	2	2
BSQ		151	86	89	80
EPQ		32	26	27	20
MADRS		8	6	8	6
Average body Size estimation	204.2	213.8	185	178	172

EAT: Eating Attitude Test-40, BDS (EDI) (Body Dissatisfaction Scale-Eating Disorders Inventory). BIAS: Body Image Anxiety Scale, BIAQ: Body Image Avoidance Questionnaire, BSQ: Body Shape Questionnaire, EPQ: Eysenck Personality Questionnaire (Neuroticism), MADRS: Montgomery- Asberg Depression Rating Scale

TABLE 2. Hierarchy of stimulus (case 1)

In brackets, independent ratings of SUDS (pre-treatment and at 6 and 12-month follow-up).

1. To touch her fiancé's tummy. (65/0/0)
2. The words "kasar", "teruk", "besar", "lembek" and "isi". (68/50/60)
3. To imagine commentaries of her companions of Faculty ("it is incredible. How can she be so thin and have such big thighs (buttocks)"). (70/20/0)
4. To compare herself with other woman when walking in the subway. (72/15/20)
5. To try on clothing, either in private or in public. (80/30/30)
6. To feel her legs stuck to the bed when she lies down (she tries to sleep leaning only on her ankles and buttocks). (82/60/15)
7. To look at her thighs when sitting down. (83/50/55)
8. To remember the wedding of her sister when she was very overweight and she was taken in many photographs. (84/70/70)
9. To remember a trip with her school mates at the end of her primary degrees (12-yrs-old) when she wore a bikini for the last time. (85/70/70)
10. She imagines that a fat person gives her a kiss on the cheek. She must wash her face as soon as possible. (86/50/50)
11. Her fiance touches her hips or thighs (88/0/0)
12. Attending lectures in the faculty. She tries to arrive early to sit at the end of the classroom with her legs completely under the table so that nobody can see them. (88/25/-)
13. To see her image reflected in the windows of the subway. (89/0/0?)

14. When walking in the neighbourhood, to see the boys that used to tease her as a child when she was overweight (she thinks that they still laugh at her, although she has no proof of that). (90/0/10)
 15. Being photographed or filmed with a home video. (90/60/45)
 16. Not being allowed to have "anticelulitic" treatments (daily strong massages with local creams and laser sessions). (91/80/50)
 17. To wear shorts or a mini-skirt. (91/40/30).
 18. To try on clothing after eating a bun or a cake. (91/50/65)
 19. To look at herself in the mirror of the bath of her house (she runs the partition of the bath so that the mirror remains occult) or to look at herself in the mirror of the gymnasium. (92/80/80)
 20. She is not allowed to control the amount and kind of food she eats. (99/80/90)
 21. A barbecue by the pool with her fiance's family. She has to wear a swimming bath towel in front of them all day long (she always hides herself with big bath towels). (99/40/30)
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flooding sessions by the neurophysiological records, we could see that he was doing a covert response, that is, when an annoying thought was suggested to him, he rejected it with another blocking thought. This was reflected by a weak peak and valley in systolic blood pressure and sinus arrhythmia records. He did not recognize that he was doing covert avoidance of treatment stimuli, until session 5, when we decided that in-vivo work should be started. He then asked to begin imaginal exposure again from the first step in the hierarchy. We ended at session 9, one before planned, because of lack of cooperation. He was discharged and offered attendance in another hospital. No follow-up structured data are, therefore, reported.

Six months latter he asked to come back. He had made a radical change despite not attending any other mental health center. He had experienced significant improvement in his avoidant attitudes although there were still severe problems with food. He was partly readmitted for half -an-hour fortnightly sessions of psychotherapy with extinction of the complaints of fatness.

In the psychophysiological recording there is a maximum peak response in sessions 1-2, when he was not doing covert response. Sessions 3-8 reflect a plateau until

session 9 when the confrontation with the end of treatment and discharge is reflected in another maximum response.

Discussion

We report two cases with different and conflicting outcomes. While in the first there was positive outcome, in the second it was negative, at least at the beginning. They are reported together to emphasize the usefulness of monitoring the anxiety response. Although case 2 claimed that he was feeling nervous, the recordings indicated the reverse. Covert escape is easy in imaginal exposure. Psychophysiological recording of sessions is complex and tedious and we are not proposing that it should be done routinely, but SUDS are not always a reliable way to control a session and they should not be the only way to decide the steps in treatment in difficult cases. In case 1, high scores on SUDS were not always reflected in the physiological measurements. SUDS were used as a way to prevent going through the hierarchy. In case 2, the mechanism was the reverse. This is not new: low correlations between self-report and physiologic have been repeatedly reported.

There is controversy regarding the timing of sessions. Although we followed the intensive schedule proposed by information-processing theorists, we think that this timing was inappropriate. There are two reasons: (1) in two and a half weeks there is not enough time for readaptation of a body schema. This is a slow process that can take months. Although there were improvements in the first case, they were related to the

avoidance attitudes previously showed by the patient. Body size overestimation was still severe and remained basically unchanged. (2) Homework is an essential part of treatment. Although an intensive programme helps the patient and relative feel involved in "special" treatment, and it is generally accepted that expectations and unspecific elements of psychotherapy account for as much as 60% of variance in success, there is no time left for failures or for "trial and error" procedures and the patient can easily give up. One or two weekly sessions seem the best. On the other hand, we are sceptical that a radical programme, such as that proposed by Marks, based uniquely on homework assignments without any support from the therapist, can be successful. This may only work in a sample of highly motivated individuals who have already overcome the stage of ambivalence that usually precedes commitment to change. Further studies are needed to clarify this issue.

The independent outcome of avoidance attitudes and size overestimation was to some extent expected. We think that body size overestimation can be explained by the combination of processes: perception is not a static input, it is processed and stored according to a plastic perceptual schema (in a cognitive sense).

REFERENCES

- Butters, J.W. and Cash, T.F. (1987). Cognitive-behavioural treatment of woman's body-image dissatisfaction. *Journal of Consulting and Clinical Psychology* **55** (6), 889-897.
- Dworkin, S.H. and Kerr, B.A. (1987). Comparison of interventions for women Experiencing body image problems. *Journal of Counseling Psychology* **34** (2),

136-140.

Gómez- Pérez, J. C., Marks, I. M. and Gutierrez- Fisac, J. L. Behavioural therapy for dysmorphophobia: a retrospective study. *American Journal of Psychiatry* (in press).

Kozak, M. J., Foa, E. B. and Steketee, G. (1988). Process and outcome of exposure Treatment with obsessive-compulsives: physiological indicators of emotional processing. *Behaviour Therapy* **19**, 157-169.

Pérez- Sales, P. et al. (1995). A meta-analytic review of body size estimation studies in eating disorders. Evidence and proposals. (submitted).

Rosen, J.C., Cado, S., Silberg, N.T., Srebnik, D. and Wendt, S., (1990). Cognitive behaviour therapy with and without size perception training for woman with body image disturbance. *Behaviour Therapy* **21**, 481-498.