Cognitions and their Origins in Women with Anorexia Nervosa, Non-Symptomatic Dieters and Female Controls

Thesis

UNRESTRICTED

OXFORD REGIONAL TRAINING COURSE IN CLINICAL PSYCHOLOGY

Cognitions and their Origins in Women with Anorexia Nervosa, Non-Symptomatic Dieters and Female Controls

Hannah Turner

A thesis submitted in partial fulfilment of the requirements of the Open University Doctorate in Clinical Psychology

British Psychological Society

September 1999

Estimated word count: 25,000

AWARD DATE: 14 September 1999

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

ABSTRACT

Despite the steady rise in reported cases of anorexia nervosa amongst young women, investigation into cognitive processes associated with this complex phenomenon remains in its infancy. The aim of this study was to develop a semi-structured interview to assess cognitions and their origins in patients with anorexia nervosa, non-symptomatic dieters and female controls. Potential group differences in the meaning attached to dieting were also explored. Results indicated that when discussing eating related concerns, clinical participants reported more characteristically unique eating related thoughts than non-clinical participants, differences becoming less evident when discussing concerns about weight and shape. Clinical participants also reported more assumptions related to eating, and weight and shape as a means to acceptance by self and others, and control over eating than non-clinical participants, similar differences being reported in degree of belief and associated distress.

Clinical participants identified more negative self-beliefs than non-clinical participants, similar differences being reported in degree of rational and emotional belief, and associated distress. All patients with anorexia nervosa identified an association between negative early experiences and negative self-beliefs, and a large percentage also identified an association between negative early experiences and second order assumptions. All clinical participants also reported a link between negative self-beliefs and dieting. Following a discussion of the results it is concluded that although the present study highlights subtle group differences in cognitions, it also gives prominence to an array of avenues that require further investigation if our understanding of anorexia nervosa is to be refined and more effective treatments developed.

ACKNOWLEDGEMENTS

I would like to thank everyone who took part for their interest and co-operation. My thanks also to Sally Savage, Clare Marshall, Caroline Glynn and Mark Neiderman for their help and support during data collection; and to Gillian Todd and Dr. Adrian Wells for their much appreciated advice during the early stages of this study.

My sincere thanks are also extended to my supervisor, Dr. Myra Cooper, who has been a continual source of guidance, support and encouragement; and to Paul Griffiths for his invaluable statistical advice.

Finally, I would like to thank my family and friends, most notably Fraser and Kate, for always having time to listen.

CONTENTS

1. INTRODUCTION

In the first section of the introduction a brief overview of anorexia nervosa will be presented including definitions and epidemiology. Consideration will also be given to dieting, one of the key features of anorexia nervosa. The rise of dieting in the general population will be discussed, alongside the growing use of dieters as an important comparison group within eating disorders research.

The third section will examine theories of anorexia nervosa, ranging from biological models through to socio-cultural theories. A particular emphasis will be placed upon the evolving cognitive-behavioural models since these frequently form the theoretical bedrock of empirical research within this arena. The empirical evidence supporting various strands of cognitive theory will be reviewed, methodological inadequacies considered and gaps in the literature highlighted. Finally, the rational for the present study will be presented and the research questions and hypotheses outlined.

Given that this study is concerned with the development of anorexia nervosa amongst females, the literature review will focus upon this sub-group, although it is acknowledged that cases have also been documented within the male population (Hoeken, Lucus & Hoek, 1998). Similarly, the proceeding review will focus primarily, although not exclusively, upon studies concerned with anorexia nervosa, although again it is acknowledged that research into related eating disorders, such as bulimia nervosa has, and continues, to be carried out.

1.1 Anorexia Nervosa: A Synopsis

1.1.1 Definition of anorexia nervosa

In the adult population, anorexia nervosa is an eating disorder characterised by a refusal to maintain a normal body weight. Weight loss is primarily accomplished through a reduction in total food intake. This typically begins with the exclusion of foods perceived as highly calorific, and invariably culminates in a very restricted intake that is limited to a few specific foods. Additional methods of weight loss include excessive exercise, self-induced vomiting and laxative abuse. Individuals also experience a vehement fear of weight gain that often intensifies as weight decreases.

A disturbance in the perception of body shape and size is also present. Some individuals feel their whole body is overweight, whilst others are more concerned that certain parts of their body are 'too fat', such as thighs and bottom. The self-esteem of individuals with anorexia nervosa is intricately tied to their body weight and shape; weight loss is interpreted as a sign of self-discipline and achievement, whilst weight gain is commonly regarded as a personal failure. In postmenarcheal females, amenorrhea is a sign of the physiological sequelae of starvation.

1.1.2 Diagnosis and clinical features of anorexia nervosa – restricting type

DSM-IV (American Psychiatric Association, 1994) specify the following requirements for a diagnosis of anorexia nervosa: a refusal to maintain body weight at or above a minimally normal weight for age and height (i.e. body weight less than 85 per cent of that weight that is considered normal for that person's age and height); an intense fear of gaining weight or becoming fat, even though under weight; a disturbance in the way in

which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight; and in postmenarchal females, amenorrhea (i.e. the absence of at least 3 consecutive menstrual cycles).

Alongside the restricting type of anorexia nervosa, a binge eating/purging sub-type has also been specified in DSM-IV. This classification is used to describe individuals who regularly engage in binge-eating[1] and/or purging[2] during episodes of restrictive intake.

1.1.3 Epidemiology

Current incidence and prevalence

The estimated incidence of anorexia nervosa has been put at 4-8.2 per 100 000 total population (Lucas, Beard, O'Fallon & Kurland, 1991; Szmukler, McCance, McCrone, & Hunter, 1986). In Great Britain, Turnball, Ward, Treasure, Jick & Derby (1996) conducted a survey at the primary care level. They reported an incidence of 7.9 per 100 000 population for all females, and for females aged 10-19 years an incidence of 34.1 per 100 000 population, in 1993.

In relation to the prevalence of anorexia nervosa, Pagsberg & Wang (1994) report a 1 year prevalence rate of 23.5 per 100 000 population for all females, and of 32.3 per 100 000 population for females aged 10-24 years, for the period 1973-1987.

[1] Defined as a period during which the individual experiences a sense of lack of control over their eating and consumes a quantity of food that is greater than most individuals would eat in a similar period of time.

[2] Including self-induced vomiting and/or the misuse of laxatives, diuretics or enemas.

Has anorexia nervosa become more common?

There has been considerable debate as to whether or not the incidence of anorexia nervosa is, or has been, on the rise. In a recent review of 16 studies mentioning incidence rates, Fombonne (1995) concluded that although some studies showed an increase, no study ruled out possible alternative explanations and just as many studies, generally based on larger samples, failed to identify an upward trend. Similarly, Turnball *et al.* (1996) found no increase in presentation to primary care services over the period 1988-1993.

However, in their recent review of secular trends in the incidence of anorexia nervosa, Pawluck & Gorey (1998) concluded that although there was no evidence for an overall increase in incidence, a near three fold increase had been observed over the past 40 years amongst women aged 20-30 years (1950-1964 versus 1980-1992, 6.28 versus 17.70 cases per 100 000 per year, respectively). Similar age specific trends have been documented elsewhere in the literature. For example, Lucas *et al.* (1991) found a significant linear increase from 1935-1984 in females aged 15-24 years.

Thus it would seem that whilst the notion of a general increase in the incidence of anorexia nervosa remains unsupported by current epidemiological studies, there is evidence to suggest an increase in the incidence amongst the most vulnerable group of females aged 15-30 years, over the past 2 decades.

Who suffers from anorexia nervosa?

Anorexia nervosa has long been regarded as a western phenomenon, occurring primarily in young, Caucasian, middle class females (Hsu, 1990, pp.77). Professions such as ballet, athletics and modelling are also considered high risk groups, possibly because of the emphasis placed upon slimness as a prerequisite for success (Garner & Garfinkel, 1980). Indeed, amongst ballet dancers reported prevalence rates range from 7–11 per cent (Hamilton, Brookes-Gunn & Warren, 1985; Szmukler, 1985).

The peak age of onset of anorexia nervosa is in the pubertal years and typically starts with dieting (Casper, 1996), however eating disorders have been reported among children as young as 8 years. (Lask & Bryant-Waugh, 1992). Cases have also been documented amongst males (Braun, Sunday, Huang & Halim, 1999). Although strikingly similar to females in many aspects of clinical presentation, Anderson (1984) suggests that males with anorexia nervosa tend to overvalue masculinism and athleticism, whilst placing less emphasis on achieving diminishing body proportions, compared to females.

Cases have also been documented among Black, Asian and Arab populations living in the UK (Szmukler & Patton, 1995), as well as amongst indigenous African-American populations (Hesse-Biber, 1996), and non-western cultures (Lee, Lee, Leung & Yu, 1997). It is also interesting to note that in non-developed countries, some clinicians have reported the absence of weight and shape concerns in many otherwise typical cases of anorexia nervosa. (Khandelwal, Sharan & Saxena, 1995).

1.2 Dieting

The trend towards an increasingly thinner aesthetic ideal for women over the past 20 years (Garner & Garfinkel, 1980) has led to a precipitous rise in dieting, the tangible manifestation of this ideal. Indeed, dieting has reached epidemic proportions in all female age groups (Waterhouse, 1997). In a recent survey, Allaz, Bernstein, Rouget, Archinard & Morabia (1998) found that 71 per cent of women aged 30-74 years wanted to be thinner (even though 73 per cent of them were within their normal weight range) and that 42 per cent of them had dieted within the past year. Similarly, in their survey of adolescent females, Grigg, Bowman & Redman (1996) found that 77 per cent of females wanted to lose weight and 51 per cent had tried to lose weight in the month prior to the survey, motivated primarily by peer and media pressure.

As a key feature of anorexia nervosa, clinicians have long suspected that dieting puts an individual at risk of developing an eating disorder. In their prospective study of a representative group of mid-adolescent schoolgirls, Patton, Johnson-Sabine, Wood, Mann & Wakling (1990) found that dieters had an eight fold increase in the incidence of broadly defined eating disorders a year later. Patton, Carlin, Shao, Hibbert, Rosier, Selzer & Bowes (1997) have documented a similar trend. They classified 38 per cent of female teenagers as intermediate dieters and 7 per cent as extreme dieters, 62 per cent of extreme dieters reporting high levels of depression and anxiety. In conclusion they suggested that dieting might be viewed as lying on a continuum with clinical eating disorders. However, not all dieters go on to develop an eating disorder and as yet it remains unclear as to why some, but not all, progress along the clinical pathway.

The distinct behavioural similarity that exists between dieters and those with anorexia nervosa has led some researchers to compare these two groups (e.g. Butow, Beaumont, & Touyz, 1993; Zotter & Crowther, 1991). Taking this idea one step further, M.J. Cooper & Fairburn (1992) noticed the emergence of two distinct groups of dieters. They classified dieters who did not have a history of an eating disorder as 'non-symptomatic dieters', and those who had engaged in any of the core behavioural features of an eating disorder[3], either currently or in the past, as 'symptomatic dieters'.

However, comparisons between clinical and dieting control groups remain relatively sparse, despite suggestions that such studies may serve to elucidate subtle group differences that could inform theory and drive treatment development (M.J. Cooper, 1997).

1.3 Theoretical Perspectives of Anorexia Nervosa

Since the inception of anorexia nervosa as a recognised clinical disorder in the 1970's, a plethora of theories have been proposed. Ranging from biological through to socio-cultural, these models are bound by one mutual goal; to provide an understanding of the genesis and maintenance of a disorder that is commonly viewed as one of the most recalcitrant forms of psychopathology (Vitousek, Watson & Wilson, 1998). A brief overview of these theories will be presented alongside a more detailed analysis of the evolving cognitive-behavioural models, since these accounts frequently form the bedrock of empirical research and are pivotal to our evolving understanding.

[3] Such as self-induced vomiting, bingeing or laxative abuse.

1.3.1 Biological perspective

Claims of a genetic liability to anorexia nervosa are becoming increasingly frequent within the literature. In their on-going population based twin study of anorexia nervosa, Kortegaard-Sandal, Horder, Jorgensen & Gillberg (1997) have found significantly higher rates of concordance in monozygotic as compared to dizygotic twin pairs. However, because of the similar psychosocial environment to which siblings are exposed, claims could equally be made that such findings are the consequence of environmental as opposed to genetic factors.

Additional confusion pertains to exactly *what* it is that might be inherited in anorexia nervosa - is it the eating disorder itself, underlying personality traits or certain physical characteristics? Although some studies have suggested a link between anorexia nervosa and obsessive-compulsive, avoidant and dependant personality traits (I. Gillberg, Rastam, & C. Gillberg, 1995), the evidence currently available remains inconclusive. It has also been suggested that an unusual distribution of fat or a 'drive for thinness' may constitute the inherited component (Treasure, 1995). Indeed, the distribution of fat around the body is likely to be genetic-metabolic and body mass index is also highly heritable (Rutherford, McGuffin, Katza & Murray, 1993). Given that these characteristics confer a high risk for eating disorders, it is possible that a relatively high body mass index, a pear shaped body figure, and personality characteristics such as drive for thinness and perfectionism constitute the inherited components. However, the precise form and extent of the genetic contribution to anorexia nervosa has yet to be established.

1.3.2 Socio-cultural perspective

The role of socio-cultural factors in the pathogenesis of anorexia nervosa continues to attract much interest and speculation. The idealised look for woman has varied over time, and during the past 40 years there has been a significant shift away from the more voluptuous curved figures of the 1950's, towards the angular, sylph-like appearance that epitomises contemporary beauty in western society. The pressure to conform to such improbable weights and shapes is also well documented in the literature. As previously mentioned, in their survey Allaz *et al.* (1998) found that 71 per cent of women wanted to be thinner.

Bruch (1973) was among the first to overtly hypothesise about the social causation of anorexia nervosa, tentatively suggesting that the fashion and media industries were primarily responsible for disseminating the societal ideals of thinness that underlie eating disorder psychopathology. An allegation that has since been supported by the age specific increase in anorexia nervosa occurring in parallel with both the media driven promotion of the 'waif' look and the proliferation of the dieting industry (Garner & Garfinkel, 1980).

However, most women are exposed to a similar level of media and cultural pressure, yet only a modicum of females develop unhealthy attitudes to weight and shape. Indeed, it has already been suggested that a large proportion of females diet, yet clinical eating disorders remain relatively rare within the general population. Thus it would appear that whilst socio-cultural theories provide a valuable contribution to our understanding, they fail to provide an adequate account of the genesis of anorexia nervosa.

1.3.3 Systemic perspective

The family has long been implicated in the development and maintenance of eating disorders (Minuchin, Rosman, & Baker, 1978). The picture that emerges from early anecdotal accounts tends to be a negative one of an overinvolved, overprotective family. Whilst holding high expectations of its children, the unit is unable to provide the impetus and support required by its members, who are attempting to develop a sense of autonomy and independence during adolescence (Eisler, 1995). However, qualitative descriptions can give a misleading, one-sided picture, and these accounts appear to have acquired a spurious factual status over time. Indeed, the notion that a particular family constellation or means of functioning indicates family pathology remains unsupported by empirical evidence (Gillberg & Rastam, 1998).

1.3.4 Psychodynamic perspective

Although viewed primarily as a disorder of personal relationships and the organisation of the self, modern psychodynamic thinking advocates that eating disorders begin outside as well as inside an individual. It is argued that external influences, such as societal ideals of slenderness and the importance placed upon social judgements about appearance, are internalised and become an integral aspect of self identity.

The internal mechanisms are possibly more intricate and begin during the early years of life, when a baby is dependant upon the nurturance received from others, usually the mother. In line with their early observations of a mother placing her child's needs before those of her own, it is argued that as they get older, girls develop a growing awareness that they too will be expected to place the needs of others before their own.

This organisation of self as subordinate to the needs of others is regarded as pivotal to the development of an eating disorder. This tenet is also believed to colour all subsequent phases of development, as the child who becomes anorexic feels unable to control her own well-being and destiny, attending to the needs of others rather than becoming the person she wants to be. This pervasive sense of being dominated by others is invariably accompanied by a drive to be perfectly good, for fear that otherwise she will be perfectly bad. The upshot of which is an intense difficulty believing in the integrity and personal uniqueness of 'being me'.

Eisler (1995) suggests that the meaning of an anorectic's concern over food intake is twofold: it is an expression of self-control; 'I am myself and not what others want be to be', whilst also conveying a message of not wanting to take up space or place demands on resources. Regarding themselves as greedy, anorectics commonly experience their appetite for food as disgusting, and eating as an unacceptable self-assertive activity. The common preoccupation with feeding others providing legitimate access to food whilst demonstrating innocence of greedy intentions.

Despite offering an attractive explanation for some of the psychological features and internal struggles commonly identified in anorexia nervosa, psychodynamic accounts are notoriously difficult to evaluate and thus to date supporting empirical evidence remains relatively sparse (Dare & Crowther, 1995).

1.3.5 Summary

In light of the review it can be seen that each theoretical orientation is limited in its explanatory capacity. It is argued that given its complexity, the genesis of anorexia nervosa is likely to be multifactorial; the result of a combination of biological and psychological factors, occurring primarily within a cultural milieu that promotes thinness.

1.4 Evolution of the Cognitive-Behavioural Accounts of Anorexia Nervosa

1.4.1 Garner & Bemis (1982)

Based upon Beck's (1976) theory of depression, Garner & Bemis (1982) presented the first systematic cognitive-behavioural account of anorexia nervosa. Reduced to its essence, the model holds that anorexic symptomatology is maintained by a 'characteristic set of overvalued ideas about the personal implications of body weight and shape' (Vitousek, 1996, pp. 384). Those at risk of developing anorexia nervosa are often sensitive, perfectionistic individuals, who are concerned with meeting the expectations of others. Feeling useless and perhaps low in mood, these stable individual characteristics become entwined with socio-cultural ideals for female appearance, the upshot of which is the belief that weight loss will alleviate distress.

Once formed these beliefs drive the individual to lose weight through restricting their daily food intake. Success not only enhances feelings of self-control, but also evokes positive remarks from others, both of which act as potent positive reinforcers. This is subsequently accompanied by an intensifying fear of weight gain, the development of faulty information processing strategies, such as selective attention, and the

physiological sequelae of starvation, all of which serve to reinforce disordered thoughts and behaviours.

1.4.2 Guidano & Liotti (1983)

Guidano & Liotti (1983) suggest that the central feature of anorexia nervosa is concerned with problematic personal identity structures. These cognitive structures are regarded as rules that play an important part in organising and influencing one's experience.

In contrast to Garner & Bemis (1982), Guidano & Liotti (1983) give prominence to early developmental factors. As reviewed by M.J. Cooper (1997), Guidano & Liotti (1983) suggest that a failure to develop autonomy, individuality and self expression in childhood plays a fundamental role in the development of problematic identity structures, which are typically characterised by a sense of failure and personal ineffectiveness in patients with anorexia nervosa. It is also postulated that individuals with eating disorders have an imprecise attributional style that hinders their capacity to accurately identify and define problems. These elements subsequently become intertwined, giving rise to maladaptive solutions to problems, such as dieting and weight loss.

This model suggests treatment should focus upon underlying beliefs, personality structures and attitudes to reality, with issues relating to food, weight and eating constituting secondary goals.

1.4.3 Vitousek & Hollon (1990)

As summarised by M.J. Cooper (1997), Vitousek & Hollon (1990) conceptualise anorexia nervosa in terms of schema theory, drawing specific attention to low self-worth, attitudes to eating, weight and shape, and self evaluation in terms of weight and shape. Self-schemata relate to cognitive generalisations about the self based upon past experience, which guide the processing of subsequent self related information. Conversely, weight-related schemata are concerned about what it means to be fat or thin. It is proposed that in patients with eating disorders these two types of schemata become interwoven, forming weight-related self-schemata that centre around issues of weight and its implications for the self. Such cognitive structures are believed to represent the core psychopathology in anorexia nervosa, influencing thought, perception, affect and behaviour (Vitousek & Hollon, 1990). They guide information processing, such as selective attention and memory, which in turn functions to maintain the schemata. They also serve to organise and stabilise the individual's experience of themselves and their environment (Vitousek & Hollon, 1990).

Although Vitousek & Hollon (1990) extend their cognitive theory beyond processes driven by assumptions to those driven by core beliefs[4] (Young, 1990, M.J). Cooper, (1997) highlights the model's lack of specificity relating to the mechanism(s) that link core beliefs with lower level cognitions. Fairburn, Shafran & Z. Cooper (1999) also suggest that this model barely features the need to control eating, despite the existence of this as a prominent feature of anorexia nervosa.

[4] The terms 'core beliefs' and 'negative self-beliefs' are used interchangeably throughout the text.

1.4.4 Fairburn, Shafran & Z. Cooper (1999)

Drawing upon the earlier work of Slade (1982) and Vitousek & Hollon (1990), Fairburn, Shafran & Z. Cooper (1999) propose a control driven maintenance theory of anorexia nervosa, which attempts to integrate concerns about weight and shape with issues of self-control. It is argued that an extreme need for control is the central feature of anorexia nervosa, upon which western society's tendency to judge self-worth in terms of weight and shape is superimposed. It is also suggested that the need for control becomes centred on eating because dietary restriction constitutes a means of rapidly obtaining an enhanced feeling of self-control. Extreme concerns about weight and shape, and the physiological sequelae of starvation, including impaired concentration and a narrowing of interests, are also believed to play a maintaining role through encouraging further dietary restriction. Although this model provides an additional dimension to the theoretical literature, there is as yet no supporting empirical evidence.

1.4.5 Evaluation of the cognitive-behavioural models

In an attempt to proceed from the seminal work of Garner & Bemis (1982), which highlighted the role played by automatic thoughts and underlying assumptions in anorexia nervosa, two additional structures that may be of importance have also been integrated into cognitive theories of eating disorders, namely personal identity structures (Guidano & Liotti, 1983) and self-schemata (Vitousek & Hollon, 1990).

However despite these advances, M.J. Cooper (1997) recently highlighted the need for a detailed theory that explains the precise mechanisms that link various facets of the disorder. She argues that detailed information about the nature of negative self-beliefs

and the role of developmental factors and early experiences in their formation remains absent from current theories. She also highlights the lack of specificity regarding the content and form of weight-related self-schemata. Indeed the precise mechanism(s) by which assumptions link negative self-beliefs to disturbed eating behaviour remain somewhat elusive. Thus the fundamental question of how potential sufferers arrive at the idea that dieting will relieve their distress remains theoretically unanswered.

1.5 What is the Evidence?

Empirical research into cognitive models of anorexia nervosa has investigated the content of thoughts and assumptions, as well as the relationship between cognitions and behaviour. However, investigation into the role of schema driven processes and the possible role of early experiences in the formation of core beliefs remains in its infancy (M.J. Cooper, Todd, & Wells, 1998). This research will now be reviewed and areas for future research highlighted.

1.5.1 Empirical evidence for the content of negative automatic thoughts and underlying assumptions

As previously suggested, automatic thoughts in anorexia nervosa are believed to reflect concerns of food, eating, weight and shape (Vitousek & Hollon, 1990), and it has also been suggested that these themes may extend to the content of underlying assumptions (M.J. Cooper, 1997). To date, the content of automatic thoughts and underlying assumptions has been assessed using self-report questionnaires, techniques from experimental psychology, treatment outcome studies and a semi-structured interview.

Self-report questionnaires

A literature review revealed that relatively few studies have investigated the content of automatic thoughts in patients with anorexia nervosa. However, using a modified version of the Distressing Thoughts Questionnaire, Clark, Feldman & Channon (1989) found that individuals with anorexia nervosa had a higher frequency of negative eating, weight and shape related thoughts compared to female controls. These thoughts were also more uncontrollable, emotionally laden, guilt inducing and plausible to those with anorexia nervosa, compared to controls.

In relation to underlying assumptions, the Anorectic Cognitions Scale (ACS: Mizes, 1992) assesses three dimensions: rigidity of weight and eating regulation efforts; perception of weight and eating behaviour as the basis for approval from others; and belief that rigid weight and eating is fundamental to self-worth. Reliability and validity data has been published (Mizes & Klesges, 1989), alongside empirical evidence for the measure's ability to distinguish those with anorexia nervosa from non-eating disordered controls (Mizes, 1992). However, this measure fails to distinguish assumptions relating to eating from those relating to weight and shape, despite suggestions that such a distinction may be of theoretical importance (Fairburn, Z. Cooper & P.J. Cooper, 1986).

However a self-report questionnaire that does assess domain specific differences in the content of assumptions has recently been developed. Preliminary work suggests that this measure, the Eating Disorder Belief Questionnaire (EDBQ: M.J. Cooper, Cohen-Tovée, Todd, Wells & Tovée, 1997), can distinguish between eating disordered patients and controls on the following sub-scales: weight and shape as a means to self acceptance;

weight and shape as a means to acceptance by others; and control over eating (M.J. Cooper *et al.,* 1997). Although in its infancy, this measure could potentially be of use in research, as well as in the clinical arena.

In a related vein, Geller, Johnson & Madsen (1997) recently developed a self-report questionnaire aimed at measuring the influence of weight and shape on self-esteem. Preliminary reports suggest the 'Shape and Weight based Self-Esteem Inventory' has sound psychometric properties, and research indicates that women with eating disorders score significantly higher than female controls and women with other psychiatric disorders, even after controlling for demographic variables and self-esteem (Geller, Johnston, Madsen, Goldner, Remick & Birmingham, 1998). Although this finding lends support to the hypothesis that weight and shape has an inordinate influence on self-esteem, the questionnaire fails to consider the role of eating related assumptions in anorexia nervosa.

Experimental psychology

M.J. Cooper & Fairburn, (1992) used a concurrent verbalisation task and a self-report questionnaire to investigate automatic thoughts in patients with anorexia nervosa, patients with bulimia nervosa, symptomatic and non-symptomatic dieters, and female controls. Automatic thoughts were collected whilst participants completed three behavioural tasks: looking at themselves in a full length mirror, weighing themselves and eating a sweet. The results indicated that patients with eating disorders had more negative automatic thoughts relating to eating, weight and shape during the tasks than the controls, while dieters occupied an intermediate position. Individuals with anorexia

nervosa showed greater concern with eating than the dieters, while concern with weight and appearance distinguished bulimics from the dieters.

Measures obtained from the Thoughts Checklist, which included ratings of frequency, duration and belief in negative automatic thoughts, were generally similar to those obtained during the concurrent verbalisation tasks. However, only automatic thoughts were identified and no attempt was made to identify differences between automatic thoughts related to eating, and those related to weight and shape.

Outcome research for treatment

According to cognitive theory, successful cognitive-behavioural treatment (CBT) requires modification of attitudes towards eating, weight and shape, and dysfunctional weight-related self-schema (M.J. Cooper, 1997). Thus effective treatment may provide an indirect source of evidence for the presence of cognitive disturbance in anorexia nervosa. However, the evidence to support the effectiveness of CBT for anorexia nervosa remains sparse. Although P.J. Cooper & Fairburn, (1984) and Peveler & Fairburn (1989) report cases of successful CBT treatment, the one controlled trial reported in the literature found no difference between CBT and behavioural therapy (Channon, De Silva, Hemsley & Perkins, 1989). However given the dearth of evaluative studies it would, as yet, be premature to conclude that this area fails to support the presence of a cognitive disturbance in anorexia nervosa.

Empirical evidence exists to support two of the key features of cognitive disturbance proposed by cognitive theories of anorexia, namely the presence of negative automatic thoughts concerned with eating, weight and shape, and the presence of underlying assumptions that link issues of eating, weight and shape with themes of self-worth and acceptance by self and others.

1.5.2 The role of core beliefs in anorexia nervosa

Very few attempts have been made to assess core beliefs in anorexia nervosa. Using a sentence completion task (Padesky & Mooney, 1993), M.J. Cooper, Todd & Cohen-Tovée (1996) found that patients with anorexia nervosa recorded more negative core beliefs than normal controls. The clinical group also revealed fewer positive beliefs about the world compared to normal controls. The 'negative self-beliefs' sub-scale of the EDBQ (M.J. Cooper *et al.*, 1997) also assesses negative self-beliefs. Preliminary findings suggest this sub-scale can distinguish between eating disordered and non-eating disordered individuals; those in the eating disordered group scored significantly higher compared to the controls, indicating a more negative self view.

More recently, M.J. Cooper *et al.* (1998) used a semi-structured interview to investigate underlying assumptions and negative self-beliefs in women with eating disorders. Their study revealed that the self-beliefs of patients with eating disorders, unlike those of non-eating disordered women, were negative, unconditional, and concerned with themes such as abandonment and uselessness. They were also invariably associated with childhood trauma, including emotional, physical and sexual abuse. These finding support the ideas of Guidano & Liotti (1983), who suggest that early experience may play a role in the development of negative self-beliefs.

In their study, M.J. Cooper *et al.* (1998) also identified three types of assumptions within the eating disorder group: those linking eating with self acceptance; those linking weight gain or loss with acceptance by others; and those linking bingeing to cognitive and emotional control. They conclude that the conjunction of global negative self-beliefs with concern regarding weight, shape and eating is indicative of a cognitive behavioural profile of eating disorders.

Although highlighting the importance of underlying assumptions and negative self-beliefs in anorexia nervosa, data relating to the interview's reliability and validity has yet to be documented. Furthermore, the sample size was small, the data was qualitative, and the interview failed to make a distinction between eating, and weight and shape related situations. Data relating to other cognitive characteristics such as duration, degree of emotional and rational belief, and the degree of distress caused by cognitions were also omitted. Additional control groups, such as dicters or patients with depression, are also required in order to establish whether these findings are particular to patients with an eating disorder. Indeed, with the exception of a study by Butow *et al.* (1993), who found that eating disordered patients had a more negative self perception compared to controls and dieters, researchers have yet to fully investigate whether differences in assumptions and self-beliefs exist between dieters and individuals with anorexia nervosa.

1.5.3 The causal link

Again, very little research has been carried out into the causal relationship between cognitions and eating behaviour in anorexia nervosa. However this link has been studied in relation to bulimia nervosa. Drawing upon techniques from experimental psychology, M.J. Cooper, Clark & Fairburn (1993) found that once assumptions related to eating, weight and shape had been activated, patients with bulimia nervosa ate less in a taste test than patients whose assumptions were not activated. This suggests that assumptions about eating, weight and shape are causally related to disturbed eating patterns, specifically to reduce intake, in patients with bulimia nervosa.

Similarly, in their more recent study exploring the content and origin of dysfunctional beliefs in anorexia nervosa and bulimia nervosa, M.J. Cooper *et al.* (1998) found that conditional assumptions about eating, weight and shape provided a link between negative self-beliefs and automatic thoughts related to eating, weight and shape, in patients suffering from bulimia nervosa and anorexia nervosa. All patients viewed dieting as a means of elevating the negative implications associated with self-beliefs. In their paper, M.J. Cooper *et al.* (1998) drew a parallel between assumptions associated with dieting and beliefs described by Young (1990) as *schema compensation* beliefs; dieting appeared to be a way to overcome early negative experiences and associated negative beliefs. Such strategies may also serve to maintain a schema by preventing it from being challenged.

1.6 Methodological Considerations

The evolving insights into the complexities of cognitive processes in anorexia nervosa serve to highlight a number of methodological inadequacies, some of which will now be briefly discussed.

The majority of self-report questionnaires are based on knowledge of the literature and clinical experience, leaving few that are developed on the basis of empirical evidence. Due to their highly structured nature, questionnaires may miss specific features of interest and simply confirm the investigator's hypotheses without providing a full picture of the cognitive disturbance. Data on reliability and validity is often limited and completion invariably relies on retrospective information, which is subject to response bias and may be inaccurate. The potential for questionnaires to capture accurate moment-to-moment thoughts is also unclear (M.J. Cooper, 1997).

In contrast, those more unstructured techniques, including concurrent verbalisation and thought sampling, yield more immediate information relating to the moment-to-moment thoughts of individuals in naturalistic settings, thus providing a more accurate picture of cognitive functioning at a specific time point. However, such paradigms may also be open to response bias.

Clinical interviews are widely used to explore the complexities of eating disorders (Z. Cooper & Fairburn 1987). Interviews afford an opportunity to ask probing questions and clarify ambiguous responses, thus averting misinterpretation. However certain disadvantages limit their practicality. They can be unwieldy and time consuming, and

also run the risk of being personally intrusive (Fairburn & Beglin, 1994). Indeed admitting to behaviours deemed by many as unacceptable (e.g. self-induced vomiting), may be extremely difficult and distressing. Thus continual monitoring of patient distress is of paramount importance when using semi-structured interviews in either clinical or research settings.

Finally, despite suggestions that the core psychopathology of eating disorders may lie in the personal meaning attached to weight and shape (Vitousek & Hollon, 1990), with assumptions about eating constituting secondary concerns (Fairburn *et al.*, 1986), relatively few studies have attempted to separate these content areas clearly.

1.7 Summary and Rationale

Recent developments in the cognitive theory of anorexia nervosa suggest that negative automatic thoughts, negative underlying assumptions and negative self-beliefs play an important role in the genesis and maintenance of eating disorders (Vitousek & Hollon, 1990). However, the above review highlights a number of gaps in our knowledge of cognitive characteristics and our understanding of the precise mechanisms by which beliefs and assumptions influence eating behaviour in anorexia nervosa.

Although empirical evidence for the presence of automatic thoughts is evident within the literature, studies invariably focus upon the frequency of thoughts. Indeed, with the exception of a study by Clark *et al.* (1989), the potential importance of additional dimensions such as duration, degree of belief and degree of associated distress appears to have been largely overlooked within the existing literature.

Similarly, with the exception of studies by Geller *et al.* (1997) and M.J. Cooper *et al.* (1998), both the content of and the underlying mechanism(s) by which core beliefs and assumptions influence eating behaviour in anorexia nervosa remain relatively neglected in terms of research. Yet it has been argued that underlying assumptions form the kernel of cognitive theory, since they drive automatic thoughts that in turn drive behaviour (M.J. Cooper, 1997). Indeed additional information pertaining to their links with other concepts, the extent to which they are believed, their development and their emotional impact is required if our understanding of their role is to be refined.

Although early experiences have been implicated in the development of negative self-beliefs at a theoretical level (Guidano & Liotti, 1983) and from preliminary evidence using a semi-structured interview (M.J. Cooper *et al.*, 1998), detailed empirical evidence has yet to be documented. Investigation into the origins of negative self-beliefs, their links with dieting, and the extent to which they are believed at a rational and emotional level remains in its infancy. It is also unclear as to whether these attributes are unique to eating disordered patients, as opposed to non-symptomatic dieters.

Indeed, studies invariably lack adequate comparison groups, and whether or not subtle differences in cognitions exist between non-symptomatic dieters and patients with anorexia nervosa remains inadequately explored. To date no known study has investigated whether subtle differences exist between these two groups in the following areas.

Eating related situation

- The number, duration, degree of belief and degree of distress in eating, and weight and shape related negative automatic thoughts
- The number, degree of belief, degree of distress and development of first[5] and second order eating related assumptions concerned with self and others

Weight and shape related situation

- The number, duration, degree of belief and degree of distress in eating, and weight and shape related negative automatic thoughts
- The number, degree of belief, degree of distress and development of first order eating related assumptions concerned with self and others
- The number, degree of belief, degree of distress and development of second order eating, and weight and shape related assumptions concerned with self and others

Negative self-beliefs

- The number, degree of rational and emotional belief, degree of associated distress and development of negative self-beliefs

The aim of this study was to develop a semi-structured interview with which to assess cognitions and their origins in females with anorexia nervosa, non-symptomatic dieters and normal female controls. It was intended to assess the interview's test re-test and inter-rater reliability as well as its concurrent validity. More specifically, the study aimed to explore group differences in those dimensions of thoughts, assumptions and negative self-beliefs that have yet to be adequately investigated within the literature.

[5] First order assumptions differ from second order assumptions in that they do not tap into negative self-beliefs.

In line with previous recommendations (Fairburn *et al.*, 1986), content area was clearly defined and eating, and weight and shape related concerns were investigated separately. It was also intended to shed further light upon the role of early experiences in the development of negative self-beliefs, as well as investigate potential group differences in the role and meaning attached to dieting.

1.7.1 Research questions

1. Can the semi-structured interview reliably and validly measure various dimensions of automatic thoughts and assumptions related to eating, weight and shape, and negative self-beliefs?

2. Do patients with anorexia nervosa, non-symptomatic dieters and female controls differ with regards to the number, degree of belief, and distress associated with automatic thoughts related to eating, and weight and shape?

3. Do patients with anorexia nervosa, non-symptomatic dieters and female controls differ with regards to the number, degree of belief, and distress associated with underlying assumptions relating to: eating, and weight and shape as a means to self acceptance; eating, and weight and shape as a means to acceptance by others; and control over eating?

4. Do patients with anorexia nervosa, non-symptomatic dieters and female controls differ with regards to the number, degree of rational and emotional belief and distress associated with negative self-beliefs?

5. Are negative early experiences associated with underlying assumptions related to eating, weight and shape, and to negative self-beliefs amongst patients with anorexia nervosa?

6. Do patients with anorexia nervosa show a link between negative self-beliefs and dieting that does not exist amongst non-symptomatic dieters?

1.7.2 Hypotheses

1. The semi-structured interview will have inter-rater reliability, test re-test reliability and concurrent validity.

2. The patients with anorexia nervosa will have more negative eating, and weight and shape related automatic thoughts than the non-symptomatic dieters and the female controls; similar differences will be found in duration, degree of belief and associated distress.

3. The patients with anorexia nervosa will have more underlying assumptions related to eating, and weight and shape as a means to self acceptance; eating, and weight and shape as a means to acceptance by others, and control over eating, than the non-symptomatic dieters and the female controls; similar differences will be found in degree of belief and associated distress.

4. The patients with anorexia nervosa will have more negative self-beliefs than the non-symptomatic dieters and the female controls; similar differences will be found in degree of rational and emotional belief and associated distress.

5. Negative self-beliefs and underlying second order assumptions related to eating, and weight and shape will be associated with negative early experiences in the patients with anorexia nervosa.

6. The patients with anorexia nervosa, but not the non-symptomatic dieters or the female controls, will identify a link between their negative self-beliefs and dieting.

2. METHOD

After describing the study design, the criteria for participant selection will be explained. This will be followed by a description of the measures used, a discussion of pertinent ethical issues and an outline of the procedure.

2.1 Design

The study involved collecting detailed data from three independent groups of participants: patients with anorexia nervosa, non-symptomatic dieters and normal female controls. There were three experimental designs: a replication study involving comparisons within groups, and between and within group designs investigating differences between groups and associations between variables.

2.2 Participants

2.2.1 Clinical participants

Participants with anorexia nervosa

Participants with anorexia nervosa were recruited through their primary therapist. All were female, aged 18–46 years, and had a Body Mass Index (BMI: weight (kgs)/height (m^2)) of 18[6] or below. All were screened with the eating disorder module of the Structured Clinical Interview for DSM-IV (SCID: Spitzer, Williams & Gibbons, 1996) to confirm a diagnosis of anorexia nervosa at the time of the study.

[6] Participants also met the 85 per cent weight for height criteria stipulated by the DSM-IV diagnosis of anorexia nervosa (DSM-IV, American Psychiatric Association, 1994).

2.2.2 Non-clinical participants

Non-symptomatic dieters

Non-symptomatic dieters were recruited by requesting volunteers from amongst university students, hospital staff and colleagues of the investigators, as well as from slimming clubs. Non-symptomatic dieters were defined as those who had been following a standard weight reducing diet and/or setting rigid rules about what should be eaten for the past month or more (M.J. Cooper & Fairburn, 1992). All were female (aged 19-56 years) and had a BMI within the range of 19-36. Women who had engaged in self-induced vomiting, bingeing[7] or laxative/diuretic abuse were excluded by interview, as were those with a diagnosis or history of an eating disorder or psychiatric illness (see Appendix I for screening interview).

Non-clinical controls

Non-clinical controls were recruited by requesting volunteers from amongst university students, hospital staff and colleagues of the investigators. All were female (aged 20-36 years) and had a BMI within the range of 17-24. Women with a diagnosis or history of an eating disorder or psychiatric illness were excluded by interview. Women who were currently dieting or had a history of self-induced vomiting, bingeing or laxative/diuretic abuse were also omitted from this group.

[7] Defined as a period during which the individual experiences a sense of lack of control over their eating and consumes a quantity of food that is greater than most individuals would eat in a similar period of time.

2.3 Measures

2.3.1 Demographic data

Demographic information including age, ethnic origin, number of years in full time education, weight and height (used to calculate BMI) was collected. Additional information including age of onset, and type and length of treatment was also sought from participants with anorexia nervosa.

2.3.2 Self-report questionnaires

All participants completed the following self-report questionnaires (see Appendix II).

Eating Attitudes Test (EAT: Garner & Garfinkel, 1979)

The EAT is one of the most widely used rating scales in the study of anorexia nervosa, and has been found to differentiate between eating disorder groups and normal controls (Williamson, Cubic & Gleaves, 1993). Each of the 40 items is answered on a 6 point Likert scale (1=never; 6=always) and ratings can be summed to provide a global score of eating disturbance. The EAT has good psychometric properties, including internal consistency (total population: cronbach's alpha coefficient = .94) and good concurrent validity (correlation with the EDI scales: Drive for thinness: .81; Body dissatisfaction: .50) (Garner & Garfinkel, 1979).

Eating Disorder Belief Questionnaire (EDBQ: M.J. Cooper, Cohen-Tovée, Todd, Wells, & Tovée, 1997)

The EDBQ is a 32 item measure designed to assess beliefs and assumptions relevant to eating disorders. All questions are answered on a 100 point Likert scale (0=I do not

usually believe this at all; 100=I am usually completely convinced that this is true). The EDBQ consists of four sub-scales measuring: negative self-beliefs; weight and shape as a means to self-acceptance; weight and shape as a means to acceptance by others; and control over eating. Preliminary work suggests these sub-scales possess good psychometric properties, including high internal consistency of each factor (alpha coefficients = .86 to .93), good convergent validity (correlation with the EAT $p<0.01$) and promising concurrent validity using eating disordered patients ($p<0.01$) (M.J. Cooper *et al.*, 1997).

Rosenberg Self-Esteem Scale (RSE: Rosenberg, 1965)

The RSE is one of the most widely used self-report scales designed to measure global self-esteem. Respondents are asked to rate each of the 10 items on a 4 point Likert scale (1=strongly agree; 4=strongly disagree). Evidence suggests the RSE has robust psychometric properties, including good convergent validity (correlation with EDI ineffectiveness sub-scale: .66); and promising construct validity (Griffiths, Beumont, Giannakopoulos, Russell, Schotte, Thornton, Touyz & Varano, 1999).

Beck Anxiety Inventory (BAI: Beck, Epstein, Brown & Steer, 1988)

The BAI is a 21 item measure that provides a global score of anxiety. Questions are rated on a 4 point Likert scale (0=not at all; 3=severely). The BAI is widely used in eating disorders research, and has good psychometric properties, including high internal consistency (Cronbach's alpha = .92) and good test re-test reliability over one week ($r(81) = .75$) (Beck, Epstein, Brown & Steer, 1988).

Beck Depression Inventory (BDI: Beck, Ward, Mendelson, Mock, & Erbaugh, 1961)

The BDI is another self-report instrument commonly employed in eating disorders research. This 21 item measure gives a global score of depressive symptomatology. All items are rated on a 4 point Likert scale, higher scores indicating a more severe level of symptomatology. The BDI has good psychometric properties, including high internal consistency (alpha coefficient = .86) and high concurrent validity (.73) (Beck, Steer & Garbin, 1988).

'Restraint' sub-scale of the Dutch Eating Behaviour Questionnaire (DEBQ-R: Van Strien, Fritjers, Berger & Defares, 1986)

The 'restraint' sub-scale consists of 10 items, each of which is scored on a 5 point Likert scale (1=never; 5=very often). The DEBQ-R is often used to confirm that dieters exhibit a level of dietary restraint, which is comparable to that found in dieters in other studies (M.J. Cooper *et al.*, 1997). In the present study, the DEBQ-R was used to ensure that the non-symptomatic dieters and the female controls were comparable in level of dietary restraint to relevant groups recruited in previous studies. This sub-scale was not completed by the clinical participants.

2.4 Semi-Structured Interview

A semi-structured interview was conduct with each participant (see Appendix III). The interview was adapted from that recently developed by M.J. Cooper *et al.* (1998) and consisted of two main sections.

Section one

Participants were asked to focus on the most recent situation in which they had felt anxious, bad or worried about their eating. Specific questions were asked to help participants get a clear picture of the situation (e.g. "where were you?", "who were you with?", "what were you doing"), and they were also asked to identify the duration of their concerns. Participants were subsequently asked to identify the feelings they had experienced in the situation, and to rate the strength of each on a 100 point Likert scale (e.g. 0=not at all anxious; 100=as anxious as I have ever felt). Specific probe questions were then asked to help participants identify any automatic thoughts related to eating and/or to weight and shape. Participants were also asked to clarify the duration of each thought identified and to rate on a 100 point Likert scale, the extent to which they believed each thought at the time (0=I did not believe this at all; 100=I was completely convinced that this thought was true). The most distressing eating, and weight and/or shape related thoughts were then identified and participants were asked to rate the degree of distress associated with each thought using a 100 point Likert scale (0=not at all distressed; 100=as distressed as I have ever felt).

The most distressing eating related thought was subsequently investigated in more detail using semi-structured questions together with the downward arrow technique described by Burns (1980). This is a well established cognitive technique that is commonly employed in clinical practice. However given its predominant use as a clinical tool, its reliability and validity have yet to be established. This was used, together with the semi-structured questions, to identify the assumptions related to self acceptance attached to the automatic thought. Examples of the specific questions used to access these

assumptions included: "suppose that were true, what would be so bad about that?", what's the worst that would say about you". Participants were asked to rate the extent to which they believed each assumption at the time on a 100 point Likert scale (0=I did not believe this assumption at all, 100=I was completely convinced that this was true), as well as rate the level of distress caused by each assumption (0=not at all distressed, 100=as distressed as I have ever felt).

Subsequent probe questions were designed to elicit information about the origins of any assumptions relating to self acceptance (e.g. when did you first have thoughts like these?), and were followed by questions designed to provide more detail about this time (e.g. how old were you? what was happening in your life at the time?). Participants were then asked whether these assumptions reflected their current beliefs.

Assumptions related to self acceptance were pursued further, again using the downward arrow technique, to elicit any negative self-beliefs. Participants were asked to rate their rational and emotional belief in each negative self-belief using a 100 point Likert scale (0=I did not believe this belief at all, 100= I was totally convinced that this was true). They were also asked to rate the degree of distress caused by each belief (0=not at all distressed; 100=as distressed as I have ever felt).

Subsequent probe questions were designed to elicit information about the origins of any negative self-beliefs (e.g. what is your first memory of these beliefs?), and were followed by questions designed to provide more detail about this time (e.g. how old were you? what was happening in your life at the time?). Participants were then asked

whether these beliefs reflected their current beliefs about themselves and whether they did anything to change the way they thought or felt.

This led into additional questions designed to shed further light upon the manner in which negative self-beliefs might impact upon behaviour (e.g. do you feel that the beliefs...and the distress that goes with them are connected in some way to your attempts to diet/prevent weight gain? is dieting/preventing weight gain helping with these beliefs and the distress that goes with them? how do you think that works?).

Participants were subsequently reminded of their most distressing eating related thought and asked additional probe questions aimed at eliciting assumptions related to others (e.g. what do you think other people would think about you? what's the worst they could think about you?). Again, using a 100 point Likert scale, the belief and distress associated with each of these assumptions was documented and participants were asked to identify their first memory of these assumptions. The downward arrow technique was again employed to establish whether those negative self-beliefs identified earlier also underlay participants' assumptions relating to acceptance by others. Any additional negative self-beliefs were identified and participants rated their rational and emotional belief in each, as well as their associated distress, using the 100 point Likert scale as before. Their first memory of these beliefs was also explored, and any possible links with dieting/prevention of weight gain investigated as before.

Section two

The second part of the interview asked participants to identify the last situation in which they had felt anxious, worried or bad about their weight and/or shape. As for the eating related situation, they were asked to describe the situation and identify the duration of their concerns. The probe questions used in the first section were again employed, as participants were asked to describe how they had felt and what thoughts were running through their mind at the time. As before, the duration and the extent to which they believed each thought was also documented, and the most distressing weight and/or shape related thought was identified. This was subsequently pursued in a manner synonymous to that described earlier, with assumptions relating to self and others being explored independently, and any additional negative self-beliefs also being identified and explored.

Finally, participants were asked whether the most distressing weight and/or shape related thought identified in the first section was underlain by the same assumptions and negative self-beliefs identified in the second section. If this wasn't the case, this thought was pursued as before, and any additional underlying assumptions related to acceptance by self and others, and negative self-beliefs were identified.

In view of the early developmental stage of this semi-structured interview there is currently no reliability or validity data. It was piloted on 6 volunteers (2 different participants from each of the three groups), which led to several modifications; questions relating to visual imagery were omitted from the schedule and the most salient weight and/or shape related thought identified in the first section was only investigated

if significantly different from that identified and pursued in the second section. These modifications were made in order to avoid unnecessary repetition and to shorten interview time.

2.5 Ethical Considerations

2.5.1 Ethical approval

Given that five ethics committees were to be approached, ethical approval was initially sought from the Anglia and Oxford Multiple Regional Ethics Committee (MREC). Following their approval, ethical consent was also obtained from the following Local Regional Ethics Committees: Oxfordshire Psychiatric Research Ethics Committee, Northampton Medical Research/Ethics Committee, Aylesbury Vale Local Research Ethics Committee, and East Berkshire Research Ethics Committee. MREC approval also allowed for recruitment from Huntercombe Manor Hospital. (see Appendix IV).

2.5.2 Consent

The research was explained thoroughly by written information (see Appendix V) and verbally, either by telephone or in person. Participants were also given an opportunity to ask any questions about the study before the interview commenced, and it was made clear that participants could stop at any point during the interview if they so wished. All participants were required to complete a consent form and, in the case of the clinical group, an individual not involved in the research witnessed this procedure (see Appendix VI for consent forms).

2.5.3 Confidentiality

All participants were given code numbers known only to the researchers. All information given was kept in a locked cupboard and audiotapes were destroyed after use.

2.5.4 Distress

Clinical judgement was used throughout the interview to monitor potential distress. When difficult information was being disclosed, participants were offered the opportunity to either take a break or to discontinue the interview. When discussing early life events, those participants who preferred not to disclose details were given the opportunity to simply identify whether the event(s) were positive or negative.

2.5.5 Debriefing

At the end of the interview participants were given a further opportunity to ask remaining questions and give any general feedback relating to their experience(s) of participating in the study.

2.6 Procedure

2.6.1 Recruitment

The service managers of five local Eating Disorder Clinics were approached with a letter of enquiry seeking potential participants with a diagnosis of anorexia nervosa. All services expressed an interest in the study and, as noted, ethics applications were made to the local MREC and to the appropriate Local Research Ethics Committees. Following ethics approval, a meeting was arranged with each service and details of the recruitment

procedure were finalised in correspondence with service managers and clinicians. It was agreed with each service that the primary clinicians would carry out the following: identify and give potential participants an information sheet, ascertain whether or not they were interested in hearing more about the study and, where appropriate, establish the most suitable means of contact between the client and researcher. Contact was invariably by telephone, or through meeting the patient with their primary therapist, and at this time any remaining issues were discussed and an appointment time was arranged, if the individual was then willing to participate.

Those in the non-clinical control groups were recruited through approaching students attending the local universities and by requesting volunteers from amongst hospital staff and colleagues of the investigators. Non-symptomatic dieters were also recruited through local slimming clubs. All potential participants were sent an information sheet and provided with an opportunity to ask any questions before deciding whether or not to participate in the study. At each stage it was made clear to all participants that they were free to leave the study at any time and that this would not affect their right to access health care services.

2.6.2 Screening

Participants were screened with the eating disorder module of the Structured Clinical Interview for DSM-IV (SCID: Spitzer, Williams & Gibbons, 1996) to confirm or exclude a DSM-IV diagnosis of anorexia nervosa. Non-clinical participants completed the DEBQ-R (see Appendix II), and were asked a series of questions adapted from the 'dieting' supplement of the Eating Disorders Examination (M.J. Cooper &

Fairburn, 1992). They were also asked about any past or present psychiatric illness (see Appendix I).

2.6.3 Setting

Participants were seen individually, either in a clinical setting or in their own homes, depending upon the preference of the participant.

2.6.4 Interview

The purpose of the study and the procedure was explained and another opportunity to ask questions was given. Participants were then screened and, providing they fulfilled the inclusion criteria and wished to proceed, they were asked to read and complete the consent form. In the case of the clinical participants, this was witnessed and signed by an individual not involved in the study. Where applicable, information about age of onset, and length and type of treatment was collected before the semi-structured interview was administered. All interviews were recorded on audiotape with the participants' permission.

The length of the procedure ranged from 15-90 minutes depending upon group membership, the clinical participants typically taking longer than those in the non-clinical groups. At the end of the interview participants were de-briefed and asked if they had any comments or queries. They were also asked to complete and return the self-report questionnaires in the SAE provided. Finally, they were asked if they would be willing to be contacted about repeating the interview in order to provide data for test re-test analysis.

2.6.5 Test re-test reliability

Nine participants from each group agreed to repeat the interview. For these interviews the procedure was as above, but with a shortened introduction. All repeat interviews took place within 3 weeks of the initial administration.

2.6.6. Inter-rater reliability

Nine, randomly selected, interviews from each group were rated by an independent rater experienced in the field of eating disorders. The independent rater scored the interview text according to an agreed coding format (see Appendix VII). Permission to have the data rated by another colleague was sought from each participant before the interview began.

3. RESULTS

A brief explanation of the data analysis procedure and response rate will be reported. This will be followed by presentation of the demographic and self-report questionnaire data, after which data relevant to each hypothesis will be presented.

3.1 Data Analysis

The data was analysed using SPSS (SPSS, Inc., 1997). Data from the questionnaires was ordinal scaled and the raw data from the interviews was nominal, ordinal or interval scaled. The data elicited from each section of the interview was analysed independently, unless otherwise specified.

Checks for normality of distribution were made by group, using the Kolmogorov-Smirnov test, for demographic variables, self-report questionnaires and interview data relevant to each hypothesis. Where the data failed to meet the criteria for parametric analysis, non-parametric equivalents were applied. Most notably, the demographic data were all normally distributed and therefore met the assumptions necessary for parametric analysis. However, scores on several of the questionnaire sub-scales and a large proportion of the interview data were not normally distributed and thus analysis of interview and questionnaire data used non-parametric tests, i.e. Spearman correlation coefficients, Kurskal-Wallis and Mann-Whitney U tests. As the expected direction of difference was stated in the hypotheses, one-tailed tests were used, where applicable.

3.2 Sample

3.2.1 Response rate

Of the 20 potential clinical participants recruited, 18 fulfilled the inclusion criteria and were willing to participate in the research. Two failed to fulfil diagnostic criteria and were thus excluded from the study. Within the non-clinical groups, 15 potential participants reported engaging in purging behaviours and were thus filtered out of the non-symptomatic dieting group. Two potential participants failed to fulfil the inclusion criteria for the control group.

3.2.2 Demographic characteristics

All participants were female and Caucasian. The mean age, number of years in full time secondary education and Body Mass Index (BMI) for the three groups is presented in Table 1.

Table 1. Demographic data by group

	Female controls (*N*=18)	Non-symptomatic dieters (*N*=18)	Anorexia nervosa patients (*N*=18)
Mean age in years (SD)	23.9 (4.1)	29.9 (9.1)	24.7 (7.1)
Mean years in education (SD)	12.2 (1.8)	11.0 (2.3)	9.8 (1.5)
Mean BMI[a] (SD)	21.0 (1.8)	25.2 (4.9)	16.1 (1.6)

SD = standard deviation; Mean number of years in full-time education = from the age of 11 years upwards.
[a] BMI = kg/m^2

One way analyses of variance with post hoc Tukey tests were used to assess differences between groups on demographic variables. Significant differences were found for age (F (2,50) = 3.97, p<.05). The female controls were significantly younger than the

non-symptomatic dieters ($p<.05$), however there were no significant differences between the patients with anorexia nervosa and either of the non-clinical groups. Significant differences were also found in relation to number of years in full time education (F (2,51) = 7.54, $p<.01$). The female controls had spent significantly longer in education than the patients with anorexia nervosa ($p<.05$). However, the non-symptomatic dieters did not differ significantly from either of the other two groups.

Differences between groups were also found for BMI (F (2,50) = 38.13, $p<.0001$). The patients with anorexia nervosa had significantly lower BMIs than the non-symptomatic dieters ($p<.05$) and the female controls ($p<.05$). The non-symptomatic dieters also had significantly higher BMIs than the female controls ($p<.05$).

Amongst the patients with anorexia nervosa, the mean age of illness onset was 17.7 years (SD 4.6) and, at the time of data collection, the mean length of time in treatment was 27.5 months (SD 23.7).

3.2.3 Self-report questionnaires

The data from the self-report questionnaires in presented in Table 2. Kruskal-Wallis analyses of variance tests for between group differences were used to test whether the groups scored significantly differently on the self-report questionnaires. In the case of significant differences, one-tailed Mann-Whitney U analyses were employed as post hoc tests, in order to locate the source(s) of the interaction.

Table 2. Mean and standard deviations for each of the self-report questionnaires

Scale	Female controls (*N*=18)	Non-symptomatic dieters (*N*= 18)	Anorexia nervosa patients (*N*=18)
EAT	5.2 (4.4)	9.2 (4.1)	62.7 (16.3)
BDI	1.6 (2.1)	3.4 (3.8)	32.2 (10.9)
BAI	5.3 (3.6)	4.2 (5.8)	26.6 (10.6)
RSE	33.0 (3.7)	33.5 (4.0)	18.0 (5.4)
EDBQ-A	1.6 (2.1)	9.7 (11.4)	64.6 (24.5)
EDBQ-SA	22.0(16.2)	46.5 (24.5)	80.2 (12.9)
EDBQ-C	3.1 (4.4)	9.8 (14.0)	61.3 (16.4)
EDBQ-NS	4.6 (6.3)	6.5 (8.1)	68.8 (26.3)

Standard Deviation in parentheses, EAT = Eating Attitudes Test; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; RSE = Rosenberg Self-Esteem Scale, this has been scored in a positive direction such that a high score indicates higher self-esteem; EDBQ-A = Eating Disorder Belief Questionnaire - Acceptance by Others Scale; EDBQ-SA = Self Acceptance Scale; EDBQ-C = Control Over Eating Scale; EDBQ-NS = Negative Self-Beliefs Scale.

Eating Attitudes Test (EAT) - A significant difference was found between groups on the EAT (χ^2 (2) = 39.8, p<.0001). The patients with anorexia nervosa scored significantly higher than the non-symptomatic dieters and the female controls (both comparisons, p<.0001), indicating that the patients with anorexia nervosa had more disturbed eating attitudes. The non-symptomatic dieters also scored significantly higher than the female controls (p<.001).

Beck Depression Inventory (BDI) – A significant difference was also found between groups in level of depression (χ^2 (2) = 36.8, p<.0001). The patients with anorexia nervosa had significantly higher levels of depression than the non-symptomatic dieters and the female controls (both comparisons, p<0001). There was no significant difference in level of depression between the non-symptomatic dieters and the female controls.

Beck Anxiety Inventory (BAI) – A significant difference in level of anxiety was found between groups (χ^2 (2) = 33.9, p<.0001). Again, post hoc Mann-Whitney U tests indicated that the patients with anorexia nervosa had significantly higher levels of anxiety than the non-symptomatic dieters and the female controls (both comparisons, p<.0001). The female controls had significantly higher levels of anxiety than the non-symptomatic dieters (p<.05) [8].

Rosenberg Self-Esteem Scale (RSE) – A significant difference was also found between groups in level of self-esteem (χ^2 (2) = 33.8, p<.0001). The patients with anorexia nervosa scored significantly lower on the RSE than the non-symptomatic dieters and the female controls (both comparisons, p<.0001), indicating that the patients with anorexia nervosa had lower self-esteem than the non-clinical participants. No significant differences were found between the non-symptomatic dieters and the female controls.

Eating Disorder Belief Questionnaire (EDBQ) – A significant difference was found between groups on each sub-scale of the EDBQ. These results are presented in Table 3.

Table 3. Analysis of EDBQ sub-scales

Scale	DF	F value	Significance
EDBQ-A[a]	2	36.5	*P*<.0001
EDBQ-SA[a]	2	32.6	*P*<.0001
EDBQ-C[a]	2	36.2	*P*<.0001
EDBQ-NS[a]	2	31.6	*P*<.0001

[a] Eating Disorder Belief Questionnaire - EDBQ-A = Acceptance by Others Scale; EDBQ-SA = Self Acceptance Scale; EDBQ-C = Control Over Eating Scale; EDBQ-NS = Negative Self-Beliefs Scale.

[8] Although significantly different, the absolute difference was very small and both mean scores were below the clinical range.

Post hoc Mann-Whitney U tests indicated that the patients with anorexia nervosa scored significantly higher on every scale than the non-symptomatic dieters and the female controls (all comparisons, $p<.0001$). The non-symptomatic dieters scored significantly higher than the female controls on two sub-scales: weight and shape as a means to acceptance by others ($p<.01$) and weight and shape as a means to self acceptance ($p<.002$).

3.3 Hypothesis Testing

Hypothesis 1. The semi-structured interview will have inter-rater reliability, test re-test reliability and concurrent validity.

Inter-rater reliability

Inter-rater reliability of the interview was checked by comparing the frequency of thoughts, assumptions and core beliefs documented by each rater using Wilcoxon matched pairs sign rank tests. A significance level of 5 per cent was adopted, as compared with a 1 per cent level of significance, this constitutes a more stringent criteria for reliability. The two raters scored none of the 17 items significantly differently.

Test re-test reliability

The test re-test reliability of the interview was also assessed item by item using Wilcoxon matched pairs sign rank tests. Again, a significance of 5 per cent was used. Four of the 45 items were significantly different at the 5 per cent level: the number of self-referent second order eating related assumptions elicited in the eating section, the degree of belief in other-referent second order eating related assumptions elicited in the

eating section, and the degree of belief in self- and other-referent second order weight and shape related assumptions elicited in the weight and shape section.

Concurrent validity

Global scores on the Eating Attitudes Test (EAT) and the Eating Disorder Belief Questionnaire sub-scales (EDBQ), which might be expected to correlate positively with the number of eating, and weight and shape related thoughts and assumptions elicited by the interview, were used to check the concurrent validity of the interview using Spearman coefficient correlations[9]. Table 4 shows the correlations between the EAT and the number of eating, and weight and shape related automatic thoughts, and self and other-referent first order eating related assumptions; the EDBQ-A and the number of second order weight and shape related assumptions concerned with acceptance by others; the EDBQ-SA and the number of second order weight and shape related assumptions concerned with self acceptance; and the EDBQ-C and the number of eating related automatic thoughts and self- and other-referent first order eating related assumptions, elicited during the interview.

Eating section

The EAT was found to correlate significantly with the number of eating, and weight and shape related thoughts, and the number of self- and other-referent first order eating related assumptions. The EDBQ-C was also found to correlate significantly with the number of eating related automatic thoughts and the number of self- and other-referent first order eating related assumptions.

[9] Spearman correlation coefficients were conducted as there were no grounds to expect a linear relationship to exist between the variables.

Table 4. Correlations between the EAT, the EDBQ sub-scales, and the number of eating, and weight and shape related thoughts and assumptions

	EAT	SA[a]	A[a]	C[a]
Eating section				
Eating related automatic thoughts	.73***			.71***
Weight and shape related automatic thoughts	.23*			
First order eating related assumption (SR)	.74***	-		.71***
First order eating related assumption (OR)	.40***			.34**
Second order eating related assumptions (SR)				
Second order eating related assumptions (OR)				
Weight and shape section				
Eating related automatic thoughts	.22*			.21*
Weight and shape related automatic thoughts	.50***			
First order eating related assumption (SR)	.17			.11
First order eating related assumption (OR)	-			-
Second order eating related assumptions (SR)				
Second order eating related assumptions (OR)				
Second order weight and shape related assumptions (SR)		.70***		
Second order weight and shape related assumption (OR)			.73***	

$N = 54$: *$p < .05$; ** $p < .01$; *** $p < .0001$ (One-tailed)
SR = Self-referent; OR = Other-referent
EAT = Eating Attitudes Test; [a] Eating Disorder Belief Questionnaire Sub-scales: SA = Self Acceptance; A = Acceptance by Others; C = Control Over Eating
Note. Gaps indicate that no analysis was conducted and '-' indicate that a correlation could not be computed due to a lack of data in the corresponding cells

Weight and shape section

Significant correlations were found between the EAT and the number of eating, and weight and shape related thoughts. Significant correlation were also found between the EDBQ-SA and the number of second order assumptions relating to weight and shape as a means to self acceptance, and the EDBQ-A and the number of second order weight and shape related assumptions concerned with acceptance by others. A significant correlation was also found between the EDBQ-C and the number of eating related automatic thoughts.

Concurrent validity was further assessed by correlating the mean emotion expressed in each section with scores on the Beck Depression Inventory (BDI), the Beck Anxiety

Inventory (BAI), and the Rosenberg Self-Esteem Scale (RSE). The EDBQ-NSB was also correlated with the mean rational and emotional belief in negative self-beliefs, as well as the mean distress associated with these self-beliefs. These correlations are shown in Table 5.

Table 5. Correlations between the BDI, BAI, RSE, EDBQ-NSB and mean ratings of emotion, rational and emotional belief, and associated distress

	BDI	BAI	RSE	EDBQ-NSB
Eating section				
Mean emotion	.72***	.72***	-.69*	
Weight and shape section				
mean emotion	.38*	.20	-.27*	
Negative self-beliefs[a]				
Rational Belief				.76***
Emotional Belief				.75***
Distress rating				.76***

$N = 54$: *$p < .05$ **$p < .01$ ***$p < .0001$ (One-tailed)
BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; RSE = Rosenberg Self-Esteem Scale; EDBQ-NSB = Negative Self-Beliefs Scale.
[a] Summed across situations

Within the eating section significant correlations were found between the mean emotion and the BDI, BAI and the RSE. Within the weight and shape section, significant correlations were found between the mean emotion and the BDI and RSE, but not the BAI. Across the two interview sections, significant correlations were found between the EDBQ-NSB and the rational and emotional belief in negative self-beliefs, and the distress associated with these beliefs.

Preliminary results suggest that the semi-structured interview has good inter-rater and test re-test reliability, as well as promising concurrent validity.

Hypothesis 2. The patients with anorexia nervosa will have more negative eating, and weight and shape related automatic thoughts than the non-symptomatic dieters and the female controls; similar differences will be found in duration, degree of belief and associated distress.

Kruskal-Wallis analysis of variance tests for between group differences were used to test this hypothesis. In the case of significant differences, one-tailed Mann-Whitney U analyses were employed as post hoc tests in order to establish which groups were significantly different for each other (see Appendix VIII for the post hoc Mann-Whitney U test results).

Number of thoughts

Eating section

A significant difference in the number of eating related negative automatic thoughts was found between the three groups (χ^2 (2) = 42.0, p<.0001). The patients with anorexia nervosa were found to have significantly more of these thoughts than the non-symptomatic dieters and the female controls (both comparisons, p<.0001). No significant differences were found between the non-symptomatic dieters and the female controls.

There were no significant group differences in the number of weight and shape related negative automatic thoughts identified in this section of the interview (χ^2 (2) = 5.4, n.s.).

Weight and shape section

The three groups differed significantly in relation to the number of eating (χ^2 (2) = 8.0, p<.02) and the number of weight and shape related negative automatic thoughts (χ^2 (2) = 29.8, p<.0001) elicited. Although the patients with anorexia nervosa did not report a significantly different number of eating or weight and shape related thoughts than the non-symptomatic dieters, they did report significantly more eating (p<.009) and weight and shape (p<.0001) related thoughts than the female controls. The non-symptomatic dieters reported significantly more eating (p<.002) and weight and shape (p<.0001) related negative automatic thoughts than the female controls.

Duration of thoughts

Eating section

Significant differences between groups were found in relation to the duration of eating related negative automatic thoughts (χ^2 (2) = 44.3, p<.0001). The patients with anorexia nervosa reported these thoughts as being significantly longer in duration than the non-symptomatic dieters and the female controls (both comparisons, p<.0001). No significant differences were found between the non-symptomatic dieters and the female controls.

There were no significant group differences in the duration of weight and shape related negative automatic thoughts identified in this section of the interview (χ^2 (2) = 5.8, n.s.).

Weight and shape section

Significant differences were found in relation to the duration of eating (χ^2 (2) = 7.7, p<.05) and the duration of weight and shape (χ^2 (2) = 31.1, p<.0001) related negative automatic thoughts. More specifically, the patients with anorexia nervosa reported significantly longer duration of weight and shape related thoughts than the non-symptomatic dieters (p<.004). The clinical participants also reported significantly longer duration of eating (p<.009) and longer duration of weight and shape (p<.0001) related thoughts than the female controls. The non-symptomatic dieters reported significantly longer duration of eating (p<.002) and longer duration of weight and shape (p<.0001) related thoughts than the female controls.

Degree of belief

Eating section

A significant difference in the degree to which participants believed their eating related negative automatic thoughts was found between the groups (χ^2 (2) = 38.9, p<.0001). The patients with anorexia nervosa believed these thoughts significantly more than the non-symptomatic dieters and the female controls (both comparisons, p<.0001). No significant differences were found between the non-symptomatic dieters and the female controls.

There were no significant group differences in the degree to which participants believed their weight and shape related negative automatic thoughts in this section of the interview (χ^2 (2) = 5.7, n.s.).

Weight and shape section

Significant group differences were found in relation to the extent to which eating (χ^2 (2) = 8.3, p<.02) and weight and shape (χ^2 (2) = 22.7, p<.0001) related thoughts were believed. The patients with anorexia nervosa believed these eating (p<.009) and weight and shape (p<.0001) related negative automatic thoughts significantly more than the female controls. There was no significant difference in the extent to which the patients with anorexia nervosa and the non-symptomatic dieters believed these eating, and weight and shape related thoughts. The non-symptomatic dieters believed these eating (p<.004) and weight and shape (p<.0001) related negative automatic thoughts significantly more than the female controls.

Degree of distress

Eating section

Significant group differences were found in relation to the distress caused by the most distressing eating (χ^2 (2) = 47.4, p<.0001) and the most distressing weight and shape (χ^2 (2) = 8.1, p<.02) related negative automatic thought. The patients with anorexia nervosa found their most distressing eating (p<.0001) and most distressing weight and shape (p<.009) related thoughts significantly more distressing than the non-symptomatic dieters. Similarly, the patients with anorexia nervosa were significantly more distressed by their most distressing eating (p<.0001) and weight and shape (p<.05) related thought than the female controls. No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

There were no significant group differences in the degree of distress caused by the most distressing eating related negative automatic thought identified in this section of the interview (χ^2 (2) = 5.3, n.s.).

Significant group differences were found in relation to the degree of distress caused by the most distressing weight and shape related thought (χ^2 (2) = 34.1, p<.0001). The patients with anorexia nervosa found their most distressing weight and shape related automatic thought significantly more distressing than the non-symptomatic dieters and the female controls (both comparisons, p<.0001). The non-symptomatic dieters found their most distressing weight and shape related thought significantly more distressing than the female controls (p<.0001).

Overall, the results lend considerable support to the second hypothesis.

Hypothesis 3. The patients with anorexia nervosa will have more underlying assumptions related to eating, and weight and shape as a means to self acceptance, eating, and weight and shape as a means to acceptance by others, and control over eating than the non-symptomatic dieters and the female controls; similar differences will be found in degree of belief and associated distress.

Assumptions related to eating as a means to self acceptance

Number of assumptions

Eating section

Significant differences between groups were found in relation to the number of self-referent second order eating related assumptions (χ^2 (2) = 24.5, p<.0001). The patients with anorexia nervosa reported significantly more of these assumptions than the non-symptomatic dieters and the female controls (both comparisons, p<.0001). No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

No self-referent second order eating related assumptions were elicited in this section of the interview.

Degree of belief

Eating section

Significant group differences were found in relation to the extent to which self-referent second order eating related assumptions were believed (χ^2 (2) = 24.5, p<.0001).

The patients with anorexia nervosa believed these assumptions significantly more than the non-symptomatic dieters and the female controls (both comparisons, $p<.0001$). No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

No belief ratings were reported in this section of the interview.

Degree of distress

Eating section

Significant group differences were found in relation to the degree to which self-referent second order eating related assumptions caused distress (χ^2 (2) = 24.5, $p<.0001$). The patients with anorexia nervosa found these assumptions significantly more distressing than did the non-symptomatic dieters and the female controls (both comparisons, $p<.0001$). No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

No distress ratings were reported in this section of the interview.

Assumptions related to weight and shape as a means to self acceptance

Number of assumptions

Eating section

No self-referent second order weight and shape related assumptions were elicited in this section of the interview.

Weight and shape section

There was a significant difference between groups in the number of self-referent weight and shape related assumptions elicited (χ^2 (2) = 27.1, p<.0001). The patients with anorexia nervosa reported significantly more of these assumptions than the non-symptomatic dieters (p<.003) and the female controls (p<.0001). The non-symptomatic dieters reported significantly more of these assumptions than the female controls (p<.002).

Degree of belief

Eating section

No belief ratings were reported in this section of the interview.

Weight and shape section

Significant group differences were found in relation to the extent to which self-referent second order weight and shape related assumptions were believed (χ^2 (2) = 30.4, p<.0001). The patients with anorexia nervosa believed these assumptions significantly more than the non-symptomatic dieters (p<.003) and the female controls (p<.0001). The non-symptomatic dieters believed these assumptions significantly more than the female

controls ($p<.002$).

Degree of distress

Eating section

No distress ratings were reported in this section of the interview.

Weight and shape section

Significant group differences were also found in relation to the degree to which self-referent second order weight and shape related assumptions caused distress (χ^2 (2) = 33.4, $p<.0001$). The patients with anorexia nervosa found these assumptions significantly more distressing than did the non-symptomatic dieters and the female controls (both comparisons, $p<.0001$). The non-symptomatic dieters found these assumptions significantly more distressing than did the female controls ($p<.002$).

Assumptions related to eating as a means to acceptance by others

Number of assumptions

Eating section

Significant differences between groups were found in relation to the number of other-referent second order eating related assumptions elicited (χ^2 (2) = 18.4, $p<.0001$). The patients with anorexia nervosa reported significantly more of these assumptions than the non-symptomatic dieters and the female controls (both comparisons, $p<.0001$). No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

No other-referent second order eating related assumptions were elicited in this section of the interview.

Degree of belief

Eating section

Significant group differences were found in relation to the extent to which other-referent second order eating related assumptions were believed (χ^2 (2) = 18.4, p<.0001). The patients with anorexia nervosa believed these assumptions significantly more than the non-symptomatic dieters and the female controls (both comparisons, p<.0001). No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

No belief ratings were reported in this section of the interview.

Degree of distress

Eating section

Significant group differences were found in relation to the degree to which other-referent second order eating related assumptions caused distress (χ^2 (2) = 18.4, p<.0001). The patients with anorexia nervosa found these assumptions significantly more distressing than did the non-symptomatic dieters and the female controls (both comparisons, p<.0001). No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

No distress ratings were reported in this section of the interview.

Assumptions related to weight and shape as a means to acceptance by others

Number of assumptions

Eating section

No other-referent second order weight and shape related assumptions were elicited in this section of the interview.

Weight and shape section

There was a significant difference between groups in the number of other-referent second order weight and shape related assumptions elicited (χ^2 (2) = 31.8, p<.0001). The patients with anorexia nervosa reported significantly more of these assumptions than the non-symptomatic dieters (p<.002) and the female controls (p<.0001). The non-symptomatic dieters reported significantly more of these assumptions than the female controls (p<.0004).

Degree of belief

Eating section

No belief ratings were reported in this section of the interview.

Weight and shape section

There was a significant difference between groups in the extent to which other-referent second order weight and shape related assumptions were believed

(χ^2 (2) = 37.4, p<.0001). The patients with anorexia nervosa believed these assumptions significantly more than the non-symptomatic dieters and the female controls (both comparisons, p<.0001). The non-symptomatic dieters believed these assumptions significantly more than the female controls (p<.0005).

Degree of distress

Eating section

No distress ratings were reported in this section of the interview.

Weight and shape section

Significant differences between groups were also found in relation to the degree to which other-referent second order weight and shape related assumptions caused distress (χ^2 (2) = 39.2, p<.0001). The patients with anorexia nervosa found these assumptions significantly more distressing than did the non-symptomatic dieters and the female controls (both comparisons, p<.0001). The non-symptomatic dieters found these assumptions significantly more distressing than did the female controls (p<.0005).

Control over eating[10]

Number of assumptions

Eating section

Significant differences between groups were found in relation to the number of self-referent (χ^2 (2) = 43.1, p<.0001) and other-referent (χ^2 (2) = 10.8, p<.005) first order

[10] Included first order eating related assumptions concerned with self and others.

eating related assumptions elicited.

The patients with anorexia nervosa reported significantly more self-referent first order eating related assumptions than the non-symptomatic dieters and the female controls (both comparisons, $p<.0001$). No significant differences were found between the non-symptomatic dieters and the female controls. The patients with anorexia nervosa also reported significantly more other-referent first order eating related assumptions than the non-symptomatic dieters and the female controls (both comparisons, $p<.009$). No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

There were no significant group differences in relation to the number of self-referent first order eating related assumptions elicited (χ^2 (2) – .33, n.s.). No other-referent first order eating related assumptions were elicited in this section of the interview.

Degree of belief

Eating section

There was a significant difference between groups in relation to the extent to which self-referent (χ^2 (2) = 43.0, p<.0001) and other-referent (χ^2 (2) = 10.8, $p<.005$) first order eating related assumptions were believed.

The patients with anorexia nervosa believed their self-referent first order eating related assumptions significantly more than the non-symptomatic dieters and the female

controls (both comparisons, $p<.0001$). No significant differences were found between the non-symptomatic dieters and the female controls. The patients with anorexia nervosa also believed their other-referent first order eating related assumptions significantly more than the non-symptomatic dieters and the female controls (both comparisons, $p<.009$). No significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

No significant group differences were found in the degree to which participants believed their self-referent first order eating related assumptions (χ^2 (2) = .33, n.s.). No other-referent first order eating related assumption belief ratings were reported in this section of the interview.

Degree of distress

Eating section

Significant group differences were found in relation to the degree to which self-referent (χ^2 (2) = 36.1, $p<.0001$) and other-referent (χ^2 (2) = 10.8, $p<.005$) first order eating related assumptions caused distress.

The patients with anorexia nervosa found their self-referent first order eating related assumptions significantly more distressing than did the non-symptomatic dieters and the female controls (both comparisons, $p<.0001$). No significant differences were found between the non-symptomatic dieters and the female controls. The patients with anorexia nervosa also found their other-referent first order eating related assumptions

significantly more distressing than did the non-symptomatic dieters and the female controls (both comparisons, $p<.009$). Again, no significant differences were found between the non-symptomatic dieters and the female controls.

Weight and shape section

There were no significant group differences in relation to the distress associated with self-referent first order eating related assumptions (χ^2 (2) = .33, n.s.). No other-referent first order eating related assumption distress ratings were reported in this section of the interview.

Overall, these results lend considerable support to the above hypothesis.

Hypothesis 4. The patients with anorexia nervosa will have more negative self-beliefs than the non-symptomatic dieters and the female controls; similar differences will be found in degree of rational and emotional belief, and associated distress.

Again, Kruskal-Wallis analyses of variance tests for between group differences and post hoc Mann-Whitney U tests were used to test this hypothesis.

Results indicated significant differences between groups in relation to the number of negative self-beliefs (χ^2 (2) = 44.8, $p<.0001$); the degree of rational belief (χ^2 (2) = 35.7, $p<.0001$); the degree of emotional belief (χ^2 (2) = 38.0, $p<.0001$); and associated distress (χ^2 (2) = 42.5, $p<.0001$).

The patients with anorexia nervosa reported significantly more negative self-beliefs than the non-symptomatic dieters and the female controls (both comparisons, $p<0001$). They reported a significantly higher degree of rational belief than the non-symptomatic dieters and the female controls (both comparisons, $p<.0001$). Similar differences were found in relation to emotional belief. The patients with anorexia nervosa rated their emotional belief as significantly higher than the non-symptomatic dieters and the female controls (both comparisons, $p<.0001$). Patients with anorexia nervosa reported a significantly higher level of distress associated with their negative self-beliefs than the non-symptomatic dieters and the female controls (both comparisons, $p<0001$).

The non-symptomatic dieters reported significantly more negative self-beliefs than the female controls ($p<.02$). They also reported significantly higher levels of rational ($p<.02$) and emotional belief ($p<.02$), and reported a significantly higher level of associated distress than the female controls ($p<.02$).

These results therefore support the fourth hypothesis.

Hypothesis 5. Negative self-beliefs and underlying second order assumptions related to eating, and weight and shape will be associated with negative early experiences in the patients with anorexia nervosa

Given that this hypothesis was only concerned with the clinical group, statistical analyses were not used to test this hypothesis. Instead the number of clinical participants who associated underlying assumptions and negative self-beliefs with negative early

experiences is reported (see Table 6).

Table 6. The number of clinical participants who identified an association between negative self-beliefs and second order assumptions, and negative early experiences

	Association identified	
	No (%)	Yes (%)
Eating section		
Second order eating related assumption (SR)	4 (22)	14(78)
Second order eating related assumptions (OR)	5(28)	13((72)
Weight and shape section		
Second order eating related assumptions (SR)	0(0)	18(100)
Second order eating related assumptions (OR)	0(0)	18(100)
Second order weight and shape related assumptions (SR)	2(11)	16(89)
Second order weight and shape related assumptions (OR)	0(0)	18(100)
Summed across groups		
Negative self-beliefs	0(0)	18(100)

N=18; SR = Self-referent, OR = Other-referent

It can be seen that all the patients with anorexia nervosa identified an association between negative self-beliefs and negative early experiences. Furthermore, a large percentage (72-100%) also identified an association between second order assumptions and negative early experiences.

Overall, these results support the fifth hypothesis.

Hypothesis 6. The patients with anorexia nervosa, but not the non-symptomatic dieters or the female controls, will identify a link between their negative self-beliefs and dieting.

A Chi-squared test for between group differences was used to test this hypothesis.

A significant difference was found between groups (χ^2 (2) = 41.1, p<.0001). As indicated in Table 7, all the patients with anorexia nervosa, and four of the non-symptomatic dieters identified a link between dieting and negative self-beliefs. None of the female controls identified such as link.

Table 7. The number of participants within each group who identified a link between negative self-beliefs and dieting

	Female controls (N=18)	Non-symptomatic Dieters (N=18)	Anorexia nervosa patients (N = 18)
Link identified			
Yes	0	4	18
No	18	14	0

Overall, these results support the sixth hypothesis.

4. DISCUSSION

The main aims of the present study were as follows: to assess the reliability and validity of a semi-structured interview, and to investigate the characteristics of negative automatic thoughts, underlying assumptions and negative self-beliefs in patients with anorexia nervosa, non-symptomatic dieters and female controls. The interview was also designed to explore the development of negative self-beliefs and their links with dieting in patients with anorexia nervosa. A summary of the research findings will now be presented, and consideration given to pertinent methodological issues. This will be followed by a discussion of the results in relation to the empirical evidence and theoretical models reviewed in the introduction. Where appropriate, statistically significant results will be enriched with pertinent non significant quantitative findings and qualitative trends that may be clinically, if not statistically, significant. Finally, the study's implications for clinical practice and future research will be discussed, ahead of concluding comments.

4.1 Summary of the Research Findings

The results either fully support, or almost support, each of the hypotheses. Investigation of the interview's psychometric properties indicated good inter-rater and test re-test reliability, as well as promising concurrent validity. Thus the interview appears to be a reliable instrument with which to investigate cognitions and their origins in patients with anorexia nervosa, non-symptomatic dieters and female controls.

When asked about a recent eating related episode, the patients with anorexia nervosa reported significantly more eating related negative automatic thoughts than the non-symptomatic dieters and the female controls. Similar differences were found in duration and degree of belief. The patients with anorexia nervosa also found their most distressing eating, and weight and shape related thoughts significantly more distressing than the non-symptomatic dieters and the female controls. Participants with anorexia nervosa reported significantly more self and other-referent second order eating related assumptions than the non-symptomatic dieters and the female controls. Again, similar differences were found in degree of belief and associated distress.

When asked about a recent weight and shape related situation, the patients with anorexia nervosa and the non-symptomatic dieters reported significantly more eating, and weight and shape related thoughts than the female controls. Participants with anorexia nervosa also reported significantly longer duration of weight and shape related thoughts than the non-symptomatic dieters, and significantly longer duration of eating, and weight and shape related thoughts than the female controls. The non-symptomatic dieters reported significantly longer duration of eating, and weight and shape related thoughts than the female controls. The patients with anorexia nervosa and the non-symptomatic dieters believed their eating, and weight and shape related thoughts significantly more than the female controls. The non-symptomatic dieters found their most distressing weight and shape related thought significantly less distressing than the patients with anorexia nervosa and significantly more distressing than the female controls.

As a group, patients with anorexia nervosa reported significantly more second order assumptions related to weight and shape as a means to self acceptance and weight and shape as a means to acceptance by others, than the female controls. The non-symptomatic dieters occupied an intermediate position between the clinical participants and the female controls. The patients with anorexia nervosa also believed these assumptions significantly more, and found them significantly more distressing than the female controls. The non-symptomatic dieters again occupied a position intermediate between the clinical participants and the female controls.

When talking about an eating related situation, the patients with anorexia nervosa reported significantly more first order assumptions related to control over eating than the non-symptomatic dieters and the female controls. They also believed these assumptions significantly more, and found them significantly more distressing than did the non-clinical participants.

The patients with anorexia nervosa reported significantly more negative self-beliefs than the female controls. The non-symptomatic dieters occupied a position intermediate between the clinical participants and the female controls. Similar differences were reported in degree of rational and emotional belief, and distress associated with negative self-beliefs. All clinical participants identified an association between negative self-beliefs and negative early experiences. A large percentage also identified an association between second order assumptions related to eating, weight and shape, and negative early experiences. All the clinical participants, four non-symptomatic dieters and none of the female controls identified a link between their negative self-beliefs and dieting.

4.2 Methodological Considerations

Although these results lend either full, or considerable support, to the hypotheses, there are a number of methodological issues that need to be borne in mind when interpreting the results.

4.2.1 Design of the study

Given that most of the current study used a between groups design, interpretation of the results must be qualified by the fact that they represent group differences, which may over shadow individual differences within each group.

4.2.2 Significance of the findings

The small sample size and uneven distribution of the self-report questionnaire and interview data reduced the power of the analysis through necessitating the use of non-parametric statistical analysis.

4.2.3 Sample

Despite employing recruitment methods that aimed to obtain three groups broadly similar in age and educational status, the female controls were significantly younger than the non-symptomatic dieters, and had spent significantly longer in education than the patients with anorexia nervosa. However, observations during recruitment may shed light upon these differences. When attempting to recruit non-symptomatic dieters from local student populations, a high proportion of willing participants were screened out of the study as they engaged in symptomatic behaviours, including bingeing and self-induced vomiting. These tended to be the younger females as opposed to the

slightly older females, who invariably reported a 'sensible' approach to dieting. Differences in education may have arisen because some of the patients with anorexia nervosa had taken time out of school due to either in-patient or day-patient treatment.

In view of the fact that weight loss is a feature of anorexia nervosa, one would expect the clinical participants to have a significantly lower BMI than the non-clinical participants. However, the significantly higher BMIs reported by the non-symptomatic dieters compared to the female controls, may be attributed to the age difference previously mentioned.

Responses of the three groups on the self-report questionnaires were broadly comparable to the findings of previous studies (e.g. M.J. Cooper & Fairburn, 1992; M.J. Cooper *et al.*, 1998). Patients with anorexia nervosa and female controls were also broadly similar on the sub-scales of the Eating Disorder Belief Questionnaire, compared to findings reported by M.J. Cooper *et al.* (1997). Furthermore, DEBQ-R scores of the non-symptomatic dieters were broadly comparable to those reported by Van Strien *et al.* (1986).

However, the sample size was also relatively small and, given that participants were self selected, it is possible that the non-clinical samples in particular, were biased towards females who were particularly interested in the topic being researched. This may have led to an erroneous inflation of non-clinical group responses, possibly masking subtle differences between the clinical and non-clinical groups.

4.2.4 Self-report questionnaires

Despite being widely used in eating disorders research, some of the self-report questionnaires used in this study have pertinent limitations. The EAT houses questions that may not be specific to disordered eating attitudes in today's cultural climate. For example questions about eating meat may elicit spurious scores from healthy vegetarians, as may questions about regular periods answered by females who have contraceptive injections or implants. Similar criticism can be directed towards the BAI, for example, questions relating to abdominal discomfort may relate to irregular eating as opposed to anxiety. Furthermore, the EAT and BDI appear to overlap in symptomatology; for example, the EAT asks about early waking whilst the BDI asks about weight and appetite. Nevertheless, a study by Pulous (1996) suggests the BDI is a valid measure of depression in women with eating disorders that does not reflect an overlap in symptomatology.

4.2.5 Use of the semi-structured interview

As commented upon earlier, interviewing is commonly used to explore the complexities of eating disorders (Z. Cooper & Fairburn, 1987), possibly because it allows for fine-grained analysis of moment-to-moment thoughts (M.J. Cooper, 1997). Indeed, interviewing offers an opportunity for in-depth exploration, during which ambiguity can be clarified and misinterpretation averted. However, interviews also house a multitude of potential pitfalls. Not only can they be lengthy, but they also run the risk of being unwieldy and personally intrusive. These caveats were addressed during the pilot study to ensure that their potential impact was minimised.

The semi-structured interview used in the present study was based upon that developed by M.J. Cooper *et al.* (1998). The downward arrow technique (Burns, 1980) not only formed the backbone of the interview, but also allowed for standardised investigation of the areas of interest in a manner that minimised the potential for biased questioning. A standardised Likert rating scale was also employed so that participants could make comparison ratings across sections. The interview structure was modified during the pilot study in order to minimise length and repetitiveness, and strategies for dealing with potential distress were woven into the procedure. Clinical experience was also drawn upon throughout data collection and de-briefing time was set aside following each interview.

Given that the interview was developed in its current form, specifically for this study, no information relating to its psychometric properties was available prior to the study. Consequently, the initial part of the study involved establishing the extent to which the interview could be regarded as an accurate means of eliciting the data necessary to test the hypotheses. This was achieved through carrying out reliability and validity checks.

However, the above precautions failed to avert a number of pitfalls that may have adversely affected the accuracy and reliability of the data generated. Despite modification, the interview remained somewhat repetitive in places and took some clinical participants up to 90 minutes to complete. Although short breaks were offered during the longer interviews, it could be argued that 60-90 minutes is too long to expect patients with anorexia nervosa to concentrate, particularly given that impaired concentration is a physiological sequelae of starvation (Fairburn *et al.*, 1999).

Furthermore, not all the information collected during the interviews was drawn upon during data analysis, a factor that not only has implications for interview length, but also raises ethical concerns. However, in the present study this information was seen as a vehicle through which participants could access a clearer picture of their chosen situations, which helped maximise the accuracy of the cognitions recalled.

Disadvantages also surround the retrospective nature of the interview. Although the situations recalled by patients with anorexia nervosa all occurred during the week before the interview, some of those drawn upon by non-symptomatic dieters occurred more than six months prior to the interview. It is likely that these situations were too historical to be recalled with a high degree of accuracy and specificity.

One of the complex problems encountered during this study was the scoring of the interview. The lack of concern expressed by several of those in the non-clinical groups led an interesting conceptual dilemma to unfold; if a situation does not exist and the individual reports no distressing cognitions, should interview ratings, including degree of belief and associated distress, be coded as '0', missing data or not applicable? After much deliberation and consultation with a statistician it was decided that the data should be recorded as '0', since this led to the most accurate representation of the group. Indeed, whilst it was acknowledged that this may have artificially reduced the group mean, it was also felt that documenting this data as missing or not applicable would have led to an artificially inflated group mean, derived from a proportion of the group rather than from the group as a whole.

4.2.6 Inter-rater reliability of the semi-structured interview

The Wilcoxon matched pairs sign rank test indicated no significant discrepancies between the two raters on any of the items. Although this suggests that the interview can be used confidently by different researchers, this result may have been artificially enhanced by the fact that manuscripts rather than the audiotapes were rated, making the task one of coding, rather than identification and coding. Ideally, a higher proportion of cases would have been rated using the audiotapes, however this was precluded due to time constraints.

4.2.7 Test re-test reliability of the semi-structured interview

The results of the test re-test reliability analysis although good, were slightly less satisfactory; four of the 45 items being rated significantly differently at the two time points. Closer inspection of these differences revealed that some participants reported more thoughts during the second interview whilst others reported fewer, and some belief ratings increased whilst others decreased. A number of factors might account for these discrepancies.

The situations recalled during the second interview may have simply been more or less significant for the participant concerned. Alternatively, where the same situations were discussed during both interviews, the interim may have allowed participants to contemplate the situations discussed and questions posed, resulting in variation in the amount of information recalled during the second interview.

It is also possible that during the second interview participants were less motivated to talk about the finer details of their concerns, having already discussed them a few weeks earlier. This, coupled with the knowledge that denying the existence of concerns would result in faster progression through the interview, may have led some second interviews to be less fruitful than their first round counterparts.

Despite expecting a reliable interview to elicit similar assumption and core belief ratings at different points over time, the confounding variables discussed suggest that it is perhaps an over simplification to assume that differences in test re-test reliability necessarily indicate inadequacy in the interview's structure. Although the reliability analyses carried out in the present study produced promising results, limitations such as those previously discussed should be borne in mind when assessing a measure's psychometric properties.

4.2.8 Concurrent validity of the semi-structured interview

Items from the EAT and the EDBQ sub-scales that were used to check concurrent validity generally correlated well with the corresponding number of negative automatic thoughts and assumptions elicited by the interview. Items from the BDI, BAI, RSE and EDBQ-NS sub-scale also correlated well with the mean emotion and negative self-belief ratings.

The above discussions give prominence to a number of important issues concerning the use of semi-structured interviews, particularly with clinical populations. However, given the promising reliability and validity checks, and the fact that no known measure

assesses cognitions to the necessary specificity, it was felt that this interview was the most appropriate choice of measure for the present study. It is however, acknowledged that additional psychometric investigation would be required if this instrument were to be further developed as a useful research and clinical tool.

4.3 Interpretation of the Results

4.3.1 Negative automatic thoughts

The finding that patients with anorexia nervosa reported more eating related negative automatic thoughts when discussing an eating related incident, compared to non-clinical participants, supports earlier studies (M.J. Cooper & Fairburn, 1992) as well as the theoretical ideas proposed by Garner & Bemis (1982). Findings that patients with anorexia nervosa reported longer duration of thoughts and higher levels of belief and associated distress than non-symptomatic dieters and female controls also supports and extends the findings of Clark *et al.* (1989), who found that individuals with anorexia nervosa found their eating, weight and shape related thoughts more emotionally laden and plausible than controls.

However, the clear distinction between the female controls and both the patients with anorexia nervosa and the non-symptomatic dieters becomes slightly less evident when discussing concerns about weight and shape. Here, the non-symptomatic dieters reported eating, and weight and shape related automatic thoughts that were in some ways intermediate in characteristics between those identified by patients with anorexia nervosa and those identified by female controls. This finding gives prominence to the importance of separating areas of concern, whilst also indicating that eating related

thoughts may be more specific to anorexia nervosa than weight and shape related automatic thoughts. The latter may also be characteristic of non-symptomatic dieters, though to a lesser extent than patients with anorexia nervosa.

4.3.2 Underlying assumptions related to eating, and weight and shape as a means to acceptance by self and others

The finding that patients with anorexia nervosa reported significantly more second order assumptions related to eating, and weight and shape as a means to acceptance by self and others than non-symptomatic dieters and female controls supports earlier studies (M.J. Cooper *et al.*, 1997; M.J. Cooper *et al.*, 1998; Geller *et al.*, 1998; Mizes, 1992). Current findings also indicated that patients with anorexia nervosa found their eating, and weight and shape related assumptions significantly more believable and distressing than non-symptomatic dieters and female controls. This suggests that these assumptions may be more elaborated in clinical participants. However, the findings that non-symptomatic dieters reported significantly more self- and other-referent second order weight and shape related assumptions than the females controls (similar differences being reported in degree of belief and distress), suggests that these assumptions may also be characteristic of non-symptomatic dieters, though again to a lesser extent than patients with anorexia nervosa.

These results support the theoretical proposal that weight-related self-schemata are central to the psychopathology of anorexia nervosa (Vitousek & Hollon, 1990). However, they also give prominence to the potential importance of assumptions linking weight and shape to acceptance by others, and assumptions linking eating to acceptance

by self and others. Indeed, these findings raise the question of whether current thinking is in danger of becoming overly focused upon weight and shape at the expense of potentially pivotal eating related concerns.

4.3.3 Control over eating

The finding that patients with anorexia nervosa reported significantly more cognitions related to control over eating than non-symptomatic dieters and female controls, corroborates the earlier work of M.J. Cooper *et al.* (1997) and Fairburn & M.J. Cooper (1992). In addition to existing empirical evidence, the current findings also indicated that patients with anorexia nervosa found these cognitions significantly more believable and distressing than non-clinical participants. Whilst not marginalising the importance of weight and shape related assumptions, these findings again give prominence to the potential importance of eating related assumptions.

4.3.4 Negative self-beliefs

The finding that patients with anorexia nervosa reported significantly more negative self-beliefs than non-symptomatic dieters and female controls is also in line with current thinking (Butow *et al.*, 1993; M.J. Cooper *et al.*, 1996; M.J. Cooper *et al.*, 1997). Inspection of the clinical manuscripts suggested these beliefs also mirrored those found by M.J. Cooper *et al.* (1998), as they represented a reflection of global thinking about the self and were invariably coloured with themes of worthlessness, failure and uselessness. Extending the work of M.J. Cooper *et al.* (1998), the present study also revealed that patients with anorexia nervosa found these beliefs more rationally and emotionally believable, and more distressing than non-clinical participants.

These results also parallel the theoretical ideas proposed by Guidano & Liotti (1983) and Vitousek & Hollon (1990), who both regard negative self-beliefs as being central to the development of eating disorders.

4.3.5 Development of negative self-beliefs and second order assumptions

The finding that all patients with anorexia nervosa identified an association between negative self-beliefs and negative early experiences parallels the work of M.J. Cooper *et al.* (1998). Additional similarities pervade to the type of early experiences, which included family disharmony, transitional periods at school, bullying and developmental changes associated with puberty, in the present study. These findings also support the theoretical ideas of Guidano & Liotti (1983), who suggest that negative early experiences play a role in the development of negative self-beliefs. In addition to the current literature, associations were also identified between negative early experiences and the development of second order eating, and weight and shape related assumptions in a large percentage of the patients with anorexia nervosa.

Examination of the qualitative data (see Appendix VII for examples of thoughts, assumptions and core beliefs), led to the emergence of a number of noteworthy trends that, although not investigated statistically, may be clinically significant. Initial memories of negative self-beliefs often occurred at a younger age (8-14 years) than those of second order assumptions (around 15 years). Furthermore, the negative self-beliefs identified by the clinical participants were global in nature, i.e. they were applied across a wide range of situations, including those not related to eating, weight and shape. In stark contrast, those negative self-beliefs identified by non-symptomatic

dieters were primarily concerned with themes of beauty and attractiveness, and were only evident in the context of weight and shape.

4.3.6 Links between negative self-beliefs and dieting

As in the study conducted by M.J. Cooper *et al.* (1998), all participants with anorexia nervosa identified a link between negative self-beliefs and dieting. This finding was largely confined to the clinical group in the present study, with only four of the non-symptomatic dieters and none of the female controls identifying such as link. Also in line with M.J. Cooper *et al.* (1998), inspection of the manuscripts suggested these assumptions might function as *schema compensation* beliefs (Young, 1990). Clinical participants reported that successful dieting decreased the distress caused by their negative self-beliefs, and led to enhanced feelings of self-control, success and self-esteem.

Anecdotal evidence also indicated that the majority of clinical participants whole heartedly believed these assumptions. However, enhanced self-esteem appeared to be quickly negated by thoughts of inadequate dieting, which in turn reinforced negative self-beliefs. This process may be synonymous to the *schema maintenance* processes identified by Young (1990). These links were tainted with a contrasting flavour amongst non-symptomatic dieters. They regarded dieting as a means of enhancing their physical appearance and thus their self-confidence, rather than as a means of alleviating distress associated with pervasive feelings of worthless and failure. This reflects the narrow content and application of negative self-beliefs amongst non-symptomatic dieters previously discussed.

4.4 Clinical Implications

The findings of the present study raise a number of implications for the psychological treatment of anorexia nervosa. In relation to formulation, an essential component of cognitive-behavioural therapy, the findings highlight key cognitive issues that require careful exploration during the early stages of therapy. For example, rather than identifying assumptions as a group per se, it may be beneficial to differentiate between first and second order eating, and weight and shape related assumptions.

However, the current study corroborates ideas previously suggested by M.J. Cooper *et al.* (1998) and Vitousek & Hollon (1990), who argue that therapy should focus primarily on underlying assumptions. The finding that patients with anorexia nervosa and non-symptomatic dieters experience somewhat similar weight and shape related automatic thoughts suggests these cognitions should not form the sole focus of treatment. Indeed, alongside weight and shape related underlying assumptions, second order eating related assumptions may constitute an additional focal area for treatment, especially as these appeared to be particularly evident amongst the patients with anorexia nervosa.

The degree of belief and distress associated with assumptions may also constitute useful areas of investigation and monitoring in treatment. While assumptions in anorexia nervosa could be addressed using cognitive-behavioural techniques employed in other disorders, such as gathering evidence for and against assumptions and where appropriate, modifying assumptions and gathering evidence to support revised assumptions (Padesky, 1994; Wells, 1997), rating the degree of emotional and rational

belief and associated distress in old and revised assumptions may serve as a means of monitoring change over time.

The finding that patients with anorexia nervosa had more negative self-beliefs than non-symptomatic dieters supports Guidano & Liotti's (1983) suggestion that therapy should address problematic personal identity structures. Schema Focused Therapy (Young, 1990) may constitute an effective form of treatment when working at this level. Similarly, given that these beliefs were typically associated with negative early experiences and contain high levels of emotional belief as opposed to rational belief, techniques such as Guided Visual Imagery (Edwards, 1990) may also be usefully applied to the treatment of eating disorders, although this has yet to be investigated empirically.

The link between negative self-beliefs and dieting is also an important area for therapeutic input, since such links appear fundamental in driving behaviour. Therapeutic time may usefully be spent helping clients develop an insight into the motivations that lie beneath their behaviour, including links with negative self-beliefs. The perceived benefits and pitfalls of dieting, as well as rational and irrational beliefs about the long term impact of dieting may also prove fruitful areas of exploration.

4.5 Suggestions for Future Research

The literature review highlights numerous areas that require further investigation in the field of eating disorders. Although the present study takes the empirical exploration of cognitive processes forward another step, much investigation and debate remains to be done.

In relation to the instruments used in eating disorders research, few have established psychometric properties. While the current measure has promising properties, this interview like many other instruments, requires more psychometric investigation.

The situation specific findings in the present study highlight the importance of future studies separating eating related concerns from weight and shape related concerns. It is argued that such studies may shed further light upon the relative importance of specific assumptions in the development and maintenance of anorexia nervosa. Whilst the current study does not disagree with the central positioning of weight and shape related assumptions presented in Vitousek & Hollon's (1990) model, it is argued that current thinking may be in danger of placing too much focus upon this area, possibly at the expense of pivotal eating related assumptions.

The qualitative material presented highlights the need for further investigation into the content of underlying self- and other-referent second order eating related assumptions, their developmental history and their links with dieting behaviour. Although the recent theoretical focus upon control over eating in anorexia nervosa (Fairburn *et al.*, 1999) may go some way to redressing this imbalance, the present study does not indicate

whether control is implicitly tied to the concept of eating in anorexia nervosa.

Similar studies are required in relation to negative self-beliefs; particularly into their development and links with concepts of eating, and weight and shape. Although the present study identified an association between negative early experiences and negative self-beliefs, this doesn't necessarily imply causality. Indeed this mechanism continues to require more detailed qualitative and quantitative investigation.

The qualitative differences noted in the present study highlight M.J. Cooper's (1997) observation that little has been written about the exact content of such cognitions. This may be linked to the difficulties associated with qualitative research, which include data interpretation. Qualitative analysis packages designed for the storage, retrieval and analysis of text, such as NUD.IST (Qualitative Solutions & Research, 1997), may go some way to providing a means of investigating the content of assumptions and beliefs in a more rigorous fashion. Quantitative studies may also benefit from larger sample sizes, which may increase the normality of distribution, thus allowing for more rigorous parametric statistical analysis.

Appropriate control groups, including non-symptomatic dieters, symptomatic dieters and women with depression, also need to be incorporated into studies if subtle differences in cognitive processes are to be clarified. Indeed, it would have been interesting to have extended this study to include a symptomatic dieting group and a group of depressed women, however this was precluded by time constraints.

Although Schema Focused Therapy and Guided Imagery have been used in the treatment of other psychological disorders (e.g. Grigsby, 1987; Kennerley, 1996), controlled treatment trials applying these techniques to patients with anorexia nervosa remain elusive. Effective treatment using these techniques would provide additional indirect evidence for the presence of cognitive disturbance at the level of core beliefs in anorexia nervosa.

4.6 Conclusion

In conclusion, this study confirms that when asked to discuss eating related concerns, patients with anorexia nervosa experience more eating related negative automatic thoughts than non-symptomatic dieters and female controls, similar differences being found in duration, degree of belief and associated distress. When asked to discuss concerns about weight and shape, patients with anorexia nervosa and non-symptomatic dieters report more eating, and weight and shape related thoughts than female controls, similar differences being found in degree of belief. Patients with anorexia nervosa also report longer duration of weight and shape related thoughts than non-symptomatic dieters, and longer duration of eating, and weight and shape related thoughts than female controls. Furthermore, non-symptomatic dieters found their most distressing weight and shape related thought less distressing than patients with anorexia nervosa and more distressing than female controls.

This study also found that patients with anorexia nervosa have more underlying assumptions related to eating, and weight and shape as a means to acceptance by self and others, and control over eating than non-symptomatic dieters and female controls,

similar differences being found in degree of belief and associated distress. Non-symptomatic dieters were found to have more weight and shape related assumptions concerned with acceptance by self and others than female controls, again similar differences being found in degree of belief and associated distress.

Clinical participants were also found to have more negative self-beliefs than non-clinical participants, similar differences being reported in degree of rational and emotional belief, and associated distress. These beliefs and second order assumptions were invariably associated with negative early experiences by the patients with anorexia nervosa, who also identified a link between dieting and negative self-beliefs. On a final note, although this study addresses a number of specific hypotheses, in doing so it highlights additional avenues that require further investigation and clarification if our understanding of anorexia nervosa is to be refined and more effective treatments developed.

REFERENCES

Allaz, A.F., Bernstein, M., Rouget, P., Archinard, M. & Morabia, A. (1998). Body weight preoccupation in middle-aged and ageing women: A general population survey. International Journal of Eating Disorders, 23, 287-294.

American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders. Forth Edition. Washington DC: American Psychiatric Association.

Anderson, A.E. (1984). Anorexia nervosa and bulimia in adolescent males. Paediatric Annals, 13, 901-904.

Beck, A.T. (1976). Cognitive Therapy and The Emotional Disorders. New York: International Universities Press.

Beck, A.T., Epstein, N., Brown, G. & Steer, R.A. (1988). An inventory for measuring clinical anxiety: psychometric properties. Journal of Consulting and Clinical Psychology. 56(6), 893-897.

Beck, A., Steer, R & Garbin, M. (1988). Psychometric properties of the Beck Depression Inventory: twenty-five years of evaluation. Clinical Psychology Review, 8, 77-100.

Beck, A., Ward, C., Mendelson, M., Mock, J. & Erbaugh, J. (1961). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.

Braun, D.L., Sunday, S.R., Huang, A. & Halim, K.A. (1999). More males seek treatment for eating disorders. International Journal of Eating Disorders, 25(4), 415-424.

Bruch, H. (1973). Eating Disorders: Obesity, Anorexia Nervosa and the Person Within. New York: Basic Books.

Burns, D.D. (1980). Feeling Good: The Mood Therapy Book. New York: New American Library.

Butow, P., Beaumont, P. & Touyz, S.W. (1993). Cognitive processes in dieting disorders. International Journal of Eating Disorders, 14(3), 319-329.

Casper, R.C. (1996). Outcome of anorexia nervosa with teenage onset. Journal of Youth and Adolescence, 25, 413-418.

Channon, S., De Silva, P., Hemsley, D. & Perkins, R. (1989). A controlled trial of cognitive-behavioural and behavioural treatment of anorexia nervosa. Behaviour Research and Therapy, 27, 529-535.

Clark, D.A., Feldman, J. & P. Channon, S. (1989). Dysfunctional thinking in anorexia and bulimia nervosa. Cognitive Therapy and Research, 13, 377-387.

Cooper, M.J. (1997). Cognitive theory in anorexia nervosa: A review. Behavioural and Cognitive Psychotherapy, 25, 113-145.

Cooper, M.J., Clark, D.M. & Fairburn, C.G. (1993). An experimental study of the relationship between thoughts and eating behaviour in bulimia nervosa. Behaviour, Research and Therapy, 31, 749-757.

Cooper, M.J., Cohen-Tovée, E., Todd, G., Wells, A. & Tovée, M. (1997). The Eating Disorder Belief Questionnaire: preliminary development. Behaviour, Research and Therapy, 35(4), 381-388.

Cooper, M.J. & Fairburn, C.G. (1992). Thoughts about eating, weight and shape in anorexia nervosa and bulimia nervosa. Behaviour, Research and Therapy, 30(5), 501-511.

Cooper. M.J., Todd, G. & Cohen-Tovée, E. (1996). Core beliefs in eating disorders. International Cognitive Therapy Newsletter, 10(2), 2-3.

Cooper, M.J., Todd, G. & Wells. A. (1998). Content, origin and consequences of dysfunctional beliefs in anorexia nervosa and bulimia nervosa. Journal of Cognitive Psychotherapy: An International Quarterly, 12(3), 213-230.

Cooper, P.J. & Fairburn, C.G. (1984). Cognitive-behavioural therapy for anorexia nervosa: Some preliminary findings. Journal of Psychosomatic Research, 28, 493-500.

Cooper, Z. & Fairburn, C.G. (1987). The Eating Disorders Examination: A semi-structured interview for the assessment of the specific psychopathology of eating disorders. International Journal of Eating Disorders, 6(6), 1-8.

Dare, C. & Crowther, C. (1995). Psychodynamic models of eating disorders. In G.I. Szmuler, C. Dare & J. Treasure (Eds), Handbook of Eating Disorders: Theory, Treatment and Research, pp. 125-139 UK: Wiley.

Edwards, D.J.A. (1990). Cognitive therapy and the restructuring of early memories through guided imagery. Journal of Cognitive Psychotherapy, 8, 862-886.

Eisler, I. (1995). Family models of eating disorders. In G. Szmuler, C. Dare & J. Treasure (Eds), Handbook of Eating Disorders: Theory, Treatment and Research, pp. 155-176 UK: Wiley.

Fairburn, C.G. & Beglin, S.J. (1994). Assessment of eating disorders: interview or self report questionnaire? International Journal of Eating Disorders, 16(4), 363-370.

Fairburn, C.G., Cooper, Z. & Cooper, P.J. (1986). The clinical features and maintenance of bulimia nervosa. In K.D. Brownell and J.P Foreyt (Eds), Physiology, Psychology, and Treatment of the Eating Disorders. New York: Basic Books.

Fairburn, C.G., Shafran, R. & Cooper, Z. (1999). A cognitive-behavioural theory of anorexia nervosa. Behaviour Research and Therapy, 37, 1-13.

Fombonne, E. (1995). Anorexia nervosa: no evidence of an increase. British Journal of Psychiatry, 166, 464-471.

Garner, D.M. & Bemis, K.M. (1982). A cognitive-behavioural approach to anorexia nervosa. Cognitive Therapy and Research, 6, 123-150.

Garner, D.M. & Garfinkel, P. E. (1979). The Eating Attitudes Test: An index of the symptoms of anorexia nervosa. Psychological Medicine, 9, 273-279.

Garner, D.M. & Garfinkel, P.E. (1980). Socio-cultural factors in the development of anorexia nervosa. Psychological Medicine, 10, 647-656.

Geller, J., Johnson, C. & Madsen, K. (1997). A new measure of the role of shape and weight in self-concept: The Shape and Weight Based Self-Esteem Inventory. Cognitive Therapy and Research, 21, 5-24.

Geller, J., Johnston, C., Madsen, K., Goldner, E .M., Remick, R.A. & Birmingham, C.L. (1998). Shape and weight based self-esteem and the eating disorders. International Journal of Eating Disorders, 24(3), 285-298.

Gillberg, I.C. & Rastam, M. (1998). The etiology of anorexia nervosa. In H. Hock, J. Treasure & M, Katzmann (1998). Neurobiology in the Treatment of Eating Disorders, pp. 127-141 Chichester: Wiley.

Gillberg, I.C., Rastam, M. & Gillberg, C. (1995). Anorexia nervosa 6 years after onset. Part 1. Personality disorders. Comprehensive Psychiatry, 36, 61-69.

Griffiths, R.A., Beumont, P.J., Giannakopoulos, E., Russell, J., Schotte, D., Thornton, C., Touyz, S.W. & Varano, P. (1999). Measuring self-esteem in dieting disordered patients: The validity of the Rosenberg and Coopersmith contrasted. International Journal of Eating Disorders, 25(2), 227-231.

Grigg, M., Bowman, J. & Redman, S. (1996). Disordered eating and unhealthy weight reduction practices among adolescent females. Preventative Medicine, 25(6), 748-756.

Grigsby, J.P. (1987). The use of imagery in the treatment of post traumatic stress disorder. Journal of Nervous and Mental Disease, 175(1), 55-59.

Guidano, V.F. & Liotti, G. (1983). Cognitive Processes and Emotional Disorders: A Structured Approach to Psychotherapy. New York: Guildford Press.

Hamilton, L.H., Brookes-Gunn, J. & Warren, M.P. (1985). Socio-cultural influences on eating disorders in professional ballet dancers. International Journal of Eating Disorders, 4, 465-477.

Hesse-Biber, S. (1996). Am I thin enough yet? New York: Oxford University Press.

Hoeken, D.V., Lucus, A.R. & Hoek, H.W. (1998). Epidemiology. In H. Hock, J. Treasure & M. Katzmann (Eds), Neurobiology in the Treatment of Eating Disorders, pp. 97-126 Chichester: Wiley.

Hsu, G.L.K. (1990). Etiology. In G.L.K. Hsu, Eating Disorders pp. 77-103 New York: The Guildford Press.

Kennerley, H. (1996). Cognitive therapy of dissociative symptoms associated with trauma. British Journal of Clinical Psychology, 35(3), 325-340.

Khandelwal, S.K., Sharan, P. & Saxena, S (1995). Eating Disorders: An Indian Perspective. International Journal of Social Psychiatry, 41, 132-146.

Kortegaard-Sandal, L., Horder, K., Jorgensen, J. & Gillberg, C. (1997). Is anorexia nervosa a genetic disorder? Evidence from a population study of twins. In H. Hock, J. Treasure & M. Katzmann (Eds), Neurobiology in the Treatment of Eating Disorders, pp. 132 Chichester: Wiley.

Lask, B. & Bryant-Waugh, R. (1992). Early onset anorexia nervosa and related eating disorders. Journal of Child Psychology and Psychiatry, 33(1), 281-300.

Lee, S., Lee, A.M., Leung, T. & Yu. H. (1997). Psychometric properties of the Eating Disorders Inventory (EDI-1) in a non-clinical Chinese population in Hong Kong. International Journal of Eating Disorders, 21, 187-194.

Lucas, A.R., Beard, C.M., O'Fallon, W.M. & Kurland, L.T. (1991). 50 year trends in the incidence of anorexia nervosa in Rotchester, Minn.: A population-based study. American Journal of Psychiatry, 148, 917-922.

Minuchin, S., Rosman, B.L. & Baker, L. (1978). Psychosomatic Families: Anorexia Nervosa in Context. Cambridge, Massachusetts: Harvard University Press.

Mizes, J.S. (1992). Validity of the Mizes Anorexic 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 Anorectic Cognitions Questionnaire. Addictive Behaviours, 14, 589-594.

NUD.IST Qualitative Solutions & Research Pty Ltd (1997). QSR NUD.IST: User Guide Second Edition Software for Qualitative Data Analysis. London: Qualitative Solutions and Research Pty Ltd.

Padesky, C.A. (1994). Schema change processes in cognitive therapy. Clinical Psychology and Psychotherapy, 1, 267-278.

Padesky, C.A. & Mooney, K.A. (1993). Cognitive therapy of personality disorders: Schema change processes. Workshop presented at the European Congress of Behaviour and Cognitive Therapy, London, September.

Pagsberg, A.K. & Wang, A.R. (1994). Epidemiology of anorexia nervosa and bulimia nervosa in Bornholm County, Denmark, 1970-1989. Acta Psychiatrica Scandinavica, 90, 259-265.

Patton, G.C., Carlin, J.B., Shao, Q., Hibbert, M.E., Rosier, M., Selzer, R. & Bowes, G. (1997). Adolescent dieting: Healthy weight control or borderline eating disorder? Journal of Child Psychology and Psychiatry and Allied Disciplines, 38(3), 299-306.

Patton, G.C., Johnson-Sabine., E., Wood, K., Mann, A.H. & Wakling, A. (1990). Abnormal eating attitudes in London school-girls – a prospective epidemiological study: Outcome at 12 month follow-up. Psychological Medicine, 20, 383-394.

Pawluck, D.E. & Gorey, K.M. (1998). Secular trends in the incidence of anorexia nervosa: Integrative review of population-based studies. International Journal of Eating Disorders, 23(4), 347-352.

Peveler, R.C. & Fairburn, C.G. (1989). Anorexia nervosa in association with diabetes mellitus – a cognitive-behavioural approach to treatment. Behaviour Research and Therapy, 27(1), 95-99.

Pulous, S. (1996). Validity of the Beck Depression Inventory with eating disordered patients. Educational and Psychological Measurement, 56(1), 139-141.

Rosenberg, M. (1965). Society and Adolescent Self Image. Princeton NJ: Princeton University Press.

Rutherford, J., McGuffin, P., Katza, R.J. & Murray, R.M. (1993). Genetic influences on eating attitudes in an abnormal female twin population. Psychological Medicine, 23, 425-436.

Slade, P. D. (1982). Towards a functional analysis of anorexia nervosa and bulimia nervosa. British Journal of Clinical Psychology, 21, 167-179.

Spitzer, R., Williams, J. & Gibbons, M. (1996). Instruction Manual for the Structured Clinical Interview for DSM-IV. New York: New York State Psychiatric Institute.

SPSS Inc. (1997). SPSS Advanced Statistics 7.5. Chicago: SPSS Inc.

Szmukler, G.I. (1985). The epidemiology of anorexia nervosa and bulimia. Journal of Psychiatric Research, 19, 143-153.

Szmukler, G.I., McCance, C., McCrone, L. & Hunter, D. (1986). Anorexia nervosa: A psychiatric case register study from Aberdeen. Psychological Medicine, 16, 49-58.

Szmukler, G.I. & Patton, (1995). Socio-cultural Models of Eating Disorders. In G. I. Szmukler, C. Dare & J. Treasure (Eds), Handbook of Eating Disorders: Theory, Treatment and Research, pp. 177-192 UK: Wiley.

Treasure, J. (1995). (April 24-27). Families, Food and Feeding. Paper read at the Eating Disorders '95 Conference. London.

Turnball, S., Ward, A., Treasure, J., Jick, H. & Derby, L.(1996). The demand for eating disorder care. An epidemiological study using the General Practice Research Database. British Journal of Psychiatry, 169, 705-712.

Van Strien, T., Fritjers, J.E.R., Berger, G.P.A. & Defares, P.B. (1986). The Dutch Eating Behaviour Questionnaire (DEBQ) for assessment of restrained emotional and external eating behaviours. International Journal of Eating Disorders, 5, 295-315.

Vitousek, K.B. (1996). The current status of cognitive-behavioural models of anorexia nervosa and bulimia nervosa. In P. Salkovskis (Ed.), Frontiers of Cognitive Therapy, pp. 383-418 New York: Guildford Press.

Vitousek, K.B. & Hollon, S.D. (1990). The investigation of schematic content and processing in the eating disorders. Cognitive Theory and Research, 14, 191-214.

Vitousek, K.B., Watson, S. & Wilson, G.T. (1998). Enhancing motivation for change in treatment-resistant eating disorders. Clinical Psychology Review, 18(4), 391-420.

Waterhouse, D. (1997). Like Mother, Like Daughter: How to Break Free from the Female Food Trap. New York: Thorsons.

Wells, A. (1997). Cognitive Therapy of Anxiety Disorders: A Practice Manual and Conceptual Guide. Chichester: Wiley.

Williamson, D.A., Cubic, B.A. & Gleaves, D.H. (1993). Equivalence of body image disturbances in anorexia nervosa and bulimia nervosa. Journal of Abnormal Psychology, 102, 1- 4.

Young, J.E. (1990). Cognitive Therapy for Personality Disorders: A Schema-Focused Approach. Sarasota: Professional Resource Exchange.

Zotter, D. & Crowther, J. (1991). The role of cognitions in bulimia nervosa. Cognitive Therapy and Research, 15(5), 413-426.

APPENDIX I

Screening Interview for the Non-Clinical Participants

SCREENING INTERVIEW FOR THE NON-CLINICAL PARTICIPANTS

Section A

Have you been trying to lose weight in the last four weeks? YES/NO
(It doesn't matter if you have been successful or not)

If YES, how have you tried to lose weight?

Setting a definite calorie limit YES/NO
Strict limit on quantity of foods eaten YES/NO
Strict rules on what can be eaten YES/NO
Following a standard reducing diet YES/NO
Having diet drinks instead of meals YES/NO

On how many days in the last four weeks have you tried to lose weight using one or more of these methods? ----------
(Inclusion in dieting group = YES to 2+of the above and dieting for the past month)

Section B

Have you ever had a time when you weighted much less than other people thought you ought to weight YES/NO

How much did you weigh ----------
How old were you ----------
How tall were you ----------

Section C

Have you ever had one or more eating binges during which you ate a lot of food in a short period of time – more than most people would eat in a similar period of time in similar circumstances YES/NO

During those binges did you feel that your eating was out of control YES/NO
(If YES to both exclude)

Section D

Have you ever done any of the following to lose weight

Vomited/made yourself sick YES/NO
Tried to vomit/make yourself sick but not succeeded YES/NO
Taken laxatives YES/NO
Taken diuretics YES/NO
(If YES to any exclude)

Section E

Have you ever had treatment or help for a psychological or psychiatric problem YES/NO
(If YES exclude)

Inclusion criteria for control group = NO to sections A, B, C, D, E.
Inclusion criteria for non-symptomatic dieting group = YES to section A and NO to sections B, C, D, E.

APPENDIX II

Demographic Data

Self Report Questionnaires:

Eating Attitudes Test (EAT: Garner & Garfinkel, 1979)

Eating Disorder Belief Questionnaire
(EDBQ: Cooper, Cohen-Tovee, Todd, Wells & Tovee, 1997)

Rosenberg Self-Esteem Scale (RSE: Rosenberg, 1965)

Beck Anxiety Inventory (BAI: Beck, Epstein, Brown & Steer, 1988)

Beck Depression Inventory (BDI: Beck, Ward, Mendelson, Mock & Erbaugh, 1961)

'Restraint' sub-scale of the Dutch Eating Behaviour Questionnaire
(Van Strien, Fritjers, Berger & Defares, 1986)

Eating, Weight and Shape Survey

Please help us with our survey by providing us with a few details about yourself and filling in these short questionnaires. There is no need to add your name to your details and no need to add your name to any of the questionnaires.

About Yourself

Age:

Sex: M / F (please circle)

Ethnic origin:

Number of years in full time education:

Occupation:

Weight:

Height:

Eating Attitudes Test (Garner and Garfinkel, 1979)

Place an 'X' under the column which best applies to each of the numbered statements. All results will be confidential. Most of the questions relate to food or eating, although other types of question have been included. Please answer each question carefully.

	Always	Very often	Often	Sometimes	Rarely	Never
1. Like eating with other people						
2. Prepare food for others but do not eat what I cook						
3. Become anxious prior to eating						
4. Am terrified about being overweight						
5. Avoid eating when I am hungry						
6. Find myself preoccupied with food						
7. Have gone on eating binges where I feel that I may not be able to stop						
8. Cut my food into small pieces						
9. Aware of the calorie content of the foods I eat						
10. Particularly avoid foods with a high carbohydrate content (eg bread, potatoes, rice, etc.)						
11. Feel bloated after meals						
12. Feel that others would prefer if I ate more						
13. Vomit after I have eaten						
14. Feel extremely guilty after eating						
15. Am preoccupied with a desire to be thinner						
16. Exercise strenuously to burn off calories						
17. Weigh myself several times a day						
18. Like my clothes to fit tightly						
19. Enjoy eating meat						
20. Wake up early in the morning						
21. Eat the same foods day after day						

22. Think about burning up calories when I exercise						
23. Have regular menstrual periods						
24. Other people think that I am too thin						
25. Am preoccupied with the thought of having fat on my body						
26. Take longer than others to eat my meals						
27. Enjoy eating at restaurants						
28. Take laxatives						
29. Avoid foods with sugar in them						
30. Eat diet foods						
31. Feel that food controls my life						
32. Display self control around food						
33. Feel that others pressure me to eat						
34. Give too much time and thought to food						
35. Suffer from constipation						
36. Feel uncomfortable after eating sweets						
37. Engage in dieting behaviour						
38. Like my stomach to be empty						
39. Enjoy trying new rich foods						
40. Have the impulse to vomit after meals						

BELIEFS QUESTIONNAIRE

Name: Date:

Instructions: Listed below are different attitudes or beliefs which people sometimes hold. Please read each statement carefully and decide how much you agree or disagree with the statement. Base your answer on what you emotionally believe or feel, not on what you rationally believe to be true. Choose the rating which best describes what you usually believe or what you believe most of the time rather than how you feel right now. Write the number in the space before the statement.

Rating Scale:

0 10 20 30 40 50 60 70 80 90 100

I do not usually believe this at all — I am usually completely convinced that this is true

..... 1 I'm unloveable

..... 2 If my flesh is firm I'm more attractive

..... 3 I'm ugly

..... 4 I'm useless

..... 5 I'm a failure

..... 6 If I eat a forbidden food I won't be able to stop

..... 7 If my stomach is flat I'll be more desirable

..... 8 If I lose weight I'll count more in the world

..... 9 If I eat desserts or puddings I'll get fat

..... 10 If I stay hungry I can guard against losing control and gettting fat

..... 11 I'm all alone

..... 12 If I eat bad foods such as fats, sweets, bread and cereals they will turn into fat

..... 13 I'm no good

..... 14 If I eat normally I'll gain weight

..... 15 If I eat three meals a day like other people I'll get fat

..... 16 If I've eaten something I have to get rid of it as soon as possible

..... 17 I'm not a likeable person

..... 18 If my hips are thin people will approve of me

..... 19 If I lose weight people will be friendly and want to get to know me

..... 20 If I gain weight it means I'm a bad person

..... 21 If my thighs are firm it means I'm a better person

..... 22 I don't like myself very much

..... 23 If I gain weight I'm nothing

..... 24 If my hips are narrow it means I'm successful

..... 25 If I lose weight people will care about me

..... 26 If my body shape is in proportion people will love me

..... 27 I'm dull

..... 28 If I binge and vomit I can stay in control

..... 29 I'm stupid

..... 30 If my body is lean I can feel good about myself

..... 31 If my bottom is small people will take me seriously

..... 32 Body fat/flabbiness is disgusting

Rosenberg Self Esteem Inventory (Rosenberg 1965)

Please place an 'X' in the column which you think most nearly applies to you.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. On the whole, I am satisfied with myself				
2. At times I think that I am no good at all				
3. I feel that I have a number of good qualities				
4. I am able to do things as well as most people				
5. I feel I do not have much to be proud of				
6. I feel useless at times				
7. I feel that I am a person of worth, at least on an equal plane with others				
8. I wish I could have more respect for myself				
9. All in all I am inclined to feel that I am a failure				
10.I take a positive attitude towards myself				

BAI

Name: ..... Date: .....

Below is a list of common symptoms of anxiety. Please carefully read item in the list. Indicate how much you have been bothered by each symptom during the PAST WEEK, INCLUDING TODAY, by placing an X in the corresponding space in the column next to each symptom.

	NOT AT ALL	MILDLY It did not bother me much	MODERATELY It was very unpleasant but I could stand it	SEVERELY I could barely stand it
1. Numbness or tingling				
2. Feeling hot				
3. Wobbliness in legs				
4. Unable to relax				
5. Fear of the worst happening				
6. Dizzy or light-headed				
7. Heart pounding or racing				
8. Unsteady				
9. Terrified				
10. Nervous				
11. Feelings of choking				
12. Hands trembling				
13. Shaky				
14. Fear of losing control				
15. Difficulty breathing				
16. Fear of dying				
17. Scared				
18. Indigestion or discomfort in abdomen				
19. Faint				
20. Face flushed				
21. Sweating (not due to heat)				

BDI™

Date: _____

_____ Marital Status: _____ Age: _____ Sex: _____

tion: _____ Education: _____

estionnaire consists of 21 groups of statements. After reading each group of statements carefully, ne number (0, 1, 2 or 3) next to the one statement in each group which **best** describes the way you en feeling the **past week, including today.** If several statements within a group seem to apply equally rcle each one. **Be sure to read all the statements in each group before making your choice.**

	0	I do not feel sad.
	1	I feel sad.
	2	I am sad all the time and I can't snap out of it.
	3	I am so sad or unhappy that I can't stand it.
	0	I am not particularly discouraged about the future.
	1	I feel discouraged about the future.
	2	I feel I have nothing to look forward to.
	3	I feel that the future is hopeless and that things cannot improve.
	0	I do not feel like a failure.
	1	I feel I have failed more than the average person.
	2	As I look back on my life, all I can see is a lot of failures.
	3	I feel I am a complete failure as a person.
	0	I get as much satisfaction out of things as I used to.
	1	I don't enjoy things the way I used to.
	2	I don't get real satisfaction out of anything anymore.
	3	I am dissatisfied or bored with everything.
	0	I don't feel particularly guilty.
	1	I feel guilty a good part of the time.
	2	I feel quite guilty most of the time.
	3	I feel guilty all of the time.
	0	I don't feel I am being punished.
	1	I feel I may be punished.
	2	I expect to be punished.
	3	I feel I am being punished.
	0	I don't feel disappointed in myself.
	1	I am disappointed in myself.
	2	I am disgusted with myself.
	3	I hate myself.
8	0	I don't feel I am any worse than anybody else.
	1	I am critical of myself for my weaknesses or mistakes.
	2	I blame myself all the time for my faults.
	3	I blame myself for everything bad that happens.
9	0	I don't have any thoughts of killing myself.
	1	I have thoughts of killing myself, but I would not carry them out.
	2	I would like to kill myself.
	3	I would kill myself if I had the chance.
10	0	I don't cry any more than usual.
	1	I cry more now than I used to.
	2	I cry all the time now.
	3	I used to be able to cry, but now I can't cry even though I want to.
11	0	I am no more irritated now than I ever am.
	1	I get annoyed or irritated more easily than I used to.
	2	I feel irritated all the time now.
	3	I don't get irritated at all by the things that used to irritate me.
12	0	I have not lost interest in other people.
	1	I am less interested in other people than I used to be.
	2	I have lost most of my interest in other people.
	3	I have lost all of my interest in other people.
13	0	I make decisions about as well as I ever could.
	1	I put off making decisions more than I used to.
	2	I have greater difficulty in making decisions than before.
	3	I can't make decisions at all anymore.

_____ Subtotal Page 1

CONTINUED ON BACK

9-018359

0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel that there are permanent changes in my appearance that make me look unattractive.
3 I believe that I look ugly.

0 I can work about as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.

0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.

0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.

19
0 I haven't lost much weight, if any, lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.

I am purposely trying to lose weight by eating less. Yes _____ No _____

20
0 I am no more worried about my health than usual.
1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
2 I am very worried about physical problems and it's hard to think of much else.
3 I am so worried about my physical problems that I cannot think about anything else.

21
0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

_____ Subtotal Page 2

_____ Subtotal Page 1

_____ Total Score

DEBQ-R

Please read each question carefully and circle the number which best describes your usual behaviour.

Questions	Never	Seldom	Some-times	Often	Very Often
1. When you have put on weight do you eat less than you usually do?	1	2	3	4	5
2. Do you try to eat less at meal times than you would like to eat?	1	2	3	4	5
3. How often do you refuse food or drink offered to you because you are concerned about your weight?	1	2	3	4	5
4. Do you watch exactly what you eat?	1	2	3	4	5
5. Do you deliberately eat foods that are slimming?	1	2	3	4	5
6. When you have eaten too much, do you eat less than usual the following day?	1	2	3	4	5
7. Do you deliberately eat less in order not to become heavier?	1	2	3	4	5
8. How often do you try not to eat between meals because you are watching your weight?	1	2	3	4	5
9. How often do you try not to eat in the evenings because you are watching your weight?	1	2	3	4	5
10. Do you take your weight into account with what you eat?	1	2	3	4	5

APPENDIX III

The Semi-Structured Interview

CORE BELIEFS AND EARLY MEMORY INTERVIEW

SECTION 1: EATING

When was the last time you felt really worried, anxious or bad about your eating? (not a binge episode).

- obtain brief description

Imagine that situation (could be right now).

- for how long did you feel (or have you been feeling) worried, anxious or bad about your eating? (for identified situation only).

------ hours -------minutes

How did you (or do you) feel?

- identify all feelings; prompt for more.

- rate each feeling on a customised 0-100 visual analogue scale, e.g. anxious, 0=not at all anxious, 100=as anxious as I have ever felt.

Feeling	rating

What thoughts did you (or do you) have?

- note duration of each thought.

- rate belief in each thought e.g. I'll get fat, 0=I did not believe this thought at all, 100=I was completely convinced that this thought was true.

Thought (fat/weight gain related)	Duration	Belief

Thought (eating related)	Duration	Belief

Which is the most distressing thought (fat/weight gain related)?

- identify thought and rate how much the participant was distressed by this thought, 0=not at all distressed, 100=as distressed as I have ever felt.

Thought	Distress

Which is the most distressing thought (eating related)?

- identify thought and rate how much the participant was distressed by this thought, 0=not at all distressed, 100=as distressed as I have ever felt.

Thought	Distress

IF NO EATING RELATED THOUGHTS GO ONTO SECTION 2

Use the downward arrow technique to pursue the most distressing **eating related thought** (remember that it may not lead anywhere).

To access eating related assumptions (self-referent):
- remind what most distressing eating related thought is, e.g. I shouldn't be eating this. Given you are/did .....
- what would that mean about you or say about you?
- what's the worst that it could mean?

Prompt for all assumptions.
- rate belief in each assumption, 0=I did not believe this at all, 100=I was completely convinced that this was true.

- rate how much the participant was distressed by each assumption, 0=not at all distressed, 100=as distressed as I have ever felt.

Assumption	Belief	Distress

- identify participant's first memory of these assumptions. Where were you? How old were you?

Age_____

What was happening in your life at this time? obtain brief description.

Do the assumptions reflect your current beliefs? Yes/No

Use the downward arrow technique to pursue the assumptions identified above

- suppose that were true, what would be so bad about that?
- what would that mean about you or say about you?
- what's the worst that it could mean or say about you?

Identify core beliefs

- Obtain separate ratings for rational and emotional belief.
- what do you think when you consider/look at all the evidence and consider it rationally?
- what do you think when you think about how you feel deep inside, regardless of what your rational side knows to be true?
- rate how much the participant was distressed by each belief, 0=not at all distressed, 100=as distressed as I have ever felt.

Negative self belief	R	E	Distress

- identify participant's first memory of these beliefs. Where were you? How old were you?

Age_____

What was happening in your life at this time?

Do the beliefs reflect your current beliefs? Yes/No

When you feel distressed and think I'm (summarise core beliefs) is there anything you can do or actually do to change how you feel or think?

Yes/No

Do you feel that the beliefs I'm (summarise core beliefs) and the distress that goes with them are connected in some way to your attempts to diet/lose weight/prevent weight gain?

Yes/No

In what way?

Is dieting/losing weight/attempting to prevent weight gain helping with these beliefs and the distress that goes with them?

Yes/No

In what way?

To access eating related assumptions (other-referent):
- remind what most distressing eating related thought is, e.g. I shouldn't be eating this. Given you are/did ....
- what do you think other people would think about you or do to you?
- what's the worst that they could think or do to you?

Prompt for all assumptions.

Assumption	Belief	Distress

- identify participant's first memory of these assumptions. Where were you? How old were you?

Age_____

What was happening in your life at this time? When did you first become concerned about what others thought of you?

Do the assumptions reflect your current beliefs? Yes/No

Use the downward arrow technique to pursue the assumptions identified above.

- suppose that were true, what would be so bad about that?
- what's the worst that it could mean or say about you?

Core beliefs may be the same as before. If that seems to be the case, just check all beliefs are the same, with same ratings.

Same Yes/No

Ask if there are additional beliefs. If there are, rate below and continue to end of section.

Identify core beliefs.

- Obtain separate ratings for rational and emotional belief.
- rate how much the participant is distressed by each belief, 0=not at all distressed, 100=as distressed as I have ever felt.

Negative self belief	R	E	Distress

- identify participant's first memory of these beliefs. Where were you? How old were you?

Age_____

What was happening in your life at this time? obtain brief description.

Do the beliefs reflect your current beliefs? Yes/No

When you feel distressed and think I'm (summarise core beliefs) is there anything you can do or actually do to change how you feel or think?

Yes/No

Do you feel that the beliefs I'm (summarise core beliefs) and the distress that goes with them are connected in some way to your attempts to diet/lose weight/prevent weight gain?

Yes/No

In what way?

Is dieting/losing weight/attempting to prevent weight gain helping with these beliefs and the distress that goes with them?

Yes/No

In what way?

NB: RETURN TO THIS SECTION AFTER SECTION 2 HAS BEEN COMPLETED.

Weight/shape related assumptions are only to be pursued if most distressing weight/shape thought identified earlier is very different from most distressing weight/shape thought identified in Section 2, or if it is more distressing than the Section 2 most distressing thought.

If it is the same/similar, check leads to the same assumptions (both self and other related assumptions, ask separately) as it did in Section 2.

Self, same as before Yes/No

Other, same as before Yes/No

If the most distressing weight/shape thought is very different from the Section 2 most distressing thought it should be pursued below.

To access weight and shape assumptions related to self acceptance:

- remind what most distressing fat/weight gain thought is, e.g. I'll get huge. Suppose you did .....
- what would that mean about you or say about you?
- what's the worst that it could mean or say about you?

Prompt for all assumptions

Assumption	Belief	Distress

If the thought leads to the same weight/shape self acceptance assumptions as those already identified in Section 2, check ratings are the same as before.

Same Yes/No

If there are additional assumptions record them above and continue.

- identify participant's first memory of these assumptions. Where were you? How old were you?

Age_____

What was happening in your life at this time?

Do the assumptions reflect your current beliefs? Yes/No

Use the downward arrow technique to pursue the assumptions identified above.

suppose that were true, what would be so bad about that?
- what's the worst that it could mean or say about you?

Core beliefs may be the same as those already identified. If this seems to be the case, just check all beliefs are the same, with same ratings.

Same Yes/No

Ask if there are additional beliefs. If there are, rate below and continue to end of section.

Identify core beliefs.

- Obtain separate ratings for rational and emotional belief.
- rate how much the participant was distressed by each belief, 0=not at all distressed, 100=as distressed as I have ever felt.

Negative self belief	R	E	Distress
----------	-----	-----	------
----------	-----	-----	------
----------	-----	-----	------
----------	-----	-----	------

- identify participant's first memory of these beliefs. Where were you? How old were you?

Age_____

What was happening in your life at this time? obtain brief description

Do the beliefs reflect your current beliefs? Yes/No

When you feel distressed and think I'm (summarise core beliefs) is there anything you can do or actually do to change how you feel or think?

Yes/No

Do you feel that the beliefs I'm (summarise core beliefs) and the distress that goes with them are connected in some way to your attempts to diet/lose weight/prevent weight gain?

Yes/No

In what way?

Is dieting/losing weight/attempting to prevent weight gain helping with these beliefs and the distress that goes with them?

Yes/No

In what way?

To access weight and shape assumptions related to acceptance by others:

- remind what most distressing fat/weight gain thought is, e.g. I'll get huge. Suppose you did .....
- what do you think other people would think about you or do to you?
- check whether weight and shape self assumptions identified above are also what other people would think about you.

Prompt for all assumptions.

Assumption	Belief	Distress
----------	--------	------
----------	--------	------
----------	--------	------
----------	--------	------

If the thought leads to the same weight/shape self acceptance assumptions as those already identified in Section 2, check ratings are the same as before.

Same Yes/No

If there are additional assumptions record them above and continue.

- identify participant's first memory of these assumptions. Where were you? How old were you?
Age_____

What was happening in your life at this time? obtain brief description.

Do the assumptions reflect your current beliefs? Yes/No

Use the downward arrow technique to pursue the assumptions identified above.

- suppose that were true, what would be so bad about that?
- what's the worst that it could mean or say about you?

Core beliefs may be the same as those already identified. If this seems to be the case, just check all beliefs are the same, with same ratings.

Same Yes/No

Ask if there are additional beliefs. If there are, rate below and continue to end of section.

Identify core beliefs.

- Obtain separate ratings for rational and emotional belief
- rate how much the participant was distressed by each belief, 0=not at all distressed, 100=as distressed as I have ever felt.

Negative self belief	R	E	Distress

- identify participant's first memory of these beliefs. Where were you? How old were you?

Age_____

- What was happening in your life at this time? obtain brief description.

Do the beliefs reflect your current beliefs? Yes/No

When you feel distressed and think I'm (summarise core beliefs) is there anything you can do or actually do to change how you feel or think?

Yes/No

Do you feel that the beliefs I'm (summarise core beliefs) and the distress that goes with them are connected in some way to your attempts to diet/lose weight/prevent weight gain?

Yes/No

In what way?

Is dieting/losing weight/attempting to prevent weight gain helping with these beliefs and the distress that goes with them?

Yes/No

In what way?

SECTION 2: WEIGHT AND SHAPE

When was the last time you felt really worried, anxious or bad about your weight and/or shape? (not a binge episode).

- obtain brief description

Imagine that situation (could be right now).

- for how long did you feel (or have you been feeling) worried, anxious or bad about your weight and/or shape?

------ hours -------minutes
How did you (or do you) feel?

- identify all feelings; prompt for more.

- rate each feeling, e.g. anxiety, 0=not at all anxious, 100=as anxious as I have ever felt.

Feeling	Emotion

What thoughts did you (or do you) have?

- identify all thoughts. Pursue these for weight/shape assumptions (taking most distressing thought).

- note duration of each thought.

- rate belief in each thought, e.g. I'll get fat, 0=I did not believe this thought at all, 100=I was completely convinced that this thought was true.

Thought	Duration	Belief

Which is the most distressing thought?

- identify thought and rate how much the participant was distressed by this thought, 0=not at all distressed, 100=as distressed as I have ever felt.

Thought	Distress

Use the downward arrow technique to pursue the most distressing thought.

To access weight and shape assumptions related to self acceptance:

- remind what most distressing fat/weight gain thought is, e.g. I'll get huge. Suppose you did .....
- what's the worst that it could mean or say about you?

Prompt for all assumptions.

- rate belief in each assumption, 0=I did not believe this at all, 100=I was completely convinced that this was true.

- rate how much the participant was distressed by each belief, 0=not at all distressed, 100=as distressed as I have ever felt.

Assumption	Belief	Distress

- identify participant's first memory of these assumptions. Where were you? How old were you?

Age_____

What was happening in your life at this time?

Do the assumptions reflect your current beliefs? Yes/No

Use the downward arrow technique to pursue the assumptions identified above.

- suppose that were true, what would be so bad about that?
- what's the worst that it could mean or say about you?

Core beliefs may be the same as before. If that seems to be the case, just check all beliefs are the same, with same ratings.

Same Yes/No

Ask if there are additional beliefs. If there are, rate below and continue to end of section.

Identify core beliefs.

- Obtain separate ratings for rational and emotional belief
- rate how much the participant is distressed by each belief, 0=not at all distressed, 100=as distressed as I have ever felt.

Negative self belief	R	E	Distress

identify participant's first memory of these beliefs. Where were you? How old were you?

Age_____

What was happening in your life at this time? obtain brief description

- Do the beliefs reflect your current beliefs? Yes/No

When you feel distressed and think I'm (summarise core beliefs) is there anything you can do or actually do to change how you feel or think?

Yes/No

Do you feel the beliefs I'm (summarise core beliefs) and the distress that goes with them are connected in some way to your attempts to diet/lose weight/prevent weight gain?

Yes/No

In what way?

Is dieting/losing weight/attempting to prevent weight gain helping with these beliefs and the distress that goes with them?

Yes/No

In what way?

To access weight and shape assumptions related to acceptance by others:

- remind what most distressing fat/weight gain thought is, e.g. I'll get huge. Suppose you did.....
- what do you think other people would think about you or do to you?
- what's the worst that they could think or do?
- check whether weight and shape self assumptions identified above are also what other people would think about you.

Prompt for all assumptions.

Assumption	Belief	Distress

- identify participant's first memory of these assumptions. Where were you? How old were you?
Age_____

What was happening in your life at this time? obtain brief description.

Do the assumptions reflect your current beliefs? Yes/No

Use the downward arrow technique to pursue the assumptions identified above, one category of assumptions at a time.

- suppose that were true, what would be so bad about that?
- what's the worst that it could mean or say about you?

Core beliefs may be the same as before. If that seems to be the case, just check all beliefs are the same, with same ratings.

Same Yes/No

Ask if there are additional beliefs. If there are, rate below and continue to end of section.

Identify core beliefs. Prompt for all negative self beliefs.

- Obtain separate ratings for rational and emotional belief.

- rate how much the participant was distressed by each belief, 0=not at all distressed, 100=as distressed as I have ever felt.

Negative self belief	R	E	Distress

- identify participant's first memory of these beliefs. Where were you? How old were you?

Age_____

What was happening in your life at this time?

Do the beliefs reflect your current beliefs? Yes/No

- When you feel distressed and think I'm (summarise core beliefs) is there anything you can do or actually do to change how you feel or think?

Yes/No

Do you feel the beliefs I'm (summarise core beliefs) and the distress that goes with them are connected in some way to your attempts to diet/lose weight/prevent weight gain?

Yes/No

In what way?

Is dieting/losing weight/attempting to prevent weight gain helping with these beliefs and the distress that goes with them?

Yes/No

In what way?

APPENDIX IV

Ethics Correspondence

OUR REF:ANNE/APPLTR

MREC ANGLIA & OXFORD
North West Anglia Health Authority, St John's, Thorpe Road, Peterborough PE3 6JG
Tel: 01733 883388 Fax: 01733 882299

Anne Burnley, Administrator
Direct Line: 01733 882114

Answerphone
Direct Line: 01733 882115

Letter Ref: AMB/MRECLTRS/Sapps98/5/20

13 November 1998

Dr
Clinical Psychologist in Training
Isis Education Centre
Warneford Hospital
Oxford, OX3 7JX

Dear

RE: MREC Application 98/5/20 Cognitions in patients with anorexia nervosa and dieters.

I write to confirm that approval has been given for the amendment to the application MREC 98/5/20 by the MREC at their meeting on 4 November 1998, as per your letter dated 28 October 1998.

If you have any queries or concerns, please do not hesitate to get in touch with me.

Yours sincerely

Anne M Burnley.

ANNE M BURNLEY
MREC ADMINISTRATOR
ANGLIA & OXFORD REGION

Encs

cc

Oxford Radcliffe HOSPITAL

OXFORDSHIRE PSYCHIATRIC RESEARCH ETHICS COMMITTEE

THE JOHN RADCLIFFE

Manor House
Headley Way, Headington
Oxford OX3 9DZ

Tel: 01865 222692/222547
Fax: 01865 222699

Our Ref. DG/eb/O9824

15 July, 1998

Oxford Regional Training Course in Clinical Psychology
Isis Education Centre
Warneford Hospital

Dear

Re: OPREC OM98.24 - An investigation into cognitions and cognitive processes in women with anorexia nervosa, normal female dieters and female non-clinical controls

We have now received the letter of indemnity from the Oxfordshire Mental Health Care and are happy to give final approval to your study.

Best wishes.

Yours sincerely,

David MacKeith

Dr D Geaney
Chairperson
Oxfordshire Psychiatric Research Ethics Committee

Chairperson: Dr D. Geaney

Northampton Medical Research/Ethics Committee
Secretary ☎ *Direct Dial 01604-615363*

Northamptonshire Health Authority

Our Ref: FE/MS/98/45

10 July 1998

Oxford Regional Training Course in Clinical Psychology
Isis Education Centre
Warneford Hospital
OXFORD OX3 7JX

Dear

98/45 COGNITIONS IN PATIENTS WITH ANOREXIA NERVOSA AND DIETERS

I am pleased to inform you that Formal Ethical Approval has been granted by the Committee for this study to proceed.

Whilst reviewing your application, the Committee noted that the patient's GP would be informed of their participation in the study, and wondered whether there was a separate GP letter. If this is the case, I would be grateful if you could let me have a copy for the file.

To complete our records regarding the project, I would be grateful if you could complete and return the form accompanying this letter.

Please let me know if the study has to be terminated or any ethical considerations arise which need to be discussed further by the Committee.

Yours sincerely

pp Fred Evans

Mr F Evans
Chairman, Northampton Medical Research/
Ethics Committee

NHS

Stoke Mandeville
Hospital NHS Trust

Buckinghamshire Health Authority

Aylesbury Vale Local Research Ethics Committee

Mandeville Road, Aylesbury
Buckinghamshire HP21 8AL
Telephone (01296) 315000
Direct Line: (01296) 316784

19th August 1998

Research Tutor
Oxford Regional Training Course
in Clinical Psychology
Isis Education Centre
Warneford Hospital
Oxford OX3 7JX

Dear

Re: Project NC826 - Cognitions in Patients with Anorexia Nerovosa and Dieters

I refer to your application to the Local Research Ethics Committee for consideration of the above project. I am pleased to inform you that the Committee approves the project on ethical grounds on the understanding that:

i. Any ethical problem, arising in the course of the project, will be reported to the Committee.

ii. Any change in the protocol will be reported to the Committee.

iii. The Data Protection Act 1984 be adhered to.

iv. There is compliance, throughout the conduct of the study, with good clinical research practice.

v. The Committee be informed if the research is discontinued for any reason.

vi. A report be submitted after completion.

vii. Ethical approval is for three years from the date of this letter

Ethical approval by the Committee is not an authority to proceed. You are advised to discuss your proposal with all heads of departments and others who might be affected, particularly if there are financial and/or staffing implications.

Please note that your research will be subject to review annually by the Committee.

Yours sincerely

PETER MANSFIELD
Secretary to Local Research Ethics Committee

HEATHERWOOD & WEXHAM PARK
hospitals trust

Our Ref: JAG/PC/2033

Please reply to Heatherwood Hospital

16th June 1998

Oxford Regional Training Course In Clinical Psychology,
Isis Education Centre,
Warneford Hospital,
Oxford.
OX3 7JX.

Dear

Re: **East Berkshire Research Ethics Committee Application No: 2033 - Cognitions in patients with anorexia nervosa and dieters**

At its meeting held on Thursday 11th June, 1998, the East Berkshire Research Ethics Committee received and approved your application for an investigation into cognitions in patients with anorexia nervosa and dieters. For your information the following members of the Committee were present at the meeting when your application was received and approved:

Dr. A. Macaulay (Chairman)	Consultant Psychiatrist
Mrs. E. Barker	Chief Pharmacist
Dr. R. Behrman	Consultant Physician
Mr. S. Dimitry	Consultant Obstetrician & Gynaecologist
Mr. C. Hudd	Consultant Urologist
Mrs. P. Illingworth	Deputy Nurse Member
Mrs. L. Jacobs	Lay Member
Mr. J. McAllister	Consultant Ophthalmic Surgeon
Dr. I. Mower	General Practitioner Member
Mr. G. Odds OBE	Lay Member
Mr. A. Prosser	Lay Member

For record keeping purposes, I should like to confirm that the following documentation was received and approved at the meeting:

1. MREC approval letter dated 28th May, 1998.
2. Annex D supplementary form for LRECs.
3. MREC application form.
4. Protocol.
5. Patient Information Sheet.
6. Patient Consent form.

On behalf of the East Berkshire Research Ethics Committee I should like to wish you every success with your project.

Yours sincerely,

Jennie Gray

J.A. GRAY
Assistant Administrator

Wexham Park Hospital, Wexham, Slough, Berks SL2 4HL Tel: 01753 633000 Fax: 01753 634848
[illegible] Hospital, London Road, Ascot, Berks SL5 8AA Tel: 01344 23333 Fax: 01344 874340

APPENDIX V

Information Sheet

OXFORD REGIONAL TRAINING COURSE IN CLINICAL PSYCHOLOGY Doctorate in Clinical Psychology
Isis Education Centre Warneford Hospital Oxford OX3 7JX Tel: (01865) 226431/226374 Fax: (01865) 226364

An Investigation into Thoughts and Thought Processes in Women with Anorexia Nervosa, Normal Dieters and Female Controls

Information sheet for participants

Having an eating disorder such as anorexia nervosa can be very distressing and upsetting. Although good treatments are available, recovery is often hard work and individuals may become disheartened if they feel others don't understand their difficulties or if they only progress slowly. Sadly, not everyone is helped by the treatments available at present. This means it is important to do more research, to increase our understanding of anorexia nervosa and to use our understanding to develop more effective methods of treatment.

Research suggests that women who have difficulty with their eating are often preoccupied with negative thoughts and distressing concerns. They commonly think badly about themselves and often feel out of control. This can be difficult to cope with and it is not always easy to understand why such thoughts don't just go away. Recent research suggests that these thoughts might play a role in maintaining eating difficulties. Thus, in order to get better and stay better it may be necessary to identify and change these thoughts.

Women with anorexia nervosa are often preoccupied with dieting but so are dieters without an eating disorder (and women who are not dieting). It is unclear whether dieters experience similar thoughts and think in ways that are similar to women with eating disorders. If we can discover how women with anorexia nervosa differ in thoughts and ways of thinking from dieters and non dieters, this will help us to identify areas that it might be helpful to address in treatment. The aim of the study is to investigate this area.

If you are willing to participate in this study, it will involve one, or possibly two, meetings with me, each lasting approximately an hour, either at the _____ hospital or if it is more convenient, I can visit you at home. I will ask you to talk about any difficulties you may have with your eating. I will also ask you to talk about your thoughts and any early experiences you believe are linked to these thoughts. Then I will ask you to complete a short measure relating to your thoughts and beliefs. At the end of the session I will ask you to complete some questionnaires. These can be completed either during our meeting or, if you prefer, you can complete them in your own time. If you are willing, a second meeting (approximately a week later) will be arranged, during which I will ask you the same set of questions relating to your thoughts and early experiences.

I would like to audiotape the part of each session when you talk about your thoughts and early experiences. The audiotapes will be stored in a secure place and will be wiped clean after use. Everything you tell me will be confidential. Participation is **entirely voluntary** and you may leave the study at any time, without having to give a reason and without it affecting your access to medical care.

If you would like more information on any aspect of the study, then please do not hesitate to contact me at the above telephone number. If I am not there, please leave a message and your telephone number, and I will phone you back as soon as possible.

Many thanks.
Hannah Turner
Clinical Psychologist in Training.

APPENDIX VI

Consent Forms:

Consent Form for the Non-Clinical Participants

Consent Form for the Clinical Participants

OXFORD REGIONAL TRAINING COURSE IN CLINICAL PSYCHOLOGY Doctorate in Clinical Psychology
Isis Education Centre Warneford Hospital Oxford OX3 7JX Tel: (01865) 226431/226374 Fax: (01865) 226364

ROYAL COLLEGE OF PHYSICIANS CONSENT TO RESEARCH FORM

Title of project: An Investigation into Thoughts and Thought Processes in Women with Anorexia Nervosa, Normal Dieters and Female Controls.

Name of Principal Investigator:

Psychiatric Research Ethics Committee Application Number:

Have you read the Patient Information Sheet?
(please circle your answer) Yes/No

Have you had an opportunity to ask questions and discuss this study? Yes/No

Have you received satisfactory answers to your questions? Yes/No

Have you received enough information about the study? Yes/No

Who has explained the study to you?

Dr/Mr/Mrs/Ms .....

Do you understand that you are free to leave the study
- at any time
- without having to give a reason for leaving

Yes/No

Do you agree to take part in the study? Yes/No

Signature: .....

Date: .....

Name in block letters: .....

OXFORD REGIONAL TRAINING COURSE IN CLINICAL PSYCHOLOGY Doctorate in Clinical Psychology
Isis Education Centre Warneford Hospital Oxford OX3 7JX Tel: (01865) 226431/226374 Fax: (01865) 226364

ROYAL COLLEGE OF PHYSICIANS CONSENT TO RESEARCH FORM

Title of project: An Investigation into Thoughts and Thought Processes in Women with Anorexia Nervosa, Normal Dieters and Female Controls.

Name of Principal Investigator:

Psychiatric Research Ethics Committee Application Number:

Have you read the Patient Information Sheet?
(please circle your answer) Yes/No

Have you had an opportunity to ask questions and discuss this study? Yes/No

Have you received satisfactory answers to your questions? Yes/No

Have you received enough information about the study? Yes/No

Who has explained the study to you?

Dr/Mr/Mrs/Ms .....

Do you understand that you are free to leave the study
- at any time
- without having to give a reason for leaving

Yes/No

Do you agree to take part in the study? Yes/No

Signature: .....

Date: .....

Name in block letters: .....

Witnessed by: .....

Date: .....

Name in block letters: .....

APPENDIX VII

Coding Format for the Semi-Structured Interview

CODING FOR THE CORE BELIEFS AND EARLY MEMORY INTERVIEW

SECTION 1 - EATING RELATED SITUATION

Recent episode identified		y/n
Time since episode	1 = now 2 = today 3 = in the last week 4 = in the last month 5 = over 1 month ago and less that 6 months ago 6 = more than 6 months ago	
Length of distress	1 = less that ½ hr 2 = more than ½ hr and less than 1 hr 3 = 1-2 hrs 4 = 2 hrs and over	
Negative feelings identified		y/n
Number of negative feelings		
Mean negative emotion		

A. EATING RELATED NEGATIVE AUTOMATIC THOUGHTS - a fleeting negative thought related to eating -eg: I shouldn't be eating this, I don't want anyone to see me eating this, I'll eat as little as possible, I can't eat the whole meal.

Negative eating related thoughts identified	y/n
Number of eating related negative thoughts	
Mean duration of eating related negative thoughts	minutes
Mean belief in eating related negative thoughts	
Distress of most distressing eating related thought	

B. WEIGHT AND SHAPE RELATED NEGATIVE AUTOMATIC THOUGHTS - a fleeting negative automatic thought related to weight and shape - eg: I'll get fat, I've got a big bum, I want to rub the fat off my body, In a few hours it will be stored as fat, I want to be thinner.

Negative weight and shape thoughts identified	y/n
Number of negative thoughts	
Mean duration of negative thoughts	minutes
Mean belief in negative thoughts	
Distress of most distressing thought	

ASSUMPTIONS

A. SELF-REFERENT FIRST ORDER EATING RELATED ASSUMPTIONS - those negative assumptions that are related directly to getting fat/weight gain - eg: If I eat this I'll get fat, If I eat this I'll put on weight, If I eat this I'll blow up, If I eat this I'll have to do more exercise.

Eating related assumptions identified	y/n
Number of assumptions	
Mean belief in assumptions	
Mean associated distress	

B. OTHER-REFERENT FIRST ORDER EATING RELATED ASSUMPTIONS - those negative assumptions that are related to what others might think about getting fat/weight gain - eg: If I eat this others will think I'll get fat, If I eat this others will think I'll put on weight, If I eat this others will think I'll make myself sick.

Eating related assumptions identified	y/n
Number of assumptions	
Mean belief in assumptions	
Mean associated distress	

C. SELF-REFERENT SECOND ORDER EATING RELATED ASSUMPTIONS - those negative assumptions linking eating with self acceptance - eg: If I eat this it means I'm out of control, If I eat this it means I'm a bad person, If I eat this it means I've done something wrong, If I eat this it means I've failed.

Eating assumptions identified	y/n
Number of assumptions	
Mean belief in assumptions	
Mean associated distress	
Age at first memory	
Negative events occurring	y/n
reflect current assumptions	y/n

D. OTHER-REFERENT SECOND ORDER EATING RELATED ASSUMPTIONS - those negative assumptions linking eating with acceptance by others - eg: If I eat this others will think I'm greedy, If I eat this others will think I've lost control, If I eat this others will think I'm no good.

Eating assumptions identified	y/n
Number of assumptions	
Mean belief in assumptions	
Mean associated distress	
Age at first memory	
Negative events occurring	y/n
Reflect current assumptions	y/n

SECTION 2 – WEIGHT AND SHAPE RELATED SITUATION

Recent episode identified y/n

Time since episode
1 = now
2 = today
3 = in the last week
4 = in the last month
5 = over 1 month ago and less that 6 months ago
6 = more than 6 months ago

Length of distress
1 = less that 1/2 hour
2 = more than ½ hr and less than an hour
3 = more than an hour

Negative feelings identified y/n
Number of negative feelings
Mean negative emotion

A. EATING RELATED NEGATIVE AUTOMATIC THOUGHTS - a fleeting negative thought related to eating - eg: I shouldn't be eating this, I don't want anyone to see me eating this, I'll eat as little as possible, I can't eat the whole meal.

Negative eating related thoughts identified y/n
Number of eating related negative thoughts
Mean duration of eating related negative thoughts minutes
Mean belief in eating related negative thoughts
Distress of most distressing eating related thought

B. WEIGHT AND SHAPE RELATED NEGATIVE AUTOMATIC THOUGHTS - a fleeting negative thought related to weight and shape -eg: I'll get fat, I've got a big bum, I want to rub the fat off my body, In a few hours it will be stored as fat.

Negative weight and shape thoughts identified y/n
Number of negative thoughts
Mean duration of negative thoughts minutes
Mean belief in negative thoughts
Distress of most distressing thought

ASSUMPTIONS

A. SELF-REFERENT FIRST ORDER EATING RELATED ASSUMPTIONS - those negative assumptions that are related directly to getting fat/weight gain - eg: If I eat this I'll get fat, If I eat this I'll blow up, I'll put on weight if I eat this meal.

Eating related assumptions identified y/n
Number of assumptions
Mean belief in assumptions
Mean associated distress

B. OTHER-REFERENT FIRST ORDER EATING RELATED ASSUMPTIONS - those negative assumptions that are related to what others might think about getting fat/weight gain - eg: If I eat this others will think I'll get fat, If I eat this others will think I'll put on weight, If I put on weight others will think I've given in to the temptation of food.

Eating related assumptions identified	y/n
Number of assumptions	
Mean belief in assumptions	
Mean associated distress	

C. SELF-REFERENT SECOND ORDER EATING RELATED ASSUMPTIONS - those negative assumptions linking eating with self acceptance - eg: If I eat this others will think I've lost control, If I eat this it means I've done something wrong, If I eat this it means I'm a terrible person. If I eat this it means I'm a bad person.

Eating assumptions identified	y/n
Number of assumptions	
Mean belief in assumptions	
Mean associated distress	
Age at first memory	
Negative events occurring	y/n
Reflect current assumptions	y/n

D. OTHER-REFERENT SECOND ORDER EATING RELATED ASSUMPTIONS - those negative assumptions linking eating with acceptance by others -eg: If I eat this others will think I'm greedy, If I eat this others will think I've lost control, If I eat this others will think I'm no good, If I eat this others will think I'm bad.

Eating assumptions identified	y/n
Number of assumptions	
Mean belief in assumptions	
Mean associated distress	
Age at first memory	
Negative events occurring	y/n
Reflect current assumptions	y/n

E. SELF-REFERENT SECOND ORDER WEIGHT AND SHAPE RELATED ASSUMPTIONS - those negative assumptions linking weight and shape with self acceptance - eg: If I'm fat it means I'm unattractive, If I'm fat it means I'm ugly, If I'm fat it means I'm a disgrace, If I'm fat it means I'm out of control.

Weight and shape assumptions identified	y/n
Number of assumptions	
Mean belief in assumptions	
Mean associated distress	
Age at first memory	
Negative events occurring	y/n

Reflect current assumptions y/n

Link with weight and shape assumptions identified in section 1 y/n

F. OTHER-REFERENT SECOND ORDER WEIGHT AND SHAPE RELATED ASSUMPTIONS - negative assumptions linking weight and shape with acceptance by others - eg: If I'm fat others will think I'm disgusting, If I'm fat others will think I'm useless, If I'm fat others will think I'm greedy, If I'm fat others will think I'm not worth being friends with.

Weight and shape assumptions identified y/n
Number of assumptions
Mean belief in assumptions
Mean associated distress
Age at first memory
Negative events occurring y/n
Reflect current assumptions y/n

Link with weight and shape assumptions identified in section 1 y/n

CORE BELIEFS – absolute and global beliefs about the self - ADD ACROSS SITUATIONS - eg: I'm worthless, I'm disgusting, I'm awful, I'm ugly, I'm helpless, I'm evil, I'm lazy.

Negative core beliefs identified y/n
Number of negative core beliefs
Mean rational belief in core belief
Mean emotional belief in core belief
Mean associated distress
Age at first memory
Negative events occurring y/n
Reflect current beliefs y/n

Core beliefs reflect global thinking y/n

DIETING LINKS

Link identified between core beliefs and dieting y/n

Degree of distress

Degree of belief

(NB, if a participant identifies more that one mechanism take average of each)

APPENDIX VIII

Post Hoc Mann-Whitney U Test Results

POST HOC MANN-WHITNEY U TEST RESULTS

	Mean rank	U
HYPOTHESIS 2		
Number of thoughts		
Eating section		
Eating related thoughts		
Patients with anorexia nervosa	27.00	9.0
Non-symptomatic dieters	10.00	
Patients with anorexia nervosa	27.42	1.5
Female controls	9.58	
Weight and shape section		
Eating related thoughts		
Patients with anorexia nervosa	21.00	117.0
Female controls	16.00	
Non-symptomatic dieters	22.00	99.0
Female controls	15.00	
Weight and shape related thoughts		
Patients with anorexia nervosa	26.83	12.0
Female controls	10.17	
Non-symptomatic dieters	26.42	19.5
Female controls	10.58	
Duration of thoughts		
Eating section		
Eating related thoughts		
Patients with anorexia nervosa	27.50	0.0
Non-symptomatic dieters	9.50	
Patients with anorexia nervosa	27.39	2.0
Female controls	9.61	
Weight and shape section		
Eating related thoughts		
Patients with anorexia nervosa	21.00	117.0
Female controls	16.00	
Non-symptomatic dieters	22.00	99.0
Female controls	15.00	
Weight and shape related thoughts		
Patients with anorexia nervosa	27.03	8.5
Female controls	9.97	
Patients with anorexia nervosa	23.31	75.5
Non-symptomatic dieters	13.69	
Non-symptomatic dieters	25.36	38.5
Female controls	11.64	

	Mean rank	U
Degree of belief		
Eating section		
Eating related thoughts		
Patients with anorexia nervosa	27.14	6.5
Female controls	9.86	
Patients with anorexia nervosa	26.64	15.5
Non-symptomatic dieters	10.36	
Weight and shape section		
Eating related thoughts		
Patients with anorexia nervosa	21.00	117.0
Female controls	16.00	
Non-symptomatic dieters	22.00	99.0
Female controls	15.00	
Weight and shape related thoughts		
Patients with anorexia nervosa	21.00	117.0
Female controls	16.00	
Non-symptomatic dieters	24.92	46.5
Female controls	12.08	
Degree of distress		
Eating section		
Eating related thoughts		
Patients with anorexia nervosa	27.50	0.0
Non-symptomatic dieters	9.50	
Patients with anorexia nervosa	27.50	0.0
Female controls	9.50	
Weight and shape related thoughts		
Patients with anorexia nervosa	21.00	117.0
Non-symptomatic dieters	16.00	
Patients with anorexia nervosa	20.64	123.5
Female controls	16.36	
Weight and shape section		
Weight and shape related thoughts		
Patients with anorexia nervosa	25.25	40.5
Non-symptomatic dieters	11.75	
Patients with anorexia nervosa	27.31	3.5
Female controls	9.69	
Non-symptomatic dieters	23.67	69.0
Female controls	13.33	

	Mean rank	U
HYPOTHESIS 3		
Assumptions related to eating as a means to self acceptance		
Number of assumptions		
Eating section		
Patients with anorexia nervosa	26.00	27.0
Non-symptomatic dieters	11.00	
Patients with anorexia nervosa	21.00	117.0
Female controls	16.00	
Degree of belief		
Eating section		
Patients with anorexia nervosa	26.00	27.0
Non-symptomatic dieters	11.00	
Patients with anorexia nervosa	26.00	27.0
Female controls	11.00	
Degree of distress		
Eating section		
Patients with anorexia nervosa	26.00	27.0
Non-symptomatic dieters	11.00	
Patients with anorexia nervosa	26.00	27.0
Female controls	11.00	
Assumptions related to weight and shape as a means to self acceptance		
Number of assumptions		
Weight and shape section		
Patients with anorexia nervosa	23.33	52.0
Non-symptomatic dieters	13.67	
Patients with anorexia nervosa	26.50	18.0
Female controls	10.50	
Non-symptomatic dieters	22.00	99.0
Female controls	15.00	
Degree of belief		
Weight and shape section		
Patients with anorexia nervosa	24.61	52.0
Non-symptomatic dieters	12.39	
Patients with anorexia nervosa	26.50	18.0
Female controls	10.50	
Non-symptomatic dieters	22.00	99.0
Female controls	15.00	

	Mean rank	U
Degree of distress		
Weight and shape section		
Patients with anorexia nervosa	25.56	35.0
Non-symptomatic dieters	11.44	
Patients with anorexia nervosa	26.50	18.0
Female controls	10.50	
Non-symptomatic dieters	22.00	99.0
Female controls	15.00	
Assumptions related to eating as a means to acceptance by others		
Number of assumptions		
Eating section		
Patients with anorexia nervosa	25.00	45.0
Non-symptomatic dieters	12.00	
Patients with anorexia nervosa	25.00	45.0
Female controls	12.00	
Degree of belief		
Eating section		
Patients with anorexia nervosa	25.00	45.0
Non-symptomatic dieters	12.00	
Patients with anorexia nervosa	25.00	45.0
Female controls	12.00	
Degree of distress		
Eating section		
Patients with anorexia nervosa	25.00	45.0
Non-symptomatic dieters	12.00	
Patients with anorexia nervosa	25.00	45.0
Female controls		
Assumptions related to weight and shape as a means to acceptance by others		
Number of assumptions		
Weight and shape section		
Patients with anorexia nervosa	23.53	71.5
Non-symptomatic dieters	13.47	
Patients with anorexia nervosa	27.50	0.0
Female controls	9.50	
Non-symptomatic dieters	23.00	81.0
Female controls	14.00	

	Mean rank	U
Degree of belief		
Weight and shape section		
Patients with anorexia nervosa	23.53	71.5
Non-symptomatic dieters	13.47	
Patients with anorexia nervosa	27.50	0.0
Female controls	9.5	
Non-symptomatic dieters	23.00	81.0
Female controls	14.00	
Degree of distress		
Weight and shape section		
Patients with anorexia nervosa	26.19	32.5
Non-symptomatic dieters	10.81	
Patients with anorexia nervosa	27.50	0.0
Female controls	9.50	
Non-symptomatic dieters	23.00	81.0
Female controls	14.00	
Control over eating		
Number of first order assumptions		
Eating section		
Self-referent		
Patients with anorexia nervosa	26.50	18.0
Non-symptomatic dieters	10.50	
Patients with anorexia nervosa	26.50	18.0
Female controls	10.50	
Other-referent		
Patients with anorexia nervosa	21.00	117.0
Non-symptomatic dieters	16.00	
Patients with anorexia nervosa	21.00	117.0
Female controls	16.00	
Degree of belief		
Eating section		
Self-referent		
Patients with anorexia nervosa	26.50	18.0
Non-symptomatic dieters	10.50	
Patients with anorexia nervosa	26.50	18.0
Female controls	10.50	
Other-referent		
Patients with anorexia nervosa	21.00	117.0
Non-symptomatic dieters	16.00	
Patients with anorexia nervosa	26.50	18.0
Female controls	10.50	

	Mean rank	U
Degree of distress		
Eating section		
Self-referent		
Patients with anorexia nervosa	25.50	36.0
Non-symptomatic dieters	11.50	
Patients with anorexia nervosa	25.50	36.0
Female controls	11.50	
Other-referent		
Patients with anorexia nervosa	21.00	117.0
Non-symptomatic dieters	16.00	
Patients with anorexia nervosa	21.00	117.0
Female controls	16.00	
HYPOTHESIS 4		
Number of negative self-beliefs		
Patients with anorexia nervosa	27.36	2.5
Non-symptomatic dieters	9.64	
Patients with anorexia nervosa	27.50	0.0
Female controls	9.50	
Non-symptomatic dieters	20.50	126.0
Female controls	16.50	
Degree of rational belief		
Patients with anorexia nervosa	25.17	42.0
Non-symptomatic dieters	11.83	
Patients with anorexia nervosa	27.50	0.0
Female controls	9.50	
Non-symptomatic dieters	20.50	126.0
Female controls	16.50	
Degree of emotional belief		
Patients with anorexia nervosa	25.78	31.0
Non-symptomatic dieters	11.22	
Patients with anorexia nervosa	27.50	0.0
Female controls	9.50	
Non-symptomatic dieters	20.50	126.0
Female controls	16.50	
Degree of distress		
Patients with anorexia nervosa	26.86	11.5
Non-symptomatic dieters	10.14	
Patients with anorexia nervosa	27.50	0.0
Female controls	9.50	
Non-symptomatic dieters	20.50	126.0
Female controls	16.50	