META-COGNITION IN DISORDERED EATING: DEVELOPMENT AND PRELIMINARY PSYCHOMETRIC EVALUATION OF A QUESTIONNAIRE.

by

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Submitted in part-fulfilment of the requirements for the degree of Doctorate in Clinical Psychology, University of Leicester, 2000.
STATEMENT OF ORIGINALITY

I, Alan Cunningham (as the author of this thesis) formally state that this thesis represents an original research endeavour. To my knowledge, no previous authors have examined the subject area herein. All other authors' publications involved in the conceptualisation and progress of this work have been recognised and appropriately referenced. The work entailed within this thesis was conducted solely by the author within the period of study toward the Doctorate in Clinical Psychology.

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ABSTRACT

META-COGNITION IN DISORDERED EATING: DEVELOPMENT AND PRELIMINARY PSYCHOMETRIC EVALUATION OF A QUESTIONNAIRE.

AIMS & OBJECTIVES: Conventional cognitive-behavioural models of eating disorder have a restricted focus in (a) affording primacy to weight and shape, and neglecting food and eating variables, (b) concentrating on the content of cognition and neglecting process dimensions, (c) primarily considering detriments of symptomatology rather than functionality. The S-REF model (Wells & Mathews, 1994) and the concept of meta-cognition, allows investigation that addresses these criticisms. Recent literature that infers meta-cognitive factors in eating disorders is reviewed. However, at present experimental clinical evidence is scarce, and no measure of meta-cognitive beliefs in eating disorders exists. This thesis aimed at (a) eliciting dimensions of meta-cognitive eating disordered thinking, and (b) developing a psychometrically valid and reliable questionnaire.

METHOD: Study 1 involved a clinical sample (n = 20) of patients, all satisfying DSM-IV criteria for eating disorders. A semi-structured interview elicited dimensions of meta-cognition associated with food- and eating-related cognition. These statements were thematically categorised and independently rated by two raters. Interrater reliability was high (r = .82). A new questionnaire was developed on the basis of the derived categories. Study 2 involved a large sample of current dieters (n = 264). These participants completed the new questionnaire and six other questionnaire measures.

RESULTS: The results of study 1 yielded 12 conceptually distinct dimensions of meta-cognitive beliefs. In study 2 a factor analysis reduced these dimensions to four factors: monitoring threat of eating (α = .84), abnormal self-inferences (α = .88), displacement of problematic thinking (α = .77), intrusive interference with cognitive functioning (α = .87). The new questionnaire (a) demonstrated good psychometric properties, (b) measured conceptually distinct variables, (c) distinguished between individuals on a number of dimensions of eating psychopathology. Primary indices of eating psychopathology were predicted by two of the factors.

CONCLUSIONS: The findings of these studies vindicates the assertion that meta-cognitive appraisals of food- and eating-related cognition are important in eating disorder. Clinical research implications are discussed and therapeutic recommendations for the inclusion of meta-cognitive components in treatment are offered.
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CHAPTER 1

1. CRITICAL REVIEW OF THE LITERATURE

1.1 Summary of chapter 1

This chapter will claim that existing cognitive-behavioural models of the development and maintenance of eating disorders, primarily focus on the role of appraisals related to food, weight, and shape, and the way in which eating behaviour is used as an index of self-control and self-worth. Evidence in support of these models is derived from a variety of self-report studies, information processing studies, and cognitive-behavioural treatment outcome studies. It will be argued that cognitive-behavioural conceptualisations need to be broader in their focus and include appraisals related to the functions of eating disorder symptoms (e.g. dissociative properties, egosyntonic and egodystonic properties, pro-, and anti-disorder beliefs) as well as appraisals for the need for cognitive and behavioural mediation (e.g. cognitive mediation of dietary intake, the paradoxical effects of suppressing thoughts about food, thought-shape fusion). It is proposed that a meta-cognitive understanding is required, based on the S-REF model of emotional disorder (Wells and Mathews, 1994), to link the cognitive, behavioural, attentional, and meta-cognitive dimensions of eating disorders. A review of available measures of meta-beliefs will highlight the need to develop a new psychometrically validated instrument to assess meta-cognitive beliefs about food-related thinking.
1.2 Cognitive-Behavioural models of anorexia nervosa and bulimia nervosa

Despite the present focus of this research being upon cognitive-behavioural explanations of eating disorder, there is a general consensus that eating disorders are multi-determined syndromes (Pike, Loeb, and Vitousek, 1996). Indeed, cognitive-behavioural models of eating disorders incorporate factors of this multi-determined nature. However, while acknowledging that a range of distal antecedent factors may have precipitated the disorder, cognitive-behavioural models emphasise the proximal factors in the causation and maintenance of the eating disorders.

Generic cognitive theories of emotional disorder posit that the manner in which individuals conceptualise and interpret current life events is shaped by their previous experience (Beck, 1976; Young, 1994). Early life experiences are considered to result in the development of schemata which are fundamental to the processing and integration of new information. These schemata are considered to represent cognitive templates that are essential to learning and normal functioning. Cognitive theories attempt to explain how people process information and explain the deleterious effects of distortions in cognitive processing. A central tenet of cognitive theories is that psychological disorders are characterised by particular information processing biases that are overly rigid or extreme, leading to erroneous interpretation of experiences and unrealistic expectations on the part of the individual. According to cognitive theory these biased processes are problematic or dysfunctional and constitute core features of psychopathology. Once activated, dysfunctional cognitions can lead to increased
symptomatology which in turn perpetuates and extends psychological dysfunction. The role of distorted beliefs in the eating disorders has led to the development of cognitive-behavioural models of both anorexia nervosa (Garner and Bemis, 1982, 1985; Garner, 1986) and bulimia nervosa (Fairburn, Cooper, and Cooper, 1986; Garner, 1986; Wilson, 1989). In essence cognitive-behavioural models of eating disorder posit that anorexia nervosa, and bulimia nervosa, are maintained by characteristic sets of overvalued ideas about the personal meaning and implications of body shape and weight. Eating disordered individuals have more eating- and weight-related thoughts than controls (Bonifazi and Crowther, 1996; Zotter and Crowther, 1991). These theories involve the central importance of information processing biases, dysfunctional beliefs, attitudes and assumptions that overvalue the meaning of appearance, dominate the individual's sense of self. Cognitive theories of the eating disorders assert that the core psychopathology of both anorexia nervosa and bulimia nervosa, is the attempt to compensate for deficits in self-esteem by defining, and evaluating, the self excessively in terms of weight and shape (Garner and Bemis, 1982, 1985; Fairburn and Garner, 1986; Wilson and Walsh, 1991).

According to cognitive-behavioural theory of eating disorders dysfunctional cognitions related to eating, weight and shape promote severe and maladaptive dietary restraint. For most individuals extreme dietary restraint is not sustainable for a range of physiological and psychological reasons (Fairburn, 1997). Therefore dietary restraint ultimately leads to overeating or binge eating. In many cases episodes of binge eating are compensated for by engaging in a number of purging behaviours such
as vomiting, laxative misuse, or compulsive exercise. Such compensatory behaviours often further erode the individual's sense of self-esteem (Fairburn, Marcus, and Wilson, 1993).

Vitousek (1996) has stated:

"Reduced to its essence, the cognitive-behavioural model holds that anorexic and bulimic symptoms are maintained by a characteristic set of overvalued ideas about the personal implications of body shape and weight. These attitudes have their origins in the interaction of stable individual characteristics (such as perfectionism, asceticism, and difficulties in affect regulation) with sociocultural ideals for female appearance. Once formed, the beliefs influence the individuals who hold them to engage in stereotypic eating and elimination behaviours, to be responsive to eccentric reinforcement contingencies, to process information in accordance with predictable cognitive biases, and eventually, to be affected by physiological sequelae that also serve to sustain disordered beliefs and behaviours." (p 384).

1.2.1 Evidence for cognitive models of eating disorder

Much research has been directed toward testing the explanatory value of cognitive conceptualisations of the eating disorders. As outlined below this research has generally supported the premise that individuals with eating disorders are more cognitively concerned with food, weight, and shape.
1.2.2 Self-report studies

Zotter and Crowther (1991) used a think aloud procedure and established that eating disordered individuals differ from “normal” individuals in the frequency, intensity and nature of their concerns about weight, shape, and food. Similarly, Cooper and Fairburn (1992) found that, in comparison with non eating disorder controls, individuals with eating disorders expressed more negative self-statements about eating, weight, and shape while performing related behavioural tasks, while dieters occupied an intermediate position. Furthermore, studies (e.g. Cooper & Fairburn, 1987; Garner, Olmsted & Polivy, 1983) have typically found that clinical subjects endorse concerns related to body shape and weight to a significantly greater degree than “normals” (including restricted eaters and current dieters). Similarly, studies using self-statement inventories (e.g. Clark, Feldman, & Channon, 1989; Mizes, 1990) have found that eating disordered individuals are differentiated from “normals”, in that irrational (and often erroneous) beliefs related to food, metabolism, weight, body shape, elimination/purging behaviours, etc., are pervasively espoused.

Selective memory effects have also been found. When presented with information about a fictitious person, restrained eaters and patients with anorexia nervosa remembered more food- and weight-related information about the person, while unrestrained controls remembered a broad range of details (King, Polivy, and Herman, 1991). While Sebastian, Williamson, and Blouin (1996) found that a group of eating disordered individuals recalled more fatness related words that non eating disordered, or weight preoccupied controls.
1.2.3 Information processing studies

Vitousek and Hollon (1990) argued for the application of the methodology of cognitive science to the study of eating disorders, in an attempt to move beyond the content of cognition and explore the cognitive processes through which eating disorder beliefs may develop, proliferate, and become autonomous. They proposed that studies of information processing in the eating disorders might proceed along ten main areas of enquiry:

"1) the ease and speed by which food- and weight-related stimuli are processed; 2) the elaboration of meaning around the construct of weight; 3) the intrusion of weight-related content into unrelated or ambiguous situations; 4) the possession of differentiated knowledge structures in connected domains; 5) an enhanced memory for schema consistent information; 6) the ability to retrieve schema-relevant behavioural evidence; 7) the degree of confidence in judgements and predictions about food and weight; 8) the specific relevance of weight concerns for the self; 9) the level of cognitive and affective involvement in weight-related events; and 10) the resistance to counter schematic evidence." (p 210).

A number of studies (e.g. Green, McKenna, & de Silva, 1994; Long, Hinton, & Gillespie, 1994; Ben-Tomvin et al., 1989; Cooper, Anastasiades, and Fairburn, 1992; Fairburn et al., 1991; Walker et al., 1995) utilising the Stroop paradigm have found speed of processing effects for disorder-relevant words in eating disordered individuals: this suggests that these people are less able to ignore words related to food, weight and body shape. Interference in naming food- and weight-related words
has also been observed in restrained eaters (Mahamedi and Heatherton, 1991; Ogden and Greville, 1993). The effect is reportedly strongest for food-related words (e.g. Green, McKenna, & De Silva, 1994). These findings have been interpreted as reflective of selective attention biases in eating disorders, and difficulty in ignoring or suppressing the meaning of these words despite a desire to do so (Cooper & Fairburn, 1992). One study (Sackville et al., 1998) found delayed colour-naming latencies in a group of anorectic, but not in “normal” participants; no evidence was found for preconscious attentional biases in the masked condition. The specificity of Stroop findings has been questioned (Perpiñá et al., 1992) who found that restrained eaters with a high “drive for thinness” score also exhibited Stroop interference. Furthermore, studies which have included a dietary preload prior to testing have produced contradictory findings (e.g. Schmidt & Telch, 1991; Ogden & Greville, 1993). Further studies have suggested that other factors might mediate the effects observed in studies utilising a Stroop methodology. For example, Channon and Hayward (1990) found attentional bias for food words in “normals” who had fasted for 24 hours, suggesting that hunger may be the necessary stimulus for food thoughts. The possible mediating influence of hunger was suggested by Green, Elliman, and Rogers (1996), who found that participant’s self-rated levels of hunger and desire to eat correlated with impairments in the colour naming of food words. Green, Corr, and De Silva (1999) suggested that priming effects might influence the findings of studies utilising Stroop methodology. This study found that although there was evidence of affect-related processing, there was also evidence of the influence of priming effects.
In a dichotic listening paradigm, individuals with bulimia nervosa were found to exhibit increased perceptual sensitivity and physiological responsiveness to information relevant to body or weight concerns (Schotte et al., 1990).

1.2.4 Outcome studies of cognitive-behaviour therapy for eating disorder

It would be expected that a comprehensive and coherent explanation of the eating disorders would result in a range of effective therapeutic interventions. This section examines the findings of studies that have sought to evaluate treatment efficacy.

The cognitive-behavioural models outlined above share a common view of the cognitive factors maintaining the disorder. Therefore interventions typically address both the behavioural disturbances and the beliefs, thoughts, and assumptions related to eating, weight, and shape. Anorexia nervosa and bulimia nervosa have several diagnostic and associated features in common, and the cognitive-behavioural treatments designed for them share many core theories and techniques. These typically include cognitive restructuring to address characteristic attitudes about weight and shape, psychoeducation about eating patterns, and the effects of maintaining low body weight.

1.2.5 Outcome studies of cognitive-behaviour therapy versus other treatments

1.2.5.1 cognitive-behavioural therapy for bulimia nervosa

There have been a number of randomised controlled trials, which have supported the specific clinical effectiveness of cognitive-behaviour therapy as a treatment for
bulimia nervosa (Craighead and Agras, 1991; Fairburn, Agras, and Wilson, 1992). Indices of improvement have included high remission rates for binge eating and purging behaviours (Agras et al., 1992; Garner et al., 1993) and reduced dietary restraint (Garner et al., 1993; Fairburn et al., 1991) and an increase in the amount of food eaten between bulimic episodes (Rossiter et al., 1988). Attitudes to weight and shape which are central to the cognitive-behavioural formulation of bulimia nervosa, have also been observed to improve (Garner et al., 1993; Wilson et al., 1991; Fairburn et al., 1991). Improvements in measures of general psychopathology e.g. self-esteem, depression, and social functioning have also been observed (Fairburn et al., 1992; Garner et al. 1993). The treatment effects have been shown to endure with good maintenance of change at six month, and one year follow-up (Agras et al., 1994) and five year follow-up (Fairburn et al., 1995).

1.2.5.2 CBT versus anti-depressant drug treatment

Cognitive-behaviour therapy has been compared to and combined with a variety of psychopharmacological therapies in treating bulimia nervosa. While anti-depressant medication was more effective than placebo (Mitchell and deZwaan, 1993), cognitive-behaviour therapy was superior to anti-depressant medication (Agras et al., 1992; Leitenberg et al., 1994). Furthermore, cognitive-behaviour therapy combined with anti-depressant medication was superior to medication alone (Leitenberg et al., 1994; Mitchell et al., 1990), but there were no significant differences in treatment outcome between the combined therapy and medication treatment and cognitive-behaviour therapy alone (Agras et al., 1992; Leitenberg et al., 1994). No significant differences
were found when a combined treatment was compared to a combined cognitive-behaviour therapy and placebo treatment (Mitchell et al., 1990; Fichter et al., 1991). The conclusion of these studies has been that cognitive-behaviour therapy is superior to medication alone, while combining cognitive-behaviour therapy with medication affords only modest incremental benefit. However, the combined treatment may accrue in terms of reductions in specific symptoms of bulimia nervosa or associated depression and anxiety (Agras et al., 1992; Mitchell et al., 1990).

1.2.5.3 CBT versus other psychological therapies

Cognitive-behaviour therapy for bulimia nervosa has been found to be comparable or more effective than other treatments. It was more effective than supportive psychotherapy at treatment end and follow-up (Agras et al., 1989). It has been shown to be equally effective with supportive-expressive psychotherapy in reducing binge eating, and superior in decreasing purging behaviours, lessening dietary restraint, and modifying dysfunctional attitudes to shape and weight (Garner et al., 1993). In comparing cognitive-behaviour therapy, behaviour therapy, and interpersonal psychotherapy, cognitive-behaviour therapy was equally effective at reducing binge eating and more effective at reducing purging behaviours, lessening dietary restraint, and modifying dysfunctional attitudes to shape and weight (Fairburn et al., 1991). However, interpersonal psychotherapy was equal to cognitive-behaviour therapy on all follow-up measures, suggesting different mechanisms of action. Therefore, although cognitive-behaviour therapy is particularly effective in treating the specific features of bulimia nervosa it does not appear to be more effective in reducing associated
psychopathology such as depression, anxiety, or social adjustment (Fairburn et al., 1991).

Studies that have sought to dismantle the cognitive approach to determine which are the most active, or most important components have yielded equivocal results. Most studies suggest that the broadest therapeutic effects are gained from integration of the major components of both cognitive and behavioural interventions (Leitenberg et al., 1988; Thackwray et al., 1993). However, dismantling studies have shown that cognitive-behaviour therapy is superior to behavioural therapy alone in the longer term (Fairburn et al., 1993) suggesting that techniques targeting beliefs, attitudes, and assumptions are significant for long-term recovery.

A significant percentage of individuals with bulimia nervosa do not respond dramatically or sufficiently to treatment. Nonresponders or poor responders have been found to have a greater history of psychoactive substance abuse, low self-esteem, and borderline personality disorder (Coker et al., 1993) which may be indicative of greater general psychopathology.

1.2.5.4 cognitive-behavioural therapy for anorexia nervosa

In contrast to bulimia nervosa there has been one randomised and controlled trial comparing different treatment approaches to anorexia nervosa. The Channon et al. (1989) study found no differences between cognitive-behaviour therapy and behaviour therapy. There are a number of difficulties with this study. The sample was small,
and the treatment interventions were not manual based, and although it was stated that the treatment protocol was based on the Garner and Bemis (1982, 1985) model, the extent of adherence to this model is not clear. Leung, Waller, and Thomas (1999) found that cognitive-behaviour delivered in a group format did not induce significant clinical change.

1.2.6 Limitations of conventional cognitive-behavioural models of eating disorder

As outlined above the central premise of conventional cognitive models of eating disorders has involved an intrinsic focus upon dysfunctional cognitions related to food, weight, and body shape (e.g. Fairburn, 1997; Garner and Bemis, 1982). Within these models, the centrality of these cognitions has been posited to contribute to the development and maintenance of eating disorder. The presence of these cognitive features in eating disorders has been supported by a large body of pertinent research (e.g. Ben-Tomvin et al., 1989; Cooper, Anastasiades, and Fairburn, 1992; King, Polivy, and Herman, 1991). Furthermore, there are a number of treatment outcome studies that evince high success rates for interventions based upon these models (e.g. Craighead and Agras, 1991; Wilson and Fairburn, 1993). More recently however, research findings have emerged to suggest that although these cognitions may be of fundamental importance, they are not sufficient to comprehensively elucidate eating disorder psychopathology (e.g. Cooper, 1997; Cooper, Todd, and Wells, 1998; Leung, Waller, and Thomas, 1999). This research suggests the presence of dysfunctional cognitions in the eating disorders that are not considered to be directly related to food, weight, or shape. These core beliefs may hold great personal significance (Cooper,
Anorexia nervosa and bulimia are associated with low self-esteem (Dykens and Gerard, 1986; Weinreich et al., 1985) and increased perfectionism (Garner et al., 1985; Slade and Dewey, 1986). Anorectic women have been observed to espouse more dysfunctional beliefs pertaining to guilt, self-esteem, self-evaluation (Marshall, Palmer, and Strech, 1993), lower self-ratings of competence (Bers and Quinlan, 1992), and significantly higher ratings of depression (Clark, Feldman, and Channon, 1989). Bulimic women have been observed to espouse dysfunctional cognitions related to personal competence and vulnerability to interpersonal evaluation (e.g. Mizies, 1988; Phillips Tiggermann, and Wade, 1997), shame (Andrews, 1997), insufficient self-control (Newton, Freeman, and Munro, 1993). It is possible that eating disorder psychopathology and these dysfunctional cognitions are fundamentally linked. For example, Butow, Beumont, and Touyz (1993) suggest that anorectic individuals' sense of personal value is largely derived from the success of their self-control attempts. Vitousek, Orimoto, and Ewald (1995) also suggested that in bulimia nervosa the primary mechanism may be perceived personal and social contingencies related to body shape and weight. It is possible that there is a bi-directional relationship between self-awareness and eating psychopathology. It was found that experiences that lead to self-evaluation or self-criticism produced an intensified focus on body size and shape (Striegel-Moore et al., 1986). and conversely, that shifts in weight dramatically influenced affect and cognition.

Cooper, Todd & Wells (1998) found two types of qualitatively different, and distinct beliefs in eating disorders: these were beliefs linking eating behaviour with weight...
and shape, and pejorative beliefs about the self. These were reflected in negative self beliefs, assumptions about social- and self-desirability, and assumptions about control over eating. They reported that the self-beliefs were invariably negative and unconditional, and involved themes of self as being worthless, a failure, or inferior. Beliefs about eating, weight and shape were usually in the form of conditional assumptions, and participants appeared to consider restricted eating as a way of counteracting the negative implications associated with their self-beliefs. Presumably lapses in dietary restraint could be perceived as confirmation of these self-beliefs.

Within the above research (Cooper, Todd and Wells, 1998; Cooper et al., 1996) negative beliefs have been regarded as a unitary construct. In contrast, Leung, Waller, and Thomas (1999) have utilised Young's (1994) multifactorial model of core schemata to examine the contribution of dysfunctional core beliefs in eating disorder. Both anorectic and bulimic women reported more maladaptive core cognitions than controls. Generally, anorectic and bulimic women were found to be quantitatively undifferentiated in their levels of core belief, with the exception that bulimic women reported higher levels of entitlement. However, core beliefs were only found to be associated with maladaptive eating attitudes in the bulimic women. The authors considered that the relationship between maladaptive core beliefs and eating psychopathology are important in differentiating anorectic and bulimic individuals. It would appear, as Vitousek, Orimoto, and Ewald (1995) suggest, that although there are superficial similarities in the belief systems and behavioural manifestations of both disorders, there may be important differences in underlying variables.
Despite the above emerging literature there remains a related body of literature that suggests that cognitions related to food, weight and body shape are of primary importance in eating disorders. It is therefore, necessary to understand the processes involved in the mediating variables of dieting regimens, exercise programmes, elimination and purging behaviours. In common with Costello (1992) who has argued against the practice of developing disorder syndromes without the necessary understanding of individual features, or symptoms of disorders, Waller (1993) has argued that a more comprehensive theoretical understanding of symptoms within eating disorders is required rather than a focus on syndromes. He argues that this is reliant upon the improved understanding of both the core feature of eating disorders "a disabling concern over control of food, shape, and weight" (pp 83), and features that are commonly, but not universally present, e.g. bingeing, vomiting, body image distortion, excessive exercise, menstrual dysfunction. Eating disorders are heterogeneous conditions involving considerable diversity in initiating and maintaining variables (Vitousek and Ewald, 1993). It follows that an understanding of the function and/or effects of these features would improve both clinical and research endeavours.

1.3 Appraisals about the functionality of eating disorder psychopathology

The preceding section suggested the possibility that eating disorder psychopathology serves some function for the individual. The present section expands upon these
ideas, and presents recent theorising and research findings which indicate not only the potential for functionality, but that there are also potential costs incurred in utilising these.

1.3.1 The role of self-schemata

Although cognitive distortions around weight and body image are considered to be the core features of anorexia nervosa. A number of authors have progressively emphasised other, more general features in the psychopathology of anorexia such as low self-esteem, low self-worth, perfectionism, powerlessness (Wolff and Serpell, 1998; Vitousek and Ewald, 1993; Waller, 1993). Guidano and Liotti (1983) posit a constructivist stance where cognitive structures relate to development in personal identity. Personal identity in anorexia nervosa may involve linkage between weight and shape schemata with self schemata (beliefs in personal ineffectiveness and failure) to the extent that these become enmeshed (Vitousek and Hollon, 1990). Vitousek and colleagues (Vitousek and Hollon, 1990; Vitousek and Ewald, 1993) suggested that in anorexia nervosa the beliefs related to control of eating, weight and body shape may have some cognitive utility and functionality in serving as a simplified template for control endeavours in other aspects of the individual’s life.

Vitousek and Hollon (1990) proposed that the extreme nature of distressing unconditional schemata in relation to the self (e.g. self as powerless) is believed to result in the development of compensatory conditional schemata (e.g. the self as in control if eating can be restricted, and if preferred body shape and weight can be
achieved and maintained) which are rigidly applied leading to over-control and obsessionality. This implicates the development of conditional schemata, and includes elements of over-control (Casper, Hedeker, and McClough. 1992), and a tendency to evaluate self-worth primarily in terms of self-control (Butow, Beumont, and Touyz, 1993). This cognitive model hypothesises that individuals with eating disorders develop organised cognitive structures around the issues of weight and its implications for the self that profoundly influence their perceptions, thoughts, affect, and behaviour (Vitousek and Hollon, 1990; Vitousek and Ewald, 1993). Within this model self-schemata become enmeshed with weight-related schemata with an underlying central premise that thinness equals success, competence, control, achievement, and desirability (Bennet and Gurin, 1982). This satisfies the gratification of asceticism, perfectionism, discipline, morality, (Vitousek and Ewald, 1993). Dietary restraint and subsequent weight loss may be self-reinforcing as these may lead to feelings of pride, triumph, power, control (Vitousek and Ewald, 1993; Slade, 1982), and may also involve a derived sense of power from the defiance of hunger (Fairburn et al., 1999).

Cognitive models of eating disorders take account of positive reinforcement as maintaining factors (De Silva, 1995; Garner and Bemis. 1982; Vitousek and Ewald, 1993). Indeed it has been suggested that self-reinforcement i.e. a sense of control and achievement may be gained through the defiance of hunger and restriction of eating (Garner and Bemis. 1982; Vitousek and Ewald, 1993). Individuals with anorexia nervosa appear to derive pride from their extreme self-control around food. However,
their overall self-esteem remains low and they tend to lack a sense of mastery in other aspects of their lives (Pike, Loeb. and Vitousek, 1996) and the eating disorder becomes their sole source of self-worth. As Slade (1982) suggests, this may offer the individual the experience of:

"successful behaviour in the context of perceived failure in all other areas of functioning" (pp 173).

Cognitive models of the eating disorders have differed from cognitive models of other disorders in stressing the motivated and functional aspects of cognition and behaviour (Fairburn and Garner, 1988; Garner and Bemis, 1982; Vitousek and Hollon, 1990)

Vitousek and Ewald (1993) note that:

"Cognitive theories of psychopathology usually disavow dynamic notions of motivated symptomotology, emphasising instead the automaticity of the information-processing errors that derive from lawfully and unintentionally acquired schemata" (pp 221).

1.3.2 Pro- and anti-disorder beliefs

Vitousek and Hollon (1990) proposed simplifying, organising, and stabilising functions of schematic processing in anorexia nervosa, and that these reduce complexity and ambiguity for the individual. However this model was restricted to consideration of positive functions. Wolff and Serpell (1998) proposed that anorexia nervosa involves a number of conflicting meta-cognitions in the form of pro-anorexia beliefs (e.g. the idea that anorexia offers structure and certainty in the individual’s life) as well as anti-anorexia beliefs (e.g. the idea that anorexia is a destructive,
interfering factor in the individual’s life). These authors argue that positive automatic thoughts may contribute to the egosyntonic nature of anorexia. Serpell (1999) conducted a qualitative study involving individuals with anorexia nervosa in order to elucidate a range of disorder-specific perceptions on the advantages and disadvantages of suffering anorexia nervosa.

In a positive sense anorexia was believed to provide:

1. protection and consistency;
2. control providing structure and willpower;
3. increased attractiveness and fitness;
4. superiority to others on the basis of feeling special;
5. increased confidence;
6. skill as feelings of efficacy are drawn from successful restraint;
7. avoidance of aversive cognitive and affective states;
8. disorder as an outlet for emotions and solicitation of assistance from others;
9. amenorrhea.

While in a negative sense anorexia was believed to incur:

1. perceptions of having been deceived by the disorder;
2. detriments to interpersonal relationships and social life;
3. negative impact of the disorder on others;
4. concern over physical and psychological health;
5. suppression of emotions;
6. anger toward the disorder;
7. perceptions of being consumed by the disorder and personal identity being
replaced by disorder identity;

8. the restrictive nature of the disorder as precluding other valued activities;

9. preoccupation with food and feeling controlled by food.

1.3.3 Eating behaviours as indicators of self-control and self-worth

Fairburn, Shafran, & Cooper (1999) have recently proposed a cognitive-behavioural model of anorexia nervosa that attempts to incorporate previous findings. They argue that the extreme need to control eating arises from a general need for self-control, and that the other characteristics of the disorder are influenced in the service of these needs. The individual uses food-, weight-, and shape-related issues as a means of establishing self-control and self-worth. Essentially they argue that control over eating emerges due to both, the limited spheres of control available, and to socio-cultural reinforcement (e.g. Stice, 1994). This also involves an extension of Slade’s model (1982), who suggested that eating disorders are self-maintaining to the extent that, the need for control is both positively (through the experience of successful control attempts), and negatively (through the fear of weight gain, and preclusion of other concerns) reinforced. The broader issue of control is pervasive in the eating disorder literature, reflecting the multidimensional nature of eating disorders. Domains of control associated with eating disorder have included, the family system (Selvini-Palazzoli, 1974; Bruch, 1978), or the wider socio-cultural milieu (Orbach, 1986; Malson, 1998). In the Fairburn, Shafran, & Cooper (1999) model, control bids have been regarded as an intrapersonal dynamic related to personality, cognitive, or affective predisposition (Bruch, 1973; Garner and Bemis 1982; Fairburn, Cooper, and Cooper, 1986).
Fairburn, Shafran, & Cooper (1999) propose that three main factors are important in the maintenance of the disorder:

1) Successful dietary restriction provides direct evidence of self-control and self-worth, and hunger sensations may be similarly appraised. Presumably, failure to adhere to the strict dietary rules may be perceived as equally direct evidence of fallibility and ineffectuality, with ensuing negative self-evaluation.

2) Psychological and physiological effects of severely restricted eating and purging (e.g. Wilson, 1991) potentate further dietary restriction. For example, hunger sensations may also be appraised as threats to dietary control, and the heightened sensation of fullness secondary to delayed gastric emptying may be appraised as indicative of overeating (Garner et al, 1996). Psychological effects such as impaired concentration, preoccupation with food and eating may also be interpreted as threats to control. Furthermore, in eating progressively less with correspondingly less weight loss, individuals may be motivated to increase their sense of control by engaging in excessive exercise or elimination behaviours; these secondary behaviours are believed to contribute to the disorder as individuals typically relax their stringent eating patterns (Fairburn, 1995). Self-monitoring in the form of checking behaviour may be an important factor in the maintenance of body image distortion, and may therefore be an important variable in the maintenance of anorexia nervosa (Rosen, 1996).

3) Extreme concerns related to shape and weight encourage dietary restriction. Overweight people are viewed in pejorative terms by comparison to slimmer peers
(Allon, 1982), and self-perceptions of being overweight are related to lower self-esteem, depression, and heightened anxiety (Heatherton, 1993). Consequently, many individuals are motivated to develop or maintain an acceptable weight and body shape (Brownell, 1991). The emphasis on thinness in society has potent consequential impact on beliefs, attitudes and behaviour (Polivy, Garner, and Garfinkel, 1986). However, high percentages of women are reportedly dissatisfied with their weight (Schlundt and Johnson, 1990), these women are exposed to the same cultural and societal influences but do not develop eating disorders. Therefore in isolation, socio-cultural concerns are not of sufficient explanatory value. Fairburn, Shafran, & Cooper (1999) argue that that continual monitoring of weight, with positive and negative appraisals of slight weight losses and gains respectively, also contribute to maintenance. Rosen (1997) has identified a similar process with respect to perceived changes in body shape. However this is, in itself, mutable with reference to: negative affect (Taylor & Cooper, 1992); the consumption of food believed to be highly calorific (Thompson et al, 1993); and media images of thin women (Hamilton & Waller, 1993).

1.3.4 Functions of binge eating

There is an association between negative affect and bingeing (Johnson et al., 1995), with negative mood preceding the binge episode (Davis, Freeman, and Garner, 1988), and a suggestion that binge eating provides temporary relief from the negative mood state (Kaye et al., 1986). Binge eating may result from the self-regulation of negative affect, as binge eating appears to relieve anxiety (Hsu, 1990; Schlundt and Johnson,
This possibly occurs through mechanisms that offer competing stimuli to distract the individual from problematic concerns (Fairburn and Cooper, 1987) or displace the experience of distress from more profound concerns to the less threatening, and seemingly manageable, problem of overeating (Schlundt and Johnson, 1990). However, the behaviour of eating food also has a range of comforting attributes such as the association of certain foods with more pleasurable experiences, the hedonic experience of taste, or the alleviation of hunger. It has also been reported that the relief gained from binge eating is temporary and inevitable leads to feelings of guilt, shame, disgust, self-disparagement, perceptions of diminished personal control, and depression (Elmore and De Castro, 1990; Schlundt and Johnson, 1990).

There are suggestions that bulimic behaviours may constitute an attempt to reduce awareness of intolerable cognitive and emotional states where these are appraised as threatening or unacceptable. There are models suggesting that binge eating represents an attempt to reduce awareness of stimuli that are perceived as threatening (Lacey, 1986; Root and Fallon, 1989; Heatherton and Beaumeister, 1991). McManus et al., (1996) suggested that two awareness reducing effects may exist: (1) binge eating may modify affect by comfort or distraction (Lacey, 1986); (2) food may act as an emotional stimulant, a physical stimulus, or may exert a calming effect from emotional arousal. In contrast, Heatherton and Beaumeister (1991) regard binge eating as a motivated attempt to escape from self-awareness through the blocking of negative cognitions and emotions, and binge eaters are more susceptible to external food cues when they are in distress manifest by negative self-evaluation. They argue
that binge eating may not directly moderate affect, the primary process may be a reduction of cognitive awareness and a secondary consequence may be attenuated affect. When attention becomes narrowed proximal (e.g. sensory aspects of food), rather than distal goals (e.g. consequences of overeating) become salient (Heatherton and Beaumeister, 1991) and the individual’s level of self-awareness becomes lowered, enabling avoidance of meaningful and abstract thinking and consequent disinhibition. Therefore, binge eating results from the loss of higher level cognitions including those that regulate food intake and eating, in the service of abstract goals such as weight loss. In support of this model Wardle and Beales (1988) found that participants on a weight loss programme ate significantly more, while they watched a frightening film.

Such awareness reducing behaviours do not appear to be restricted to conventional concerns in eating disorders. Waller et al. (1995) found an information-processing bias for general threat information (not just related to food, weight and shape) in a non-clinical female population, and women with higher levels of bulimic attitudes showed attentional bias and slowed processing of threatening rather than neutral information. Quinton (1998) extended this work in a comparison of dieters and non-dieters and found that for dieters the level of bulimic eating psychopathology was positively associated with interference. Quinton (1998) suggested that bulimic behaviours serve the function of reducing awareness from threatening information.
However threat is a multi-faceted concept (e.g. physical harm, harm to the self-concept, loss of personal control, social disapproval), and the nature of the threat also appears to be important. Waller et al. (1995) found that self-directed criticism was most directly associated with bulimic behaviours. Using Stroop methodology McManus, Waller, and Chadwick (1996) investigated the processing of five different types of threat: autonomy, sociotropy, discomfort anxiety, ego threat from others, and ego threat from self. Compared to controls bulimic women had a significantly greater bias for autonomy, discomfort anxiety and ego threat from self. Furthermore, non-clinical women with high level of bulimic attitudes have also been shown to have a significant bias for ego threat from self (Waller et al., 1996). Attentional bias to threat reflecting self-criticism emerged as the most significant form of threat. Polivy and Herman (1999) found that experimentally induced negative self-awareness resulted in overeating in dieters.

Such ideas of functionality are similar to those of Borkovec and Inz (1990) who suggested that voluntary engagement in worry may have the cognitive utility of distraction from more negatively valenced concerns. In generalised anxiety, anxious rumination in the form of worry may partly operate as a mechanism for inhibiting the processing of distressing emotionally charged information (Borkovec and Inz, 1990; Wells, 1997). It would be theoretically feasible that the inhibition of distressing cognitions might result from the increased preoccupation and rumination about food. Schlundt and Johnson (1990) have found that the heightened preoccupation with food also involved a decreased capacity to perform other cognitive tasks while Polivy (1990) found that chronic restricted eating resulted in preoccupation with food.
thoughts and memory disturbances. Impairments in dieters' cognitive processing (Green, Elliman, and Rogers, 1997) and working memory (Green and Rogers, 1998) have been attributed to reductions in working memory and attention capacities, due to the preferential processing of cognitions concerning food and shape.

The relationship between preoccupation with food and more aversive cognitions may be reciprocal, as restrained eaters can be induced to violate their dietary rules by the experience of negative emotions (Cools, Schotte, and McNally, 1992; Heatherton, et al., 1993). Dieters have been found to be significantly more preoccupied with thoughts of food and eating than non-dieters (Hart and Chiovari, 1998). However, their cognitive focus on food has been shown to be compromised by other competing concerns. Scattolon and Nicki (1995) found that dieters induced to worry about social-evaluative and performance-based concerns exhibited disinhibited eating. This group subsequently consumed more food that those instructed to worry about food and eating, or appearance. The authors considered these findings to be supportive of the boundary model proposed by Herman and Polivy (1984). However, an alternative interpretation might suggest that in attending to other concerns, regulation of dietary restriction was afforded insufficient attention to maintain restraint.

1.3.5 Dissociation in eating disorders

Quinton (1998) stated that the cognitive and emotional pattern of reducing awareness whilst under perceived threat is similar to the concept of dissociation. High levels of dissociation have been found in individuals with bulimia nervosa (McManus, 1995;
Studies have linked dissociation to bulimia (McCarthy et al., 1994; Miller et al., 1993) and to binge eating in particular (Everill, Waller, and MacDonald, 1995). Furthermore, patients with eating disorders have been shown to have elevated scores on self-report instruments measuring dissociative experiences (Demitrack et al., 1990; McCallum et al., 1992) or may have comorbid dissociative disorders (Levin et al., 1993; Torem, 1990). A history of abuse (sexual, physical, and emotional) has been implicated as a risk factor for the development of bulimic symptomatology (Pitts and Waller, 1993; Waller, 1992), with emotional abuse emerging as the strongest predictor (Kent, Waller, and Dagnan, 1999). Everill, Waller and MacDonald (1995) have implicated dissociation as a mediating variable between a history of sexual abuse and the frequency and severity of bingeing in women with bulimic disorders. Everill and Waller (1995) suggest that when events trigger trauma schemata the cognitive and affective consequences become too powerful to be blocked at a cognitive level and bingeing increases. Other tension-reducing behaviours such as self-harm or alcohol misuse have often been reported alongside bulimic behaviours (Demitrack et al., 1990; Lacey, 1993) suggesting that a number of blocking or displacing strategies may be attempted.

Gleaves and Eberenz (1996) and Greenes et al. (1993) have questioned the association between eating disorders and dissociative phenomena. Greenes et al. (1993) found a significant association between depression and dissociation in eating disordered individuals and suggested that higher levels of dissociation were an artefact of the elevated levels of depression. Katz, and Gleaves (1996) found that dissociation, as
defined (e.g. Steinberg, 1996) as involving amnesia, depersonalisation, derealisation, identity confusion, and identity alteration, was not experienced by all eating disordered participants but rather a range of dissociative-like experiences were common among individuals with eating disorders, regardless of the presence of a comorbid dissociative disorder.

(Katz and Gleaves 1996) described a range of dissociation-like experiences in patients with eating disorders (both anorexia nervosa and bulimia nervosa). These included:

1/ The experience of internal dialogues about food;
2/ The experience of internal dialogues arguing about eating;
3/ A childhood history of having attempted to block out stressful stimuli;
4/ Willing themselves not to eat, even when hungry;
5/ The belief that the mind can control the body;
6/ The experience of absorption regarding thoughts about food;
7/ The experience of memory disturbances due to thoughts about food;
8/ The experience of time distortions due to thoughts about food;
9/ The feeling that there is another person within them that forces them to starve or binge;
10/ The feeling that there is another person within them that prevents them from eating, even in the presence of food or hunger cues;
11/ The feeling that there is another person within them that forces them to eat, even when they are not hungry;
They may feel that they are purging themselves of an undesirable part of
themselves;

The feeling that they are losing control over another person within them that will
trick them into starving or bingeing.

Katz and Gleaves (1996) concluded that individuals with eating disorders may
experience a range of experiences that may be located along a continuum of
dissociation, from pathological dissociation to dissociation-like experiences

1.3.6 Cognitive appraisals of food properties

Food is one of the essential elements of life, it is a fundamental need (Maslow, 1943).
It is inevitable that individuals develop a range of beliefs related to food and eating.
This section will examine aspects of the literature that are related to cognitive aspects
of food and eating.

Food thoughts and subsequent eating behaviours are multidimensional. For example,
an individual may focus on the caloric value and appraise the thought as dangerous or
threatening, or alternatively the focus may be upon gustatory pleasure and the thought
may be appraised as appetitive. For individuals who have high levels of dietary
restraint (especially those with eating disorders) food preference is less dependent on
the hedonic responses to taste and more dependent on beliefs and attitudes about
specific types of food. Dichotomous thinking about food has been observed, with
foods being classified into “good” or “bad” categories (Garner et al., 1982; O’Connor
et al., 1987). In comparisons between restrained and unrestrained eaters Tepper (1992) found that restricted eaters controlled food intake on the basis of food-related beliefs. Indeed eating behaviour has been shown to be influenced by the type of food, and the individual's cognitive appraisal of the food (Stoner et al., 1994; Sunday, Einhorn, and Halamni, 1992; Booth, 1995). Stoner et al. (1996) found clear differences in beliefs and attitudes toward food between individuals with eating disorders and controls. The macronutrient properties of foods e.g. fat content, caloric values, were revealed as important factors in rated desire to eat various food types, and there was an avoidance of high fat, high carbohydrate, high calorie foods. Both bulimic and anorectic individuals show a strong tendency to avoid fat and choose calorie-reduced products (Tuschl et al., 1990). Sunday et al. (1992) examined preferences and affective perceptions of food among eating disorder patients and restrained and unrestrained control participants. They found that eating disorder patients and restrained controls exhibited similarities in food-related cognitions. Eating disordered individuals have more negative thoughts about eating than non-dieting controls, with dieters occupying an intermediate position (Cooper and Fairburn, 1992). Furthermore, eating disorder patients have been shown to associate significantly more guilt and danger to high-fat or high-calorie foods compared to restrained controls (Sunday, Einhorn, and Halamni, 1992), and exhibit increased negative reactions to eating such foods in comparison to controls (Ruggerio et al., 1988). Cognitive or affective components of eating disorders are thought to be powerful determinants of eating behaviour (Sunday et al., 1992).
Indeed interactions between cognitive and affective components may also be important. Those with eating disorders and dieters have lower self-esteem (Wilson and Whaley, 1990). However, lowered self-esteem could be a precondition for dieting, or it could be consequent on unsuccessful dietary restriction, or more likely a complex interaction of both these factors.

Cognitions related to food and the perceived consequences of eating appear to exert an important influence on the regulation of eating behaviour in non clinical (dieting) populations (Polivy et al., 1986). Dieters are prone to irrational thinking about food and eating (King et al., 1987; Knight and Boland, 1989). Tuschl et al., (1990) found that dieters showed a strong tendency to avoid fat and choose more low fat products than non dieters, and also used more artificial sweeteners and calorie-reduced foods. Boon et al., (1998) found that restrained dieters expressed more eating-control, weight- and shape-related cognitions than unrestrained eaters, with restrained non-dieters occupying an intermediate position. The authors argued that this indicated that both chronic (cognitive) and acute (hunger) variables are important determinants of eating. Boon et al., (1998) found that exposure to food stimuli and food-related cognitions elicited more eating control, weight-, and shape-related cognitions in restrained eaters. Laessle et al., (1989) confirmed that restrained eaters ate significantly less than non restrained eaters, and reported differences in food preferences, with the restrained group reporting significantly less consumption of food items categorised as “high carbohydrate-high caloric”, “fat-carbohydrate” and “fat-protein”.

1.4 Self-regulation in eating disorder

1.4.1 Appraisals related to cognitive mediation of dietary intake

Rodin (1990) suggested that eating behaviour is a function of factors that are specific to the individual (e.g. hunger or satiety cues, mood state, food-related cognitive set, previous experience of food types), and factors that are specific to the stimulus (e.g. the social context of the eating episode, sensory characteristics of the food). In a review of studies directed toward the characterisation of disordered eating, Heatherton (1993) implicated a wide range of physiological, psychological, environmental, and socio-cultural determinants of eating behaviour. However, it was concluded that cognitive mediation is the primary mechanism of restricted dietary intake, rather than a primary physiological deficit (e.g. dysfunctional appetite regulation, or impaired taste perception), and furthermore, that disordered eating involves the exertion of cognitive control to overcome both interoceptive and contextual cues.

Polivy and Herman (1993) concluded that the relationship between food-related cognition is complex. They suggested that only certain types of cognitions (i.e. "sensory" thoughts about food) were likely to result in disinhibited eating. Conversely, they suggest that retaining thoughts about the dangers of food was a necessary condition for successful dietary restraint, to the extent that distraction from such regulatory thoughts was observed to result in increased eating. Cooper, Clark, and Fairburn (1993) found that when thoughts related to eating, weight, and shape were experimentally induced, participants in the experimental group ate less than
controls. Self-monitoring of food intake has been reported as possibly the single most important determinant of weight loss (Wadden, 1993; Baker & Kirschenbaum, 1993). Indeed, Kayman et al. (1990) concluded that consistent self-monitoring of eating and weight was associated with weight loss maintenance while sporadic monitoring was associated with lack of success. Heightened self-awareness and monitoring of dietary intake has been shown to prevent disinhibition of eating restraints (e.g. Pecsok & Fremouw, 1988; Prokop et al., 1991). Experimentally manipulated attentional focus on food intake has also been shown to inhibit eating (Polivy et al., 1986). While Grilo et al. (1989) found that the most common reason for failing to control dietary intake was the presence of food cues (e.g. smell and sight) and argued that these cues were especially potent in capturing attention. By contrast, French (1992) found that preloaded restrained eaters expressed more control-related thoughts regarding food than non-preloaded restrained eaters and unrestrained eaters, but these thoughts did not mediate disinhibited eating. Westenhoefer (1991) found that strategies to restrict food intake were differentially successful. High disinhibition was associated with strategies centred on counting calories, avoiding some foods, frequent dieting and eating low calorie foods, while low disinhibition was associated with a more flexible control of everyday eating behaviour that included cognitively controlled stopping of eating, taking small helpings, and eating slowly. Therefore success in dietary restraint may be predicted by two different sets of behaviours and cognitions.
1.4.2 The paradoxical effect of restricted food intake

It has been reported that there are a number of attendant psychological consequences of restricting food intake. Classic studies of food restriction (Keys et al., 1950) studied the effects of starvation. A sample of normal weight men were asked to restrict their eating to the extent that they lost 25% of their initial body weight. It was found that the participants became obsessively concerned by food to the exclusion of other considerations. Furthermore, when the men were subsequently allowed to eat freely they were observed to gorge themselves to an extent that far exceeded their pre-study levels (Franklin et al., 1948). These men frequently reported perceptions of lack of control over their eating and obsession with food, and food restriction appeared to result in binge eating in individuals whose previous food intake was moderate. These behaviours continued even when these men had returned to their pre-study weight. It has been observed that prior food deprivation appears to produce a tendency to overeat and even binge (Polivy, 1996). It has also been observed that restricted eating is often counterproductive as the oscillation between periods of restricted eating and overeating do not necessarily result in weight loss (Heatherton, Polivy, and Herman, 1991; Klesges, Isbell, and Klesges, 1992; Tiggemann, 1994). If weight loss is the ultimate goal then individuals may be motivated to exert increased control over their dietary intake, and thereby establish a maladaptive cycle.

The above studies examining the consequences of starvation have found heightened cognitive focus on food and eating (Franklin et al., 1948; Keys et al., 1950) which
involved obsessional thinking and rumination about food. Preoccupation with food thoughts is a well recognised feature of eating disorders (e.g. Fairburn, 1997), a phenomena that is appraised as aversive by those with an eating disorder (Serpell, 1999; Polivy and Herman, 1993), and in dieters (Polivy and Herman, 1993). Several studies have demonstrated that the heightened cognitive focus on food thoughts receded following a period after normal eating had been re-established (Levin et al., 1990). This effect has not however, been noted within the shorter-term period of restored eating (Garfinkel et al., 1978). Indeed, even long-term repletion may fail to reverse this effect in some individuals (Casper, 1980). It is likely that, even in periods of normal eating, food retains its personal significance for those with eating disorders.

1.4.3 The paradoxical effect of suppressing thoughts about food

Polivy and Herman (1993) also note that individuals attempting to restrict their intake of food, often attempt to suppress food-related thoughts. As noted by Ward, Bulik, and Johnson (1996) trying to suppress food thoughts may result in these thoughts becoming hyperaccessible (this is discussed in further detail below).

It has been suggested that binge eaters and dieters experience difficulties in suppressing thoughts of food, and often become preoccupied with such thoughts (Herman & Polivy, 1993), and that such attempts are related to bingeing (Williamson, 1990). Ward, Bulik, and Johnson (1996) have forwarded a model of bulimia nervosa based on the mental control theory (Wegner et al., 1987; Wegner, 1994). Mental control and the attempted suppression of unwanted thoughts have been regarded as
important issues in clinical disorder, as such attempts are believed to result in rebound effects which increase the frequency, intrusiveness and perceived uncontrollability of unwanted thoughts (Wegner, 1994; Wells & Mathews, 1994). Zotter and Crowther (1991) found that bulimic individuals were more likely, than “normals” or currently dieting controls, to espouse negatively valenced and distorted cognitions about food, weight and body shape. Essentially, Ward et al. (1996) state that the paradoxical presentation in bulimia nervosa (attempts at stringent dietary intake restriction, and recurrent episodes of binge eating) is replicated in the nature of their accompanying mental processing. Within this process bulimic individuals attempt to suppress personally relevant food, weight, and body shape thoughts, which according to mental control theory will result in increased frequency of these thoughts. The “ironic” process (Wegner, 1994) results in these problematic thoughts becoming hyperaccessible. Ward et al. (1996) suggest that this may lead to loss of control over eating (although they do not elaborate on a proposed mechanism), and over time lead to exacerbation and maintenance of bulimia. Indeed, bulimia appears to involve periods of successful regulation and the consumption of “healthy” foods (e.g. Hadigan et al, 1992), and periods of failed regulation and the consumption of “forbidden” foods (e.g. Davis et al, 1988). Cooper, Todd, and Wells (1998) have also emphasised the importance of permissive thoughts that appeared to facilitate further eating following the initial lapse.

1.4.4 Thought-shape fusion: A cognitive distortion?

A recent study (Shafran et al., 1999) described a cognitive distortion (that they termed
"thought-shape fusion") associated with eating disorder pathology. This distortion
is conceptually related to "thought-action fusion" which is believed to be an important
feature of obsessive-compulsive disorder (Rachman, 1993; Shafran et al., 1996).
Thought-action fusion is comprised of two components: the belief that having an
unacceptable obsessional thought. a) potentates the likelihood of the event actually
occurring; b) is morally equivalent to actually acting upon the thought. Thought-
shape fusion (TSF) has three components: a) probability TSF in which thinking about
the forbidden food increases the probability that the person has gained weight, b)
morality TSF in which experiencing the thoughts about eating the forbidden food is
believed to be morally equivalent to actually eating the prohibited food, c) perceptual
TSF in which experiencing the thoughts about eating the forbidden food increases the
perception of fatness.

In a non-clinical sample, a modest percentage (84 of 441) of female undergraduate
students espoused at least one of the beliefs proposed in TSF. This lends support to
the postulated phenomenon. The correlations between TSF and eating disorder
pathology were significant, even when the effects of depression and obsessionality
were partialled out (Teachman, Shafran, and Rachman, 1997). Although conceptually
related TSF and thought-action fusion have been found to be only modestly correlated
(Shafran and Baker, 1997) suggesting that these represent related but separate
cognitive distortions. This study also found evidence of attempts at cognitive
neutralisation in response to the occurrence of the cognitive distortion. These
included individuals imagining themselves, eating "good" rather than "forbidden"
foods, exercising, or vomiting. The conclusion of this study stated that, people who are excessively concerned about their body image might be prone to forming connections between their unwanted intrusive thoughts about food and eating and their body shape, and that they are motivated to make attempts at reparation.

1.4.5 The concept of self-regulation

Many of the ideas offered within cognitive models of eating disorder outlined above, suggest that the characteristic behaviours observed in these disorders, serve a self-regulatory function.

Equilibrium and homeostasis are essential components in human existence, with the body regulating processes such as temperature, breathing, digestion, etc. Humans also seek equilibrium in their psychological experience. Underlying most self-regulation models is the assumption that humans are inherently self-constructing, and possess an internal control system that regulates their behavioural, affective and cognitive responses (Ford, 1987). Therefore, self-regulation consists of the internal and external processes that allow an individual to engage in goal-directed actions over time, and in different contexts (Baumeister & Heatherton, 1996; Karoly, 1993). This includes the monitoring, evaluation, selection and modification of behaviour to accomplish goals in an optimal and satisfactory manner (Karoly, 1993).

One of the most important models of self-regulation is that proposed by Carver and Scheier (1981, 1990) who stated that self-regulation of behaviour typically involves
conscious or control-led cognitive processing. They propose that goals are cognitive structures and are stored in memory in the form of behavioural scripts or knowledge. These cognitive representations are considered to enable the interpretation, appraisal, and guidance of actions. This model entails a multi-level hierarchy of competing processes. When a goal is salient or activated, it functions as a referent value or standard of comparison, and subsequent information concerning the individual’s behaviour (and its perceived consequences) are compared to this standard. If there is a discrepancy between the perceived information and the internal standard or goal (via feedback loops), then the individual attempts to change his/her behaviour to match the desired outcome (a negative feedback process). Several theorists (e.g. Baumeister & Heatherton, 1996) have identified a number of dysfunctional patterns of self-regulation: underregulation which is due to deficient standards, inadequate monitoring, or insufficient cognitive resources; misregulation where ineffective or counterproductive strategies are initiated; or the reference values or goals themselves may be distorted and dysfunctional. Wells and Mathews (1994) have formulated a model of self-regulation which attempts to further expand the understanding of clinical disorders.

1.5 Application of the S-REF model in eating disorder

1.5.1 A unifying model of emotional disorder: The S-REF model

The Self-Regulatory Executive Function (S-REF) model was forwarded by Wells and Mathews (1994), in an attempt to integrate the findings of information-processing
research with Beck's (1976) schema theory. This was proposed to extend the original schema theory to incorporate other important cognitive functions, as despite observed effectiveness in treating a range of psychological disorders, cognitive-behavioural approaches have been criticised for their restricted focus upon the content dimension of thoughts and beliefs. It has been argued that these approaches may be usefully extended by consideration of cognitive processes such as attention, regulation of cognition, levels of control of processing, and interactions between varieties of processing (Wells and Purdon, 1999; Wells and Mathews, 1996).

These researchers have also argued that the practical utility of cognitive-behavioural therapy has been limited by the concentration on content of appraisals and beliefs concerning external stimuli or non-cognitive internal events. They have argued that a comprehensive and integrative cognitive model should investigate the mediating influences of the aforementioned cognitive processes.

The S-REF model is a multi-level system comprised of three interacting levels of cognition:

1. A lower level characterised by automatic and reflexive processing. According to the model three types of information can be represented initially at the lower level:
   (a) external stimulus information, (b) cognitive state information, and (c) body state information:

2. An intermediate level of attentionally demanding and voluntarily controlled processing, involving conscious appraisal and regulation of action:
A higher level incorporating self-knowledge and strategies for self-regulation stored in long-term memory.

The lower level is similar to the structure proposed by Norman and Shallice (1986), while the intermediate and higher level comprise a structure similar to that posited by Carver and Scheier (1981, 1990). The S-REF is the intermediate level within the system and Wells and Mathews (1994) argue that this structure is of profound importance in understanding emotional disorder. The S-REF is regarded as the central mechanism of self-regulation, with self-relevant knowledge stored in long-term memory being the primary influence on the processing operations of the S-REF. However, the process is thought to begin when stimuli which have undergone a degree of automatic or low-level processing intrude into conscious awareness, thereby activating the S-REF. Here these intrusions are appraised with regard to their personal significance, by referencing higher-level self-knowledge structures. If any actual-ideal discrepancies are identified the S-REF initiates and regulates strategies aimed at reducing these discrepancies. The S-REF is conceived of as a limited capacity controlled processing system, and is therefore regarded as sensitive to attentional demands. The processing operations are guided by self-knowledge structures, these are identified by Wells and Mathews (1996) as:

"(1) declarative beliefs (e.g. "I am a failure; I am seriously ill"); (2) procedural beliefs or plans that direct the activities of the controlled processing system. These plans direct selective attention, memory retrieval, appraisal, and meta-cognitive processing in response to stimuli." (p 882).
The model incorporates previous experimental findings from various areas shown to be implicated in the development and maintenance of clinical disorder, e.g. self-focused attention and its detrimental consequences (Ingram, 1990). In the S-REF model self-focus is considered to be an important process moderating the appraisal of internal events and initiating reparative internal and/or external strategies in response to perceived ideal-actual discrepancies. Within this larger process, a series of consequences comprising the “cognitive-attentional syndrome” is considered to contribute to emotional disorder. This syndrome consists of intensified self-focused attention and processing of internal events, reduced efficiency of cognitive functioning, activation of self-beliefs and self-appraisals, attentional biases and capacity limitations. The degree and nature of self-processing is a problematic component of this syndrome. This is due to a) the depletion of resources for processing information incompatible with dysfunctional beliefs, b) performance deficits due to capacity limitations, c) the activation of dysfunctional plans and beliefs, and d) reduction in the capacity of the cognitive system to pass attentional control to lower levels of processing that require less involvement (Wells & Mathews, 1996).

Like the Carver and Scheier (1981, 1990) model, Wells and Mathews (1994) have argued that attentional resource deployment is, at least partially, regulated on a voluntary basis. They argue that within information-processing studies examining attentional bias, the contribution of involuntary mechanisms has been overstated, and that mechanisms which may be fundamentally voluntary may account for some of the
observed effects. Phenomena such as the emotional Stroop interference are attributed
to a voluntarily executed plans which specify the monitoring of negative stimuli that
intrude into awareness. This involves voluntarily initiated threat-monitoring plans
directed toward the registration and ongoing monitoring of threatening stimuli. Wells
and Mathews (1996) state:

"The S-REF model offers an explanation for attentional bias as a consequence of
voluntary threat-monitoring strategy. S-REF activity increases the accessibility of
generic plans for control of selective attention which implement a strategy of focusing
attention on channels associated with threat. Attentional control strategies may be
seen as one element of the person's strategies for dealing with stress." (p 885).

Therefore, the S-REF influences the immediate focus of attention, for example by
means of monitoring, and intensified vigilance which in turn is likely to contribute to
maintenance by the priming of low-level representations of stimuli and increase the
possibility of further intrusions. This is argued to result in meta-cognitive beliefs
related to the controllability, intrusiveness, dismissability, dangerousness, power,
consequences, etc., of these cognitions. The self-potentating cycle of the cognitive-
attentional syndrome is completed during times of higher demand. When resource
capacity is already occupied by dysfunctional processing the individuals is more likely
to encounter situations that strain or exceed resources. Consequently the individual
may make negative inferences about the self, and self-control beliefs, which may in
turn contribute to the maintenance of perceived self-discrepancies.

The model encompasses the possibility of the aforementioned dysfunctional self-
regulation attempts: underregulation may result from capacity limitations:
misregulation may result in counterproductive attempts to exert control e.g. thought suppression attempts and rebound effects (Wegner et al, 1987; Wegner, 1994); reference values and comparative standards may become dysfunctional as new maladaptive self-schema develop (Wells & Mathews, 1994). These processes may contribute to the development and maintenance of the disorder.

1.5.2 The concept of meta-cognition

The S-REF therefore serves a meta-cognitive function involved in cognitive, affective, and behavioural self-regulation. It performs the appraisal of lower-level outputs and initiates, and regulates, strategies aimed at reducing self-discrepancies and perceived threats to the self.

Slife (1987) has argued that without meta-cognition, awareness of cognitive events including thoughts, feelings, and memories would not be possible. The concept of meta-cognition has been implicated in recent cognitive theories of psychopathology (Wells & Mathews, 1994; Wells, 1997).

Meta-cognition has been defined as beliefs and attitudes held by individuals about their own mental states i.e. “cognition about cognition” (Flavell & Ross, 1981), “thinking about thinking” (Yussen, 1985), and “knowledge and control individuals have over their own cognition” (Allen & Armour-Thomas, 1991). While cognition has its object in the external environment (people, places, objects, symbols) and internal environment (bodily states, cognitive states), meta-cognition has as its object
other cognitive events occurring within awareness. So meta-cognition is the aspect of the information-processing system that monitors, interprets, evaluates and regulates the contents (especially of specific types of thought) and processes of its own organisation. The architecture of this cognitive system has not been established but meta-cognition may be regarded as a parallel stream of cognition providing appraisal and interpretation of these cognitive events, and beliefs about the self-relevance of these.

Several theorists (e.g. Brown, 1987; Flavell 1979; Moses & Baird, 1998; Nelson et al. 1999) distinguish between two dimensions of meta-cognition: (a) meta-cognitive knowledge i.e. reportable, stable knowledge/beliefs that individuals possess about their own cognition (static knowledge); (b) meta-cognitive regulation i.e. the monitoring, appraisal, resource allocation, planning, control, and regulation activities that affect cognitive processes (strategic knowledge). Both of these subsystems are believed to interact in a dynamic process aimed at reducing actual-ideal discrepancies, and meta-cognition is therefore viewed as an important mediating factor in self-regulation (Nelson & Narens, 1990; Wells & Mathews, 1994).

The knowledge that individuals have about their own thinking is therefore important. Especially as such knowledge is subject to appraisal and the implementation of strategies resulting from the motivational consequences of such appraisals. Meta-cognition may become maladaptive and lead to distortions in mental experience in
several ways: a) meta-cognitive knowledge may be inaccurate and threat may be erroneously attributed to certain cognitions; b) meta-cognitive regulation may malfunction and result in excessive monitoring or dysfunctional control attempts; c) in cyclic interactional fashion dysfunctional regulation attempts may lead to adverse modifications to meta-cognitive knowledge. Overall these may contribute to psychological disorder (Wells & Mathews, 1994; Wells, 1995).

1.5.3 Meta-cognitive components of eating disorder

Although these recent developments hint at meta-cognitive aspects within eating disorders none of these directly, or comprehensively examine the nature or contribution of meta-cognitive dimensions. The presence of meta-cognitive dimensions is vague and implicitly, rather than explicitly, suggested in the model proposed by Fairburn, Shafran, and Cooper (1999). Other theorising has suffered from an overly restricted focus on a single meta-cognitive strategy i.e. thought suppression attempts (Ward, Bulik, and Johnson, 1996), or an overly specific focus on a single meta-cognitive distortion (Shafran et al., 1999), or meta-cognition has been implied at a descriptive level (Katz and Gleaves, 1996). Other pertinent factors include appraisals related to the cognitive mediation of eating (e.g. Wadden, 1993), and impairments in general cognitive performance due to preoccupation with food-related thinking (e.g. Green et al., 1996). Meta-cognitive factors have only recently emerged within the clinical psychology literature as potential contributors to clinical disorder. At this juncture it would seem more appropriate to investigate the nature and contribution of a full range of meta-cognitive dimensions. As with any emergent
theme, consideration of conceptualisation, operationalisation, and measurement are paramount to initial investigations.

1.5.4 The measurement of meta-cognition

A number of questionnaires have been developed to measure the proposed constructs of meta-cognition. These questionnaires have primarily been developed with reference to anxiety disorders.

1.5.4.1 Thought Control Questionnaire (TCQ: Wells and Davies, 1994)

The experience of unwanted, intrusive thoughts has been reported as a normal process (Salkovskis and Harrison, 1984; Wells and Morrison, 1994). However, it has been suggested that individual’s appraisals of these thoughts, and consequent control attempts may be instrumental in the development of psychological disorder (Wells and Mathews, 1994; Clark and Purdon, 1993). Subsequent research has supported the premise that intrusive and subjectively uncontrollable thoughts are features of several psychological disorders (Cartwright-Hatton and Wells, 1997; Wells and Papageorgiou, 1995; Bouman and Meijer, 1999).

The Thought Control Questionnaire (TCQ; Wells and Davies. 1994) derived from a concern that previous research had focused solely upon thought suppression attempts to control intrusive thoughts. It was considered that this was unnecessarily restrictive, and that further research in the area would benefit from the development of a questionnaire that measured the range of control strategies that individuals may use.
Therefore the TCQ was developed to measure individual differences in the strategies that individuals used in attempts to control intrusive cognitions, and investigate the role of thought control strategies in the maintenance of psychological disorder. However, Wells (1994) has stated that thought control strategies are only one dimension of meta-cognitive self-regulation, and as the TCQ is purely a measure of control strategies it does not measure the beliefs held about discrete thoughts. The negative appraisal of such beliefs would logically precede control attempts. Furthermore, the TCQ was not designed to measure thought control strategies employed in the eating disorders.

1.5.4.2 The Meta-Cognitions Questionnaire (MCQ: Cartwright-Hatton and Wells, 1997)

The Meta-Cognitions Questionnaire (MCQ; Cartwright-Hatton and Wells, 1997) was developed in order to measure beliefs about worry and intrusive thoughts. The underlying premise of this questionnaire was based on Wells and Mathews (1994) S-REF model, and Wells (1995, 1997) conceptualisation of generalised anxiety disorder.

The MCQ has the advantage of acknowledging that both positive and negative meta-cognitions may contribute to psychological disorder, and measures both types of meta-cognitions. The major disadvantage of the MCQ is that it is generic, and was designed to measure general worry and meta-worry. Recent research has suggested that worries (and subsequent meta-worries) may be more content-specific (Bouman...
and Meijer, 1999). Within this study the authors developed a questionnaire (Meta-Cognition about Health; MCHA) to measure specific meta-beliefs about health/illness worries. This examination of meta-worry in hypochondriasis found that hypochondriacal patients worried more about specific illness-related topics, but not about general topics: correlations between the MCQ and the MCHA subscale, and total scores, were low. There are methodological weaknesses in both, the method of constructing the new questionnaire, and in the small sample size of this study. However, it has raised the important possibility that disorder-specific meta-cognitions may exist, as well as the more general, or trait-like worry measured by the MCQ.

1.5.4.3 Thought-Shape Fusion Questionnaire (TSFQ; Shafran et al., 1999)
The Thought-Shape Fusion Questionnaire (TSFQ; Shafran et al., 1999) was designed to investigate a cognitive distortion associated with eating disorder pathology, which was believed to be related to thought-action fusion observed in individuals with obsessive-compulsive disorder (Shafran, Thordarson, and Rachman, 1996). As outlined above, the posited distortion was comprised of 3 domains: probability; morality; perceptual. Correlations between measures of eating disorder symptomatology and the TSFQ were found in a percentage of the sample in this study. The TSFQ has direct relevance to eating disorder and is undeniably meta-cognitive in its focus. However, by focusing on one meta-cognitive dimension it has restricted utility in the measurement of meta-cognition in the eating disorders.
1.5.5 The need for a new measure of meta-cognitive beliefs about food-related thinking

The central premise of this thesis is that a full analysis and understanding of eating disorders should not concentrate solely on the negative aspects of the disorders, but should also examine the perceived positive features, or functions, while also recognising the nature and effects of costs incurred by such strategies. The possibility that conflicting meta-cognitions may contribute to maintenance of the disorders, in a manner similar to that proposed in GAD (Wells & Mathews, 1994; Cartwright-Hatton & Wells, 1996) is the subject of investigation in the present study.

Eating disordered individuals may be conceived of as worrying about eating, weight and body shape. Vitousek and Hollon (1990) have suggested that these individuals exhibit negative self-evaluation, and that they evaluate themselves in terms of the control they exert over eating, weight and body shape. This may be problematic for three main reasons: 1) a fundamentally negative self-perspective leads to perpetual dissatisfaction with diet and appearance, and may result in increased attempts to control calorific intake through a variety of means; 2) both cognitions related to food, weight and body shape, and interoceptive information, may be appraised as intrusive and threatening to regulation, thereby increasing maladaptive regulation attempts; 3) chronic hypervigilant monitoring of calorific intake, weight and body shape may become aversive leading to attentional avoidance and potential behavioural lapses. For the individual with an eating disorder these factors may adversely impact upon self-image and sense of identity.
The impact upon intrapersonal factors is an important consideration, as eating disordered individual's attempts to exert extreme control over their eating may be undermined in a number of ways: they are under continual physiological pressure to eat, making dietary lapses inevitable; the contribution of metabolic changes due to restricted eating/starvation; they have specific and inflexible dietary rules which require careful monitoring, and may also lead to increased priming and intrusion of related cues (this may also potentate lapses); they typically exhibit dichotomous thought styles, and lapses are exacerbated and catastrophied; the lowering of mood intensifies negative self-evaluation. It is hypothesised that self-evaluation and self-criticism may also derive from the dynamics of the regulatory system. That is to say the experience of food-related cognition will involve a variety of personal meanings, and meta-cognitive factors may be implicated in appraisals of control, self-worth, maintenance of self-schema. While maladaptive self-regulation may itself lead to loss of control over eating.

The Fairburn et al. (1999) and Ward et al. (1996) theories are essentially self-regulatory in nature, and their proposed components may be viewed in terms of failed regulation. The findings related to thought-shape fusion (Shafran et al., 1999) imply a tendency to interpret thoughts as having excessive personal significance. While the findings of and Katz and Gleaves (1996) point toward consumption of attentional resources in the service of regulating eating. With Green et al. (1996) stating that cognitive function may be impaired due to consequent consumption of attentional capacity. It is proposed that the S-REF model (and the concept of meta-cognition in
particular) could be used to further investigate the proposals made in these recent theories and research. Consideration of this literature would suggest that both prescriptive/regulatory and intrusive thoughts may prevail in individuals with eating disorders, and it is proposed that both positive and negative meta-cognitions about food-, weight-, and body shape-related thoughts may be central to disorder maintenance. It is also possible that there are differences at the meta-cognitive level, with overemphasis on positive meta-cognitions in anorexia nervosa, and on negative meta-cognitions in bulimia nervosa. Therefore, although meta-cognitive concerns may be common to both disorders, the emphasis on consequent treatment would differ.
CHAPTER 2

2. STUDY 1: A CLINICAL INVESTIGATION OF META-COGNITIVE DIMENSIONS OF FOOD-RELATED THOUGHTS

2.1 Introduction

Chapter 1 highlighted the need to examine meta-cognitive factors in the development and maintenance of eating disorder. The following two studies proceeded when ethical approval had been granted by Leicestershire Research and Ethics Committee (see Appendix 8). The study detailed within this chapter was intended to be a preliminary investigation of the occurrence and nature of food- and eating-related meta-cognitive beliefs and strategies within eating disorders. The aims of this study were:

(1) to elicit and examine meta-cognitive dimensions (involving food- and eating-related cognition) within a sample of participants who had an eating disorder;

(2) to derive conceptually distinct categories of meta-cognition from the collected data;

(3) to sample these derived categories and develop a new questionnaire to measure meta-cognitive dimensions (involving food- and eating-related cognition) within eating disorders.
2.2 Method

2.2.1 Participants

A total of 39 female clients from the Leicester eating disorder service (n = 23; 59%) and the Sheffield eating disorder service (n = 16; 41%) who fulfilled the selection criteria, were contacted and offered the opportunity to participate in this study, and were offered meeting times. From this initial group 20 clients (11 from the Leicester service and 9 from the Sheffield service) attended the arranged meetings, indicating a response rate of 51%.

The sample selection was criterion-based, in that all potential participants were required to satisfy the following criteria:

2.2.1.1 Inclusion criteria

(1) All participants had a DSM-IV classification of eating disorder of a restrictive and/or purging type (anorexia nervosa, bulimia nervosa, EDNOS). The criteria for these are reproduced in appendix 1;

(2) All participants were aged at least 18 years old;

(3) All participants were on the Eating Disorder Service waiting list or about to commence outpatient treatment at the time of research;

(4) All participants were judged to be in stable medical condition, and physically able to participate.
2.2.1.2 Exclusion criteria

(1) Individuals under the age of 18 years old were not included in this study;

(2) Individuals receiving in-patient treatment at the time of research were excluded, due to potential medical or physical constraints in participants;

(3) Individuals who had in the past, or were currently undergoing a course of cognitive-behavioural therapy, were excluded in order to eliminate biases predicated by familiarity with cognitive models;

(4) Individuals who were receiving psychoactive medication at the time of research were excluded, due to potential confounds related to pharmacological effects;

(5) Individuals with a diagnosis of binge eating disorder were not included as this disorder remains poorly conceptualised and defined, and it is not yet a recognised DSM-IV disorder;

(6) Individuals with clinically diagnosed developmental or comorbid mental disorder were also excluded.

2.3 Procedure

2.3.1 Recruitment of participants

Potential participants for this study were identified from both the Leicester and the Sheffield eating disorder services. The service policies at both departments involved in this study, was to assess individuals referred to the service prior to diagnosis and placement on appropriate waiting lists. Therefore each potential participant had undergone one or more rigorous structured assessment interview session(s), conducted
by a clinician experienced in the area of eating disorders, and had satisfied DSM-IV
criteria for a diagnosable eating disorder prior to placement on the waiting list.

Potential participants were selected from records at the eating disorder services.
Clinicians within these services were approached to select potential participants in
accordance with the inclusion and exclusion criteria. Individuals selected at this stage
were contacted by the relevant clinician who had been provided with information
leaflets (see appendix 2), invitations to participate (see appendix 2), and a stamped
addressed envelope. In total potential participants were offered written information
on the nature and purpose of the study, and the offer of further verbal discussion or
elucidation. Potential participants were requested to indicate (on a tear off slip) their
decision whether or not to participate, and the preferred method of contact for those
who wished to participate.

Each individual indicating a willingness to participate was contacted by letter (see
appendix 2) containing a proposed meeting time and location details. All interviews
with participants were conducted within the premises of the relevant eating disorder
service.

2.3.2 Interview protocol

All meetings consisted of the following. Each interview commenced with a further
outline of the nature of the study and probe questions to ensure that participants fully
understood the implications of taking part. Written consent was obtained from all
participants prior to commencement.
Participants were asked to complete a demographic information sheet requesting the following information: age; gender; ethnic origin; employment; marital status. Information on height and weight was also sought in order to compute participant’s Body Mass Index (weight in kilogrammes/height in metres^2). The main part of this study required participants to complete (a) the 6 standardised psychometric instruments detailed below, and (b) the semi-structured interview procedure. The order of these two procedural components was reversed in half of the meetings, in order to reduce potential biases from order or priming effects.

2.4 Measures

There is no universally accepted assessment protocol for the eating disorders. However there appears to be a consensus for the need for a multidimensional and multi-method approach to assessment (e.g. Cooper, 1997). This requires that both of the following specific and concomitant factors are evaluated:

(1) specific psychopathology and behavioural patterns that define the core features of the disorders (extreme dietary restraint, purging behaviours, stereotypic attitudes toward food, weight and body shape);

(2) broader psychopathology not necessarily specific to eating disorders.

Therefore, in addition to the structured interview/clinical assessment procedures conducted within the Eating Disorder service, the 20 participants were also asked to complete 6 psychometric instruments.
In general the selection of questionnaires was guided by the following:

1. their use is not confined to those with a diagnosed clinical disorder;
2. they have good psychometric properties;
3. they are easily administered and completed;
4. they are objectively scored;
5. they are not susceptible to bias from interviewer-participant interactions;
6. they can be administered anonymously.

The questionnaires were presented in random order to preclude the potential confounding influence of order effects.

2.4.1 Measures of eating disorder psychopathology

Given that Study 2 intended to recruit a sample of current dieters, it was considered necessary to use questionnaires that had been used to measure symptoms associated with eating disorder pathology in both eating disorder and non-clinical samples. The two most widely used are the Eating Disorder Inventory—2 (EDI-2; Garner, 1991) and the Eating Attitudes Test (EAT; Garner and Garfinkel, 1979).

2.4.1.1 Eating Disorder Inventory—2 (EDI-2; Garner, 1991)

The Eating Disorder Inventory—2 (EDI-2; Garner, 1991) is a 91-item multidimensional self-report inventory designed to measure symptoms of disordered eating. The original version (Garner, Olmsted, and Polivy, 1983) contained 64 items divided onto 8 scales: a) drive for thinness; b) bulimia; c) body dissatisfaction; d) ineffectiveness; e) perfectionism; f) interpersonal distrust; g) interoceptive awareness:
h) maturity fears. The revision retained the original scales and added a further 27 items to form 3 additional scales: i) asceticism; j) impulse regulation; k) social insecurity. The scale has been shown to have good psychometric properties. Garner (1991) found Cronbach’s alphas for the 8 original subscales to be generally high ($\alpha = .83-.93$). High reliability coefficients ($\alpha = .72-.92$) have also been found for nonclinical samples (Raciti and Norcross, 1987). Although the internal consistency for the three additional scales of the revised inventory have been found to be lower (Eberenz and Gleaves, 1993). Test-retest reliability has been found to be satisfactory at 3 weeks (Wear and Pratz, 1987) but lower at 1 year (Crowther et al., 1990). However, most validity studies of the EDI have tested the original 8 factor version. These studies have supported the validity of the scales. The scales most directly concerned with eating behaviour and attitudes (drive for thinness, bulimia, and body dissatisfaction) were found to be more highly correlated with other measures of eating disorder pathology. Other EDI scales which measure general psychopathology were found to be more highly correlated with criterion measures of general psychopathology. This feature of the EDI-2 has been used (e.g. Patton, 1992; Waller and Mijatovich, 1998) to measure both eating psychopathology (drive for thinness, bulimia, and body dissatisfaction), and ego dysfunction in eating disorder (the remaining 8 subscales). The inventory has been found to distinguish anorexia nervosa from nonclinical participants as well, as distinguishing purging from nonpurging anorectic patients (Garner et al., 1982).
2.4.1.2 Eating Attitudes Test (EAT: Garner and Garfinkel, 1979)

The Eating Attitudes Test (EAT; Garner and Garfinkel, 1979) is a 40-item self-report inventory designed to assess the thoughts and behaviours related to anorexia nervosa. A 26-item version was developed following factor analysis to eliminate unnecessary items. EAT and EAT-26 scores have been found to be highly correlated ($r = .98$) (Garner et al., 1982). Again the reported psychometric properties of the scale are good. Internal consistency of the EAT has been found to be high ($\alpha = .90$) (Garner and Garfinkel, 1979). Test-retest reliability has also been shown to be satisfactory (Carter and Moss, 1984). The test has been found to be correlated positively with other self-report measures of eating disorder symptoms (Gross et al., 1986; Mizes, 1988). It has also been found to distinguish clinical eating disordered patients from non clinical participants, and binge eating patients from anorectic and bulimic patients, but did not differentiate anorectic patients from bulimic patients (Williamson et al., 1990). The EAT-26 used in the current study has also been used in identifying the presence of eating psychopathology in non clinical samples (e.g. Thompson and Schwartz, 1982). A score of 20 or above is indicative of eating psychopathology (Garner and Garfinkel, 1979). However, within the present study the unusual scoring procedure (0-5) was used, thereby limiting comparison with studies using the usual (0-3) scoring procedure.

2.4.2 Measures of psychological distress

It has been well established that individuals with eating disorders also frequently have concurrent symptoms of depression and anxiety disorders (Halmi et al. 1991; Steere.
These studies report that individuals with eating disorder often report lowered mood, hopelessness, guilt, worthlessness, obsessionality, anxiety. The cause and nature of these concomitant affective disorders is not well understood. It is unclear whether these are related to starvation states, whether these arise from factors secondary to the eating disorder, or whether affective disorder contributes to the eating disorder (Cooper, 1993). However, for the purposes of this study it was important to be able to account for the potential contribution of both anxiety and depression, as both may exert potent influences on meta-cognition (Wells, 1999; Teasdale, 1999).

2.4.2.1 Beck Depression Inventory (BDI: Beck, Rush, Shaw, and Emery, 1976)

The Beck Depression Inventory (BDI) was used to measure the presence and severity of depressive features, and it was developed with clinical samples. It has been widely used in research in cognitive-behavioural theory (Robinson and Kelley, 1996). The BDI has good psychometric properties. A cut-off score of greater than 9 is considered to be clinically significant (Beck et al., 1976).

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

The Beck Anxiety Inventory (BAI) was designed to measure the presence and severity of a range of features associated with anxiety. This measure is a widely used instrument in cognitive-behavioural research. The scale was developed with adult clinical samples, and within this population it has been shown to have excellent internal consistency ($\alpha = .92$) (Beck et al., 1988). It has also been used to identify
anxiety in non-clinical samples (e.g. Dent and Salkovskis, 1986), again demonstrating excellent internal consistency ($\alpha = .91$) with this group (Creamer, Foran, and Bell, 1995). A cut-off score of greater than 7 is considered to be clinically significant (Beck et al., 1988).

2.4.3 Measures of generic meta-cognitions

The present study sought to identify meta-cognitive beliefs and strategies that may be specific to the regulation of food intake and eating behaviour. However, it was considered that an important aim would be the identification and differentiation of both specific and generic meta-cognitions in eating disorder. Therefore, two measures of generic meta-cognitive processes were used in this study.

2.4.3.1 Thought Control Questionnaire (TCQ) (Wells and Davies, 1994)

The TCQ was developed to measure individual differences in the range of control strategies that individuals used in attempts to control intrusive and unwanted cognitions. The scale is comprised of five subscales which sample methods of control strategies, these are:

(i) distraction (both cognitive and behavioural);
(ii) social (attempts to normalise the thought by seeking social consensus);
(iii) worry (displacement of the thought by concentrating on lesser concerns);
(iv) punishment (anger and self-reproach for having the thought);
(v) re-appraisal (rational ruminating about the thought).
There are good psychometric properties reported for this scale. The five subscales have been shown to have high internal consistencies ($\alpha = .64-.79$) (Wells and Davies, 1994). The choice of control strategy is believed to be important in the development and maintenance of psychological disorder. The worry and punishment subscales have been found to be associated with affective psychopathology (Wells and Davies, 1994; Amir, Cashman, and Foa, 1997).

2.4.3.2 Meta-Cognitive Questionnaire (MCQ) (Cartwright-Hatton and Wells, 1997)

The MCQ was developed in order to measure a range of meta-cognitive dimensions associated with the experience of worry and intrusive thoughts. The scale is comprised of five subscales that have demonstrably high internal consistencies ($\alpha = .72-.89$) (Cartwright-Hatton and Wells, 1997):

(i) positive beliefs (worry appraised as helpful to planning and problem-solving);

(ii) uncontrollability and danger (worry appraised as uncontrollable and threatening, with consequent motivation to implement control strategies as a safeguard);

(iii) cognitive confidence (lack of confidence in memory and attentional capacities);

(iv) negative beliefs (themes of responsibility, superstition/"magical thinking", punishment, and again consequent motivation to implement control strategies as a safeguard);

(v) cognitive self-consciousness (the degree of self-awareness/preoccupation with one’s own thought processes).
2.4.4 Clinical Semi-Structured Interview

Participants were questioned about their experience of food-related thoughts in the manner detailed below.

An open-ended semi-structured interview was employed to elicit dimensions of meta-beliefs about thoughts related to food and eating. This procedure was utilised as it was considered to be an appropriate methodology for the initial aims of this study. It allowed the specific research agenda to be addressed whilst maintaining a flexible and investigative stance. These interviews utilised a modified version of the methodology employed by Wells and Hackman (1993) and Cooper, Todd and Wells (1998) in order to guide the interview process. An interview schedule (see appendix 3) was developed via consultation of the relevant literature (see chapter 1) for emergent themes which were suggestive of meta-cognitive processes. The interview schedule was intended to be both flexible and comprehensive in eliciting dimensions of meta-cognitive beliefs. The developed interview consisted of nine primary open-ended questions, followed by appropriate probe questions to elicit further elucidation.

The interview procedure asked participants to generate a range of thoughts related to food and eating that were typical for each individual. The aim was to sample the range of participant's thoughts about food and eating, and the meta-cognitive processes involved. The following areas of possible meta-cognitive importance were explored.
1. Believed origin of food thoughts (explanations of the occurrence of these thoughts);

2. Appraisal of food thoughts (considered costs and benefits associated with the thoughts);

3. Derived meaning from food thoughts (perceived significance of experiencing the thoughts);

4. Affective consequences of having food thoughts (expected emotional consequences of having the thoughts);

5. Value associated with food thoughts (judgement of the thoughts as positive or negative);

6. Valence associated with food thoughts (motivation for engaging with or disengaging from the thoughts);

7. Personal implications of having food thoughts (implications for self-evaluation for having these thoughts);

8. Possible outcomes from having food thoughts (perceived behavioural or personal consequences of having these thoughts);
9. Strategies directed at addressing food thoughts (thought control attempts directed at these thoughts.

As each meta-cognitive statement emerged the participant was asked to rate the intensity of the belief using a visual analogue scale with end points anchored at 0% “I do not believe this thought at all” and 100% “I am completely convinced this thought is true”. Each interview was audio-taped, to enable accurate transcription.

2.5 Results

2.5.1 Participant characteristics

Each of the 20 participants had received a DSM-IV diagnosis prior to inclusion in this study. These included: anorexia nervosa (n = 5), bulimia nervosa (n = 7), EDNOS: partial syndrome anorexia nervosa (n = 4), and EDNOS: partial syndrome bulimia nervosa (n = 4). DSM-IV criteria for these diagnoses are offered in appendix 1.

All participants (n = 20) were female and white. The mean age was 25.84 (SD 5.55), with ages ranging from 19 years old to 41 years old. Body mass indexes (BMI) were calculated for each participant with a mean of 21.87 (SD 2.59) and a range of 17.4 to 24.6, this indicated that all participants were in the underweight category (less than 20), or desirable category (between 20-25). In terms of employment status 50% (n = 10) of the participants were employed, 10% (n = 2) were housewives, 5% (n = 1) was self-employed, and 35% (n = 7) were unemployed. The marital status of the...
participants was 25% (n = 5) were married, 25% (n = 5) were cohabiting, and 50% (n = 10) were single).

2.5.2 Representative nature of eating disorder sample

To ensure that the sample was representative of an eating disorder population, standardised measures had been administered to the participants in this study to provide quantitative data for comparison against normative data. Descriptive statistics for measures of eating disorder psychopathology are presented in Table 1.

Table 1  Descriptive statistics and interpretation of eating pathology measures (n = 20)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Clinical range</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDI2_DFT</td>
<td>16.2</td>
<td>2.75</td>
<td>12</td>
<td>21</td>
<td>YES</td>
</tr>
<tr>
<td>EDI2_BDIS</td>
<td>17.55</td>
<td>4.02</td>
<td>12</td>
<td>26</td>
<td>YES</td>
</tr>
<tr>
<td>EDI2_BUL</td>
<td>11.8</td>
<td>4.7</td>
<td>2</td>
<td>19</td>
<td>YES</td>
</tr>
<tr>
<td>EDI2_PER</td>
<td>15.6</td>
<td>3.25</td>
<td>9</td>
<td>20</td>
<td>YES</td>
</tr>
<tr>
<td>EDI2_INEF</td>
<td>15.7</td>
<td>3.79</td>
<td>9</td>
<td>22</td>
<td>YES</td>
</tr>
<tr>
<td>EDI2_DIS</td>
<td>9.55</td>
<td>3.62</td>
<td>2</td>
<td>17</td>
<td>YES</td>
</tr>
<tr>
<td>EDI2_INT</td>
<td>12.35</td>
<td>3.59</td>
<td>7</td>
<td>21</td>
<td>YES</td>
</tr>
<tr>
<td>EDI2_MAT</td>
<td>11.6</td>
<td>6.47</td>
<td>4</td>
<td>24</td>
<td>YES</td>
</tr>
<tr>
<td>EDI2_ASC</td>
<td>9.7</td>
<td>3.93</td>
<td>2</td>
<td>17</td>
<td>N/A</td>
</tr>
<tr>
<td>EDI2_REG</td>
<td>9.35</td>
<td>3.3</td>
<td>4</td>
<td>16</td>
<td>N/A</td>
</tr>
<tr>
<td>EDI2_SOC</td>
<td>8.7</td>
<td>2.41</td>
<td>4</td>
<td>12</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: EDI 2 clinical ranges derived from normative data reported in Garner (1990).


On the Beck Depression Inventory (BDI; Beck, Rush Shaw. and Emery, 1976) the group had a mean score of 25.6 (SD 4.78) and every individual score (range 17 to 35) was clinically significant, i.e. above the cut off point of 9. Similarly, each participant had a clinically significant score (i.e. above the cut off point of 7) on the Beck Anxiety
Inventory (BAI; Beck, Epstein, Brown, and Steer, 1988), the group had a mean score of 20.45 (SD 7.42) and a range of 7 to 33.

Both clinical interview and standardised measures were used to ensure existence of eating disorder psychopathology in the participant sample. On the basis of the findings it was concluded that the participants in this study were representative of an eating disorder population.

With the caveats that the present sample size was small (n = 20) and that the MCQ and TCQ have not yet been assessed within clinical samples. 95% confidence intervals were used to compare the scores between the eating disorder sample and the original female samples involved in the development of both the MCQ and TCQ. This revealed that the eating disorder group scored lower on MCQ positive beliefs and cognitive confidence, and higher on uncontrollability and danger beliefs and on negative beliefs, with no significant difference in cognitive self-consciousness. The results are presented in Table 2.
Table 2  Comparison between eating disorder (ED) sample and original MCQ sample on the MCQ subscales

<table>
<thead>
<tr>
<th></th>
<th>Eating Disorder (n=20)</th>
<th>Cartwright-Hatton and Wells (1997) (n=142)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD) [CI95]</td>
<td>M (SD) [CI95]</td>
</tr>
<tr>
<td>MCQ_POS</td>
<td>23.30 (8.87) [19.15-27.45]</td>
<td>36.30 (10.90) [34.51-38.09]</td>
</tr>
<tr>
<td>MCQ_UNC</td>
<td>42.55 (9.45) [38.13-46.97]</td>
<td>33.10 (9.60) [31.51-34.68]</td>
</tr>
<tr>
<td>MCQ_CON</td>
<td>11.25 (2.67) [10.00-12.50]</td>
<td>17.80 (5.40) [16.91-18.69]</td>
</tr>
<tr>
<td>MCQ_NEG</td>
<td>35.90 (7.45) [32.41-39.39]</td>
<td>20.70 (5.90) [19.73-21.67]</td>
</tr>
<tr>
<td>MCQ_SCO</td>
<td>16.00 (3.18) [14.51-17.49]</td>
<td>17.60 (4.30) [16.89-18.31]</td>
</tr>
</tbody>
</table>

Note:

In the TCQ there were no significant differences in distraction, social, or re-appraisal, but the eating disorder group were higher in worry and punishment. The results are presented in Table 3.

Table 3  Comparison between eating disorder sample and original TCQ sample on the TCQ and subscales

<table>
<thead>
<tr>
<th></th>
<th>Eating Disorder (n=20)</th>
<th>Wells and Davies (1994) (n=133)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD) [CI95]</td>
<td>M (SD) [CI95]</td>
</tr>
<tr>
<td>TCQ_DIS</td>
<td>12.10 (1.86) [11.23-12.97]</td>
<td>14.61 (2.89) [14.12-15.10]</td>
</tr>
<tr>
<td>TCQ_WOR</td>
<td>14.95 (3.67) [13.23-16.67]</td>
<td>10.23 (2.55) [9.80-10.66]</td>
</tr>
<tr>
<td>TCQ_PUN</td>
<td>14.20 (2.65) [12.96-13.98]</td>
<td>9.83 (2.67) [9.38-10.28]</td>
</tr>
<tr>
<td>TCQ_RAP</td>
<td>12.60 (2.21) [11.57-13.63]</td>
<td>13.80 (2.49) [13.38-14.22]</td>
</tr>
</tbody>
</table>

Note:
2.5.3 Results from semi-structured interview data

All participants were readily able to generate, and assign intensity scores to a range of food-, and eating-related thoughts typical of themselves. A range of meta-cognitive beliefs and processes was also elicited through the interview process. Each interview was transcribed in preparation for analysis in the manner detailed below.

2.5.3.1 Stage 1: Selection of highly valenced statements

The interview data were transcribed and were subjected to a thematic categorisation. The initial procedure followed was to extract target units (with a rated intensity of belief exceeding 40%), from the interview transcripts that were representative of meta-cognitive dimensions. These were defined as:

Statements related to food and eating that were representative of meta-cognitive dimensions (i.e. awareness and/or conscious consideration) concerning either cognitive contents or processes. These were identified according to the following two definitions.

1. The statement represented meta-cognitive knowledge i.e. reportable, stable knowledge, beliefs, attitudes, or assumptions about cognitive contents or processes. This could apply to the considerations that individuals possess about their own cognition, and/or considerations about the self-relevance of these.

2. The statement represented meta-cognitive regulation i.e. the monitoring, appraisal, interpretation, resource allocation, planning, control, and regulation activities/strategies that affect/control, or are intended to affect/control cognitive processes.
2.5.3.2 Stage 2: Classification of thematic categories

Initial classification was conducted by the researcher (a clinical psychologist in training, with clinical and academic experience of both eating disorders and the S-REF model), and the research supervisor (a clinical psychologist with extensive experience of eating disorders). The two initial raters randomly selected 50% of the extracted units and grouped these into meaningful, coherent categories on the basis of emergent themes represented within the data. This resulted in the extraction of 12 conceptually distinct categories of meta-beliefs. These 12 categories were then defined, and an information sheet with detailed instructions on how to code the derived meta-cognitive units was developed (see appendix 4). The total sample of extracted units was then independently rated, by two experienced academic clinical psychologists (again with extensive experience of eating disorders and familiarity with the S-REF model).

2.5.3.3 Stage 3: Inter-rater reliability

The reliability of the coding system was calculated by using a Kappa coefficient to analyse the degree of agreement between the two raters. A kappa coefficient of .82 indicated very high inter-rater reliability. According to Fleiss (1981) values greater than .75 represent excellent agreement beyond chance. Items with poor inter-rater reliability were excluded from the pool of items.

2.5.3.4 Stage 4: Analysis of the meta-cognitive transcripts

The 12 thematically derived dimensions of meta-beliefs were finally characterised as follows. The total number of codeable thoughts extracted was N = 190. A full list is presented in appendix 5.
2.5.4 Interview Analysis and Discussion

2.5.4.1 Cognitive Neutralisation (n = 7)

Thoughts that suggested that attempts were made to neutralise initial food thoughts by replacing them with personally acceptable thoughts. Examples included:

"If I can't stop myself thinking about eating something bad, then I try to change the thought into eating something healthy."

"When I think about eating fatty foods I try my best to think about something else that's good for me."

"If I can't stop thinking about food then I do things like sums in my head. That can help."

This meta-cognitive dimension represents a covert strategy. Apparently in these instances food thoughts had been appraised as negative and/or threatening, and the individual had been motivated to implement an attempt to displace the food thought by the substitution of a neutral thought. This also suggests an awareness of capacity limitations, and perhaps represents a form of cognitive purging. Perhaps this represents a cognitive safety behaviour.

2.5.4.2 Self-inferences (n = 21)

Thoughts that have been appraised as having implications for self-perception, i.e. are regarded as indicative/reflective of personal characteristics. Examples included:
"I sometimes think that it is quite pathetic, I am an intelligent woman and all I have in my mind is food, food, food."

"I often feel greedy when I think of food."

"If I was a strong person I would be able to stop myself from eating about something but I am too weak to do that and these thoughts overrun my mind."

"I feel pathetic for having no control over these thoughts."

In this instance individuals appear to make personalised assumptions on the basis of the experience, and perceived inability to control, food thoughts. The derived implications are that individuals perceive themselves negatively in terms of actual-ideal discrepancies. That is to say that the occurrence of food thoughts (and perceived ineffectuality in their disposal) is used as evidence of personal fallibility. This dimension is similar to the negative self-beliefs found in the development of the Eating Disorder Belief Questionnaire (EDBQ; Cooper et al., 1997) involving themes of e.g. self-deprecation. shame. Fairburn, Shafran, and Cooper (1999) proposed that dietary restriction provides direct evidence of self-control and self-worth, while the sensation of fullness indicates a violation of dietary rules, and is appraised as failure by the individual. Another possible interpretation of the present finding is that, the experience of merely thinking about food and eating evokes the same self-denigration as actual eating. For individuals who already have negative self-appraisals and
perceptions of impoverished control, this may be particularly problematic. It is also possible to speculate that individuals would be motivated to implement strategies intended to displace the thoughts, or to make self-regulatory reparative attempts to lessen the actual-ideal discrepancy.

2.5.4.3 Displacement of Worries (n = 11)

Thoughts that imply awareness that preoccupation with food and eating thoughts, precludes or reduces the frequency of other negatively valenced thoughts. Examples included:

"The sad and unhappy thoughts about my personal life are replaced with thoughts of food and eating."

"Thinking about food all the time means that I do not think about other issues in my life that are difficult."

"It's your own little thing, and it protects you from having to think about some of the difficult things in your life."

"If you allow yourself to think about the negative aspects of your life then you expose yourself to all sorts of feelings and thoughts you can't control........it's like a defence against that."
Here the food thoughts appear to be appraised as having a positive, protective function. Again there appeared to be an awareness of capacity limitations, and that this may preclude other thoughts that are profoundly upsetting to the individuals. Displacement appeared to involve the substitution of lesser worries (i.e. food thoughts) for the unwanted, more affectively laden thoughts. With an increased attentional narrowing to food-related cognition, more emotionally-laden information may bypass conscious awareness. Therefore this process may involve cognitive blocking of negative cognition and/or affect. This is similar to Borkovec and Inz’s (1990) conceptualisation of worry, and may also reflect a degree of dissociation from problematic concerns (e.g. Everill and Waller, 1995; Katz and Gleaves, 1996). From the present study it is not possible to determine whether this represents a conscious strategy, or whether individuals are merely reporting an observed effect. It is however, understandable that individuals would be motivated to preoccupy themselves with food thoughts under these circumstances. Furthermore there appears to be an implicit meta-cognitive appraisal that thinking about problematic issues is intolerable and aversive.

2.5.4.4 Social Comparison (n = 15)

An implication that the experience of these thoughts, involves a negative differentiation of the individual from other people. Examples included:

"My thoughts about food are peculiar because I do not think that other people think about food in the same way that I do."
"Other people would find it incredible to know that I have these thoughts about food in my mind all the time, they would think that I was stupid and superficial."

"I am sure that I am not very good company, I mean all I ever think about is food. I can tell you about how many calories there are in a potato but that's not a very interesting conversation, it's just boring."

"I just don't think that normal people think so much about food and what they eat, in the way I do."

This dimension involves an intrapersonal appraisal of their experience of food thoughts as divergent to those of other people. There are therefore, expectations of interpersonal consequences of having these thoughts. They suggests that these individuals expect their thought processes to alienate them from other people in a number of ways: the appraisal of these thought processes as aberrant: the expectation of lack of understanding from others: expectations of disdain and/or rejection from others. These ideas are similar to the conditional beliefs elicited by the acceptance by others subscale of the Eating Disorders Belief Questionnaire (EDBQ; Cooper et al., 1997), within which social approval is considered to be contingent on weight and body shape. However, the present dimension relates to meta-cognitive appraisals rather than conditional beliefs. The findings of this study suggested that such social comparisons were invariably negative, while other studies (e.g. Serpell 1999) have suggested that positive perceptions often accompany social comparisons. For
example, a sense that these individuals are special, or more fastidious. However, the appraisals identified by Serpell (1999) may rely upon behavioural restraint, rather than cognitive restraint.

2.5.4.5 Body Information (n = 23)

Thoughts that suggest that body state information (i.e. hunger and fullness sensations, or physical tension) and ongoing thoughts related to food and eating are simultaneously processed. The manner of this suggesting, that body state information influences the appraisal/valence of the ongoing thoughts. Examples included:

"When I am hungry and thinking about food, I get scared in case I go and eat too much."

"When I have eaten and I feel full up, I am consumed by thoughts that I’ve eaten too much and I feel very guilty."

"I can’t bear the feeling of my stomach being full. I can’t stop thinking that I’ve stuffed myself with food and I feel such a failure."

"I love the sensation of hunger, It tells me that I am in control, I am succeeding."

"When I feel hungry and I get thoughts of food but I do not eat anything it makes me feel strong and in control. My body is telling me that it wants food but I resist."
"When I feel tense I become worried that I'll go and eat something I shouldn't."

This dimension suggested that both body state information (i.e. interoceptive awareness) and food thoughts were being processed in parallel, and also that these two processes became integrated at the meta-cognitive level. The major implication within this dimension was that perceived body state information was a powerful determinant in the overall appraisal of food thoughts. The S-REF model (Wells and Mathews, 1994) states that body state information is also subject to monitoring at lower levels of processing. Indeed, it has been suggested that individuals with social phobia monitor for somatic signs of physiological arousal which contribute to the overall perception of threat in social situations (Wells, 1997). It is not surprising that those with concerns around food and eating would monitor for somatic sensations believed to represent antecedents or consequences of eating. These processes were seen to be pertinent in both perceptions of likelihood to eat, and in self-evaluations following eating. According to the model of anorexia nervosa proposed by Fairburn, Shafran and Cooper (1999), the individual may derive perceptions of personal success or failure from the experience of the sensations of hunger, or fullness secondary to delayed gastric emptying. The current findings lend support to this model. In addition to the somatic sensations of hunger and fullness the symptoms of physiological arousal were also implicated within this dimension. The most frequently cited antecedent of binge eating is stress or negative affect (Elmore and De Castro, 1990; Heatherton and Beaumeister, 1991). Furthermore, experimentally induced affect has been shown to result in increased eating in dieters, but not in
dieting controls (Heatherton, Herman, and Polivy, 1991), especially when the self-concept is threatened. Self-evaluative worry has been shown to inhibit dietary restraint (Scattolon and Nicki, 1995). Given the psychological and physiological consequences of eating disorder pathology this dimension may possibly involve a downward spiral process, and exacerbate already disordered eating.

2.5.4.6 Punishment (n = 9)

Thoughts that are appraised as having implications for self-perception, specifically of the self as unworthy of the pleasures involved in food and eating, or deserving some penalty for contemplating food and eating. Examples included:

“I do actually enjoy food but as soon as I start to think about eating, I get a voice in my head telling me, “You are fat and greedy and don’t deserve to eat something nice”.

“It can feel incredibly self indulgent to think about food and I feel that I must deny myself the experience of this and eating itself.”

“I think about food a lot so it is my fault when I eat something bad or when I eat too much.”

“I should punish myself for even thinking about food.”
"I sometimes think that I will get fat as a punishment for thinking of food all the time."

This dimension appeared to involve a specific type of negative self-inference. This self-punitive dimension was however notable in the frequency of its occurrence. It appeared to imply that food was perceived to have both punishing (in terms of weight and body shape issues) and rewarding (in terms of the hedonistic aspects of eating) properties. The further implication seemed to be that, in experiencing food thoughts, individuals considered themselves to be tempting (with some overlap of fusion, see below) the punitive aspects, whilst being undeserving of the rewarding aspects. Again it is possible to speculate that individuals would be motivated to implement strategies intended to displace these thoughts, or to make bids directed at self-regulatory reparation. Both self-punishment, and worry, strategies have been found to be associated with measures of anxiety pathology (Wells and Davies, 1994) and with severity of obsessional thinking (Amir, Cashman, and Foa, 1997).

2.5.4.7 Fusion (n = 19)

Thoughts that imply that thinking about food and actual eating behaviours are causally linked in a deterministic manner. Examples included:

"Even thinking about food can make me feel fat."

"Thinking about the kinds of food I never eat, like fatty foods .... it upsets me
because it is almost as though I will go and eat some crappy foods.”

“I believe that it is important to stop myself thinking about eating fatty foods. It’s almost as if thinking about them means I intend to eat them.”

“I shouldn’t get so upset about the thought of eating but I do, it terrifies me to think that I could be tempted to go and actually eat something.”

“When I have thoughts about bad food, after a while I get scared that I will go and eat something.”

“When I have thoughts of food and eating I feel myself being pushed towards going to eat something.”

There were similarities between the processes entailed in the distortion of thought-shape fusion (Shafran et al., 1999) and those noted in the present study. There were however, important differences. The findings of the present study suggested that the primary meta-cognitive belief was that, food thoughts equalled compulsion to eat, or likelihood of eating. As noted previously, thought-shape fusion (TSF) has three components: a) probability TSF in which thinking about the forbidden food increases the probability that the person has gained weight, b) morality TSF in which experiencing the thoughts about eating the forbidden food is believed to be morally equivalent to actually eating the prohibited food, c) perceptual TSF in which
experiencing the thoughts about eating the forbidden food increases the perception of fatness. It is possible that TSF represents a number of secondary processes, with the underlying primary process involving the meta-belief that thinking about food increases the probability of eating. TSF might therefore represent projective meta-beliefs based on the expected consequences of eating.

2.5.4.8 Intrusion (n = 24)

The appraisal of thoughts related to food and eating as intrusive/unwelcome and uncontrollable. Examples included:

"What I can't understand is why I can't stop thinking about the kinds of food I never eat, like fatty foods."

"I can't stop thinking about food."

"I should be able to stop myself thinking about eating but I can't control these thoughts, they are always on my mind."

"It is like my mind is taken over by thoughts of food and eating, and the harder I try to stop it the harder it pushes."

"It is such an intolerable position to be convinced that you must not eat but to have food on your mind constantly."
Although the preoccupation with food has been explained from both psychological and physiological perspectives, it is also important to explicate individual's appraisals of these processes. It would appear that the occurrence of these thoughts is often appraised in a negative sense. It was clear that individuals often experienced these thoughts as intrusive, unwelcome, and uncontrollable: there were references to thought suppression attempts. This finding accords with previous findings involving worry in generalised anxiety disorder (Wells, 1999), and obsessions in obsessive-compulsive disorder (Purdon and Clark, 1999), that suggest that disorder-salient thoughts are appraised as intrusive and uncontrollable. The ironic effects of thought suppression attempts (Wegner, 1994) were also evident, lending support to the model proposed by Ward, Bulik, and Johnson (1996). There were also implicit overlaps with both self-inference and fusion dimensions in this category, with the result that these intrusive food thoughts were appraised as threatening.

2.5.4.9 Monitoring and Control over Eating (n =27)

Thoughts that imply the importance of regulating thoughts related to food and eating as a necessary mechanism for regulating actual eating behaviours. Examples included:

"If I keep these thoughts in my mind then I'll be able to stop myself from eating these things."

"It is absolutely essential for me to be vigilant and aware about my thoughts about
food, so I am not taken by surprise and eat something bad."

"Without careful consideration my food intake would be thrown into confusion, everything I eat must be thoroughly though and planned."

"I am very aware that I am always thinking about food, the type of food, whether or not it is fatty, the number of calories and what it is going to do to my body."

This dimension appeared to represent a meta-cognitive strategy: one that was primarily linked to the fusion dimension. This evidently entailed the purposeful and suppositious utilisation of the strategy that, control over food thoughts equalled control over eating. As discussed in chapter 1, a deliberate and consistent attentional focus on food was shown to be a necessary strategy directed toward the inhibition of eating (e.g. Polivy and Herman, 1991). This meta-cognitive dimension is therefore diametrically opposed to the intrusion dimension.

2.5.4.10 Monitoring and Emotional Control (n = 14)

Thoughts that imply conscious attempts at affective regulation via the regulation of thoughts related to food and eating. Examples included:

"I need to keep track of what I have eaten and what I will eat because if I eat too much I feel very guilty."
"I know that I will feel awful if I overeat so I make sure that I do not eat by paying attention to thoughts of wanting to eat."

This dimension apparently represented a projective strategy. Again food thoughts were purposefully retained within attention, in a manner designed to pre-empt the possibility of overeating. There appeared to be an expectation that eating would incur negative self-evaluation and consequent negative affect. This dimension also appeared to integrate the fusion dimension, with meta-beliefs related to the affective consequences of loosing control over food thoughts, and ultimately of eating behaviour.

2.5.4.11 Illness (n = 8)

Thoughts that convey the notion that preoccupation with thoughts of food and eating could be detrimental to physical and/or mental health. Examples included:

"I think that my mind is all messed up because I cannot stop myself from thinking about food."

"Every time I get into this track of thinking constantly about food it just tells me that I am not getting any better."

"I get worried that thinking about food all the time will drive me crazy."
"A big part of why I have this psychological problem is because I can't stop thinking about food."

"I believe that constantly being obsessed about thoughts of food could be detrimental to my health."

This dimension concerned the meta-belief that constant preoccupation with food thoughts may result in detriments to mental and/or physical health. This concern was also evident in those prone to excessive worry (Cartwright-Hatton and Wells, 1997). Again there are overlaps with other dimensions: the threatening nature of the illness dimension is presumably related to the perceived uncontrollability entailed in the intrusion dimension.

2.5.4.12 Functional Interference (n = 12)

Thoughts that imply awareness that important areas of cognitive function (memory, concentration, attention, etc.) are adversely affected/compromised by the preoccupation with thoughts related to food and eating. Examples included:

"I just feel that being so concerned about food deprives me of the opportunities to do so many things. I can't even read a book without being continually interrupted by these stupid thoughts."

"Constantly thinking about food affects the way I function about other things."
"Worrying about food decreases my concentration on other things, it detracts from my work."

"It (thinking about food) messes everything up, like there are things that I forget all the time, but you can never forget about food it's always there."

Cognitive interference refers to unwanted and often disturbing thoughts that intrude into a person's consciousness (Sarason, Pierce, and Sarason, 1996). Such interference has been shown to result in impoverished cognitive performance (Sarason, Pierce, and Sarason, 1996; Wells and Mathews, 1994). Again there appeared to be an awareness of capacity limitations. The experience of food thoughts was seen to exert an adverse effect upon everyday function, via their interference effect on primary cognitive functions (e.g. Green, Elliman, and Rogers, 1997). Of particular interest here, is the detrimental influence of particular types of self-referent thoughts (i.e. worry) on cognitive performance (Mathews, Hillyard, and Campbell, 1999). Furthermore, the appraisal of these effects had self-implications in terms of evaluative feedback of function. This meta-cognitive dimension is therefore diametrically opposed to the displacement of worries dimension.

2.6 Summary and recommendations

Wells (1995; 1999) made a distinction between Type 1 worry and Type 2 worry (meta-worry). In parallel with this distinction, the findings of this study are
suggestive of a similar process. Type 1 self-regulation might be regarded as the type of thoughts ordinarily used to cognitively mediate/regulate food intake, while Type 2 self-regulation (meta-regulation) might be regarded as maladaptive appraisals, and control attempts directed at these thoughts, as well as maladaptive functional use of these. In accord with Wells (1995, 1997, 1999) distinction between different types of worry, the existence of both positive and negative meta-beliefs may mean that individuals are motivated to continue to use self-regulatory strategies, whilst also being concerned about the concomitant dangers of experiencing food thoughts.

There are apparent costs and benefits inherent within the experience of food-, and eating-related thoughts for individuals with eating disorders. Meta-cognitions related to thoughts about food and eating appear to involve both positive and negative reinforcement. They are positively reinforced through beliefs that these are necessary to control and regulation of eating, and are negatively reinforced through the displacement of more negatively valenced thoughts, and the perceived avoidance of negative affect. However, there are also a number of apparent threats and self-disparaging consequences of experiencing these thoughts.

The 12 dimensions elicited in the previous section provide a range of possible meta-cognitive dimensions. However, it is possible that some of the constructs in these dimensions are similar and consequently a factor analytic study is required. The next chapter describes the development of a new questionnaire that was designed to measure the meta-cognitive dimensions sampled within the present study.
CHAPTER 3

3. STUDY 2: DEVELOPMENT AND PRELIMINARY VALIDATION OF THE FOOD AND EATING METACOGNITION QUESTIONNAIRE (FE-MCO)

3.1 Introduction

In the preceding chapter the development of the themes the questionnaire drew upon were described. This chapter will describe the initial factor analysis and relevant psychometric properties of the newly developed questionnaire, as developed in the study detailed throughout chapter 2.

3.2 Method

3.2.1 Participants

A sample of 400 dieters were approached and offered the opportunity to participate in this study. A total of 273 (68.5%) agreed to participate and returned the questionnaires. All participants were female. Of these a number of participants (n = 9) were not included in further analyses as these participants had only partially completed the questionnaire battery. Data from the remaining participants (n = 264) was entered onto Statistical Package for the Social Sciences (SPSS) spreadsheet for statistical analysis.
3.2.2 Rationale for selecting dieters as the participant sample

The present study utilised a sample (n = 264) of current dieters for the following reasons. The rationale for using current dieters was validated by several areas of previous research that have found similarities between dieters and eating disordered individuals.

(1) Wilson (1989) argued that dieters are an important comparison group in eating disorder research as they may exhibit many of the same characteristics. These include a preoccupation with weight, body dissatisfaction and perfectionistic tendencies (Garner et al., 1983, 1984).

(2) Dieters have also been found to exhibit behaviours considered to be characteristic of eating disorders (e.g. vomiting and laxative abuse as means of weight control) (Grunewald, 1985).

(3) Dieters share many of the food-related cognitions associated with disordered eating (Hetherington, 1993; Boon, Stroebe, and Schut, 1998). It has been well established that current dieting is associated with significantly increased rumination and preoccupation with food and eating compared to nondieters (Polivy, 1990; Hart and Chiovari, 1998).

(4) Similar to those with eating disorders, dieters rely more on cognitive controls than on physiological cues to regulate their eating (Hetherington, 1993; Herman and Polivy, 1980).

(5) It is therefore possible to hypothesise that dieters may use a number of meta-cognitive processes and strategies in order to monitor and control their cognitions, as these relate to the regulation of eating. For example, dieters frequently try to
suppress thoughts about eating (Polivy, 1996). However, this may render them vulnerable to the ironic processes detailed in Wegner's (1994) thoughts suppression paradigm, and may result in the paradoxical hyperaccessibility and increase in these thoughts.

(6) At another meta-cognitive level the perceived preoccupation with food and eating (in an individual trying to restrict food intake) would presumably be subject to further appraisals.

Dieters have also been observed to exhibit a number of phenomena that may be attributable to attentional capacity limitations. These include studies that suggest that preoccupation with food thoughts may associated with impairments in cognitive processing of alternative information (Green, Elliman, and Rogers, 1997; Green and Rogers, 1998). Conversely, affectively laden cognition in the form of worry has been associated with dietary inhibition (Scattolon and Nicki, 1995). With reference to the S-REF model (Wells and Mathews, 1994) a possible explanation of this effect is that profound concerns, such as socio-evaluative or personal performance issues consumed attentional capacity to the extent that dietary regulation was compromised. While for the individuals focusing upon food, eating and appearance issues, attentional capacity was successfully utilised in the service of dietary restraint. This suggests the potential importance of maintaining cognitive regulation of eating behaviour, and the avoidance of competing information (an avoidance that may be negatively reinforced by reduced negative affect).
Therefore there are a number of theoretical reasons to expect that dieters would exhibit quantitative and qualitative similarities with eating disordered individuals, and that these similarities might extend to the meta-cognitive level.

3.2.3 Sampling

Dieters were defined using similar criteria to (Green and Rogers, 1993; Cooper and Fairburn, 1992; Palmer, et al., 1996). The sample selection was criterion-based, in that all potential participants were required to satisfy the following criteria:

3.2.3.1 Inclusion criteria

(1) All participants had current active membership of a local dieting club, and were therefore using dietary restraint as a method of seriously attempting to reduce body weight.

(2) Serious attempt to diet was defined as following a standard reducing diet, and/or following predetermined and rigid rules governing dietary restriction (calorie limit, preset quantities of food, reduced or prohibited consumption of certain food groups) as a means of attempted body weight reduction.

(3) To have been engaged in the dietary restrictions detailed above for a period in excess of 4 weeks preceding data collection.

(4) The nature of the diet followed and their success in adhering to it were considered to be irrelevant, the important factor was that dietary restriction was being attempted.
3.2.3.2 Exclusion criteria

(1) A previous history, or current experience of eating disorder.

(2) A previous history, or current experience of psychiatric/psychological conditions.

3.3 Procedure

The regional offices of three national dieting/slimming organisations were approached in order to gain consent to invite their members to participate in this research. Having gained authorisation from these regional offices, sixteen local group facilitators were identified and approached for consent to involve their group members in this research. All sixteen facilitators agreed to this request.

3.3.1 Stage 1: Recruitment of participants

The researcher arranged to attend meetings of each of the 16 groups. Invitation to participate was made by a short presentation at the beginning of each diet/slimming club meeting. During this presentation the inclusion and exclusion criteria were outlined, and provision was made for members to ask questions and request supplementary information. The voluntary basis of participation was emphasised. Further written information on the nature/purpose of the study, and implications of participation (see appendix 2) was provided to each individual expressing a potential interest in participating. At this point the researcher left the meeting, while individual diet club members decided whether or not to participate. Participants were at liberty
to complete the questionnaire battery either during the meeting, or to complete these during the following week. Completed questionnaires were collected by the researcher at the beginning of the next meeting for each group.

3.3.2 Stage 2: Data collection

Individuals opting to participate were requested to complete a demographic information sheet, a battery of standardised questionnaires, and the newly developed Food and Eating-Meta Cognition Questionnaire (FE-MCQ).

The demographic information sheet (see appendix 7) requested the following information: age; gender; ethnic origin; employment; marital status. Further specific information on dieting status and information (height and weight) to compute Body Mass Index was collected. Participants were asked to provide details of their height; weight; whether or not they were currently dieting to lose weight; duration of current diet (1: between 2-4 weeks, 2: between 4-8 weeks, 3: between 2-3 months, 4: between 3-6 months, 5: between 6-12 months, 6: more than 1 year); the nature of their restricted eating was identified on 3 dimensions (1: avoiding eating for long periods of time, 2: avoiding eating specific food groups, 3: restricting the total amount of food eaten). Participants were also asked whether or not they were, or had ever engaged in behaviours associated with eating disorder; these included binge eating episodes, purging behaviours and again an indication of the most recent episode of these behaviours was requested.
3.4 Measures

Each participant was asked to complete a questionnaire battery consisting of the newly developed questionnaire, in combination with the Eating Attitudes Test-26 (EAT-26), the Eating Disorder Inventory-2 (EDI-2), the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI), the Meta-Cognition Questionnaire (MCQ), and the Thought Control Questionnaire (TCQ). The rationale for using each of these scales has already been detailed in chapter 2. Again the questionnaires were presented in random order to preclude the potential confounding influence of order effects.

3.5 Item selection and construction of the questionnaire

Items for the questionnaire were generated to sample the above 12 dimensions; 3 items were chosen to sample each dimension resulting in a 36 item questionnaire. The new questionnaire, the Food and Eating Meta-Cognitive Questionnaire (FE-MCQ) is presented in appendix 6.

The degree of personally relevant belief in each item was rated with reference to a visual analogue scale (0 – 100), with the appropriate value entered in the space provided. End points were anchored at "I do not believe this thought at all (0%)" and "I am completely convinced this thought is true (100%)". Respondents were directed to consider their own thoughts about food and asked to indicate how strongly they believed each item to be true of themselves.
3.6 Results

3.6.1 Selection of appropriate statistical analyses

Prior to statistical analysis being performed the data set was screened and subjected to preliminary analysis to determine the appropriate level of statistical analysis. The appropriate use of parametric tests requires the data set to meet three criteria:

1. In order to permit numerical calculations, the level of measurement requires either interval or ratio scaling;
2. The scores within the data set must be normally distributed;
3. There must be homogeneity of variance within the scores in each condition.

The distribution of scale scores was analysed using the Kolmogorov-Smirnov test. This test compares the cumulative frequency from the data set with the cumulative frequency that would occur if the data conformed to a normal distribution. The majority of the scores were found to differ significantly from the normal distribution, which violates the second assumption of parametric analysis. At this juncture it would have been possible to have transformed the data and produced a data set that was more normally distributed. Such transformations are legitimate and may permit the employment of parametric tests. However, in this instance it was decided to retain the original data set, and opt for the more conservative use of non-parametric tests in most of the subsequent analyses. Where there were no non-parametric equivalents (principal components analysis and multiple regression analysis) the use of parametric tests was considered permissible due to the large sample size (Bryman and Crammer, 1990).
3.6.2 Full scale factor analysis

Factor analysis refers to a range of statistical techniques that permit the reduction of a large number of inter-related variables to a smaller number of latent dimensions (Lewis-Beck, 1994). This procedure is most frequently used in the development or validation of psychometric instruments. The aim of factor analysis is to achieve parsimony by using the smallest number of explanatory concepts to explain the maximum amount of common variance in a correlation matrix. Therefore factor analysis is used to reduce the common variance into the smallest possible number of conceptually meaningful variables.

3.6.3 Sample size

Factor analysis requires the inclusion of a minimum number of participants for every variable being analysed. Kass and Tinsley (1979) recommended the use of between 5-10 participants per questionnaire item. up to a total of 300 participants. Within this study the intermediate value of seven participants for each questionnaire item (Gorsuch, 1974) was adopted. The newly developed questionnaire (FE-MCQ) had 36 items and therefore required a total participant sample of at least 252 individuals. The data collected from the 264 participants satisfied this criterion.

3.6.4 Demographic information

All participants (n = 264) were female. The mean age of participants was 29.5 years (SD 5.88) and ranged from 19 years to 43 years old. The ethnic origin of the participants was predominantly white at 87.9% (n = 232), black 6.4% (n = 17), Asian
5.3% (n = 14), and oriental 0.4% (n = 1). Over half of the sample 56.1% (n = 148) were employed, with a further 9.5% (n = 25) reporting that they were self-employed, 16.7% (n = 44) were unemployed, 5.7% (n = 15) were students, and 12.1% (n = 32) were housewives. Almost half of the sample were married and living with their partner 44.3% (n = 117), with a further 18.2% (n = 48) cohabiting with a partner, 4.2% (n = 11) were married but separated from their partner, 9.8% (n = 26) were divorced, 1.1% (n = 3) were widowed, and 22.3% (n = 59) considered themselves to be single.

3.6.5 Dieting information

The mean Body Mass Index (BMI = weight in kg/height in m²) was 25.67 (SD 3.04) with a minimum of 19.1 and a maximum of 37.09. A breakdown of BMI revealed that 3 participants were in the underweight range (less than 20), 119 participants were in the desirable weight range (between 20-25), 117 participants were in the overweight range (between 25-30), and 25 participants were in the obese range (more than 30).

All participants (n = 264) stated that they were dieting to lose weight at the time of the study. All participants had been on their current diet for a period exceeding 4 weeks. The duration of the current diet was: 17% (n = 45) 4-8 weeks; 40.2% (n = 106) 2-3 months; 28.4% (n = 75) 3-6 months; 13.6% (n = 36) 6-12 months; 0.8% (n = 2) more than 1 year. Examination of the dietary restraint methods reported by all participants confirmed that they all met the dieting criteria for this study. All
The participants (n = 264) were: a) currently dieting to lose weight; b) avoiding eating high calorie/high fat foods; c) restricting the total food intake. Furthermore 49.2% (n = 130) were avoiding eating for long periods.

None of the participants in this study considered themselves to have a past, or present eating disorder. However, a number of participants were symptomatic dieters (Cooper and Fairburn, 1992) in that they had either current or historical experience of behavioural features associated with eating disorder. Of the total sample 15.9% (n = 42) reported binge eating episodes. This had last occurred previously at: 2-3 months (n = 5); 3-6 months (n = 22); 6-12 months (n = 15). A small percentage, 3.8% (n = 10) had used diuretic and/or laxative preparations in an attempt to lose weight. Of these participants 0.8% (n = 2) had used these within the past 2-3 months; 1.1% (n = 3) had used them within the past 3-6 months; 1.5% (n = 4) had used them within the past 6-12 months: 0.4% (n = 1) had used them more than one year previously. A higher percentage of the sample, 9.5% (n = 25) had used vomiting as a weight loss strategy. Of these participants 0.8% (n = 2) had used this strategy within the past 2-3 months; 2.7% (n = 7) had used this within the past 3-6 months: 4.9% (n = 13) had done so within the past 6-12 months; 1.1% (n = 3) had used them more than one year previously.

3.6.6 Measures
Descriptive statistics for the participants' scores on the Eating Attitudes Test-26 (EAT-26), Beck Depression Inventory (BDI), and Beck Anxiety Inventory (BAI) are presented in Table 4.
Table 4  
Descriptive statistics for the EAT, BDI, and BAI (n = 264)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
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<td>BDI</td>
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<td>0</td>
<td>37</td>
</tr>
<tr>
<td>BAI</td>
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<td>6.42</td>
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<td>32</td>
</tr>
</tbody>
</table>

*Note:* 
EAT: Eating Attitude Test. BDI: Beck Depression Inventory. BAI: Beck Anxiety Inventory.

In order to illustrate the food- and eating-relevant profiles of the participants, descriptive statistics of the Eating Disorder Inventory-2 (EDI-2) are presented in Table 5.

Table 5  
Descriptive statistics for the EDI-2 subscales (n = 264)

<table>
<thead>
<tr>
<th>EDI-2 Subscale</th>
<th>Mean</th>
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<th>Minimum</th>
<th>Maximum</th>
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</thead>
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<tr>
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</tbody>
</table>

3.7 Factor analysis overview

The factor structure of the initial 36 items was analysed using a principal components method of factor extraction. This data reduction technique was employed to analyse the initial structure in order to reveal any underlying constructs or factors from the collected data. There was no theoretical assumption suggesting that the factors were independent from each other, indeed it was likely that they would be correlated to a degree. This is an important consideration in factor analysis and determines the rotation method to be used. Orthogonal factor rotation procedures yield factors that are independent, that is factors that have zero correlations with each other. In this study factor rotation would yield an oblique factor solution which allows factors to be correlated after the rotation is completed. To determine more clearly separate dimensions of the data, the existing factors were rotated using oblique rotation with direct oblimin criterion.

3.7.1 Initial factor analysis

The principal components method of factor extraction produced a solution consisting of seven factors with eigen values greater than 1.0. The Kaiser criterion specifies that only factors with an eigen value of 1.0 or more should be retained in the factor analysis. This is because if the eigen value is less than one, the variance that they account for is less than the variance accounted for by the average variable. Confirmatory evidence for the selection of this criterion was derived from the results of the graphical Scree test (Cattell, 1966) showing that the descending variance
accounted for by all the factors levelled off following factor 7. Consequently only the first seven factors were included for rotation.

3.7.2 Initial item elimination

The resultant seven factor, 36 item rotated matrix was further examined in an attempt to reduce the number of items. A review of the available methods to determine the criteria of salience are offered by Gorsuch (1974). In the present study any item not loading a minimum of 0.10 greater than the loading on any other factor was eliminated, thereby ensuring that each item could be considered to be salient to a factor. Further more items loading alone onto a factor were eliminated to ensure meaningful interpretation of stable factors. Subsequently the following items were eliminated.

(1) From factor 1, item 05 was eliminated as it loaded highly on factor 2 (-0.610).

(2) From factor 1, item 24 was eliminated as it loaded highly on factor 5 (0.668).

(3) From factor 1, item 27 was eliminated as it loaded highly on factor 4 (0.471), factor 5 (0.544), and factor 7 (-0.550).

(4) From factor 1, item 30 was eliminated as it loaded highly on factor 4 (0.700).

(5) From factor 2, item 11 was eliminated as it loaded highly on factor 4 (0.575).

(6) From factor 3, item 03 was eliminated as it loaded highly on factor 1 (0.493).

(7) From factor 4, item 28 was eliminated as it loaded highly on factor 1 (0.626).

(8) From factor 4, item 36 was eliminated as it loaded highly on both factor 2 (-0.572) and factor 5 (0.512).
(9) From factor 5, item 13 was eliminated as it loaded highly on factor 2 (-0.502), factor 3 (0.515), and factor 6 (0.462).

(10) From factor 5, item 22 was eliminated as it loaded highly on factor 1 (0.523).

(11) From factor 6, item 10 was eliminated as it loaded highly on factor 4 (0.532).

(12) From factor 7, item 15 was eliminated as it resulted in loading alone on factor 7 (-0.705).

3.7.3 Further factor analysis

In strict methodological terms any questionnaire revised following item elimination, should be administered to a completely new sample before further factor analysis is conducted (Gorsuch, 1974). In the present study this was not possible and a second factor analysis was conducted with the remaining items using the same participants (n = 264). This decision was guided by both pragmatic considerations, and the postulate of parsimony, which states that only the model involving the minimum number of common factors is considered to be appropriate.

Again the method of factor analysis was a principal components factor analysis, and as above the factors were rotated using oblique rotation with direct oblimin criterion. This produced a solution consisting of five factors with eigen values greater than 1.0. The same criteria for eliminating items were followed in the second analysis. Consequently, the following items were eliminated.

(1) From factor 2, item 17 was eliminated as it loaded highly on both factor 1 (0.509) and factor 5 (0.553).
(2) From factor 3, item 29 was eliminated as it loaded highly on factor 1 (0.602).

(3) From factor 5, item 01 was eliminated as it loaded highly on factor 4 (0.446).

3.7.4 Final factor analysis

A final factor analysis was conducted with the remaining items. Again a principal components method of factor extraction, using oblique rotation with direct oblimin criterion was conducted. This revealed a five factor structure. However, item 33 and item 34 that formed factor 5 were considered to be uninterpretable and these items were also eliminated. This resulted in the following four factors. The final factor analysis yielded a four factor solution that accounted for 66.8% of the total variance. This is presented in Table 6, with items and factor loadings presented in Table 7.

**Table 6** Scree plot, with eigen values, percentage of variance, and cumulative percentages for the first 7 factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigen Factor value</th>
<th>% of variance</th>
<th>Cum. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8.029</td>
<td>42.3</td>
<td>42.3</td>
</tr>
<tr>
<td>2</td>
<td>2.157</td>
<td>11.4</td>
<td>53.6</td>
</tr>
<tr>
<td>3</td>
<td>1.257</td>
<td>6.6</td>
<td>60.2</td>
</tr>
<tr>
<td>4</td>
<td>1.241</td>
<td>6.5</td>
<td>66.8</td>
</tr>
<tr>
<td>5</td>
<td>0.880</td>
<td>4.6</td>
<td>71.4</td>
</tr>
<tr>
<td>6</td>
<td>0.741</td>
<td>3.9</td>
<td>75.3</td>
</tr>
<tr>
<td>7</td>
<td>0.718</td>
<td>3.8</td>
<td>79.1</td>
</tr>
</tbody>
</table>
The four factors were described as follows:

3.7.4.1 Factor 1: Monitoring threat of eating (6 items)
This factor represented attempts to monitor the threat of eating, via awareness of ongoing cognitions and interoceptive perceptions. There were clear meta-beliefs that thinking about food may lead to eating (thought-eating fusion) and that interoceptive perception may also be implicated in predicting likelihood of eating. Regulatory attempts (thought suppression and/or neutralisation) to control food-related cognition were also pertinent. This factor had an eigen value of 8.02 and accounted for 42.3% of the total variance and consisted of six items with values greater than .69.

3.7.4.2 Factor 2: Abnormal self-inferences (6 items)
This factor represented the tendency to evaluate the experience of food-related thoughts in a manner that was self-inferential and included themes of denigration, morality, and stigmatisation. There were suggestions that the occurrence of these thoughts incurred self-reproach to the extent that adverse intrapersonal, or interpersonal, consequences were expected. This factor had an eigen value of 2.15 and accounted for 11.4% of the total variance and consisted of six items with values greater than .69.

3.7.4.3 Factor 3: Displacement of problematic thinking (3 items)
This factor represented the awareness that the preoccupation with food-related thoughts, engulfed attentional capacity to the extent that other negatively valenced
thoughts were inhibited. It was also implied that preoccupation with food is preferable to the experience of cognitions that are appraised (at the meta-cognitive level) as perturbing and aversive. This factor had an eigen value of 1.25 and accounted for 6.6\% of the total variance and consisted of three items with values greater than .72.

3.7.4.4 Factor 4: Intrusive interference with cognitive functioning (4 items)

This factor represented meta-beliefs that food-related thoughts were intrusive and uncontrollable. The intrusive nature of these thoughts was also appraised as overwhelming cognitive capacity, to the degree that important cognitive functioning was compromised. This factor had an eigen value of 1.24 and accounted for 6.5\% of the total variance and consisted of four items with values greater than -.76.
Table 7  
Items and factor loadings of the FE-MCQ subscales (n = 264)

<table>
<thead>
<tr>
<th>Scale/Item</th>
<th>Loadings on factor</th>
<th></th>
<th></th>
<th></th>
<th>CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1: Monitoring Threat of Eating (n = 6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 Thinking about food can lead to overeating.</td>
<td>.82</td>
<td>.19</td>
<td>.22</td>
<td>.42</td>
<td>.70</td>
</tr>
<tr>
<td>23 When I am hungry and also have food thoughts, I am more at risk of overeating.</td>
<td>.77</td>
<td>.28</td>
<td>.40</td>
<td>-.38</td>
<td>.62</td>
</tr>
<tr>
<td>14 If I stop myself from thinking about food, I can reduce the likelihood of eating.</td>
<td>.73</td>
<td>.33</td>
<td>.29</td>
<td>-.46</td>
<td>.56</td>
</tr>
<tr>
<td>08 I must monitor my thoughts about food so that I remain in control of eating.</td>
<td>.72</td>
<td>.31</td>
<td>.35</td>
<td>-.38</td>
<td>.53</td>
</tr>
<tr>
<td>04 When I am tense and also have food thoughts, I am more likely to eat.</td>
<td>.69</td>
<td>.40</td>
<td>.25</td>
<td>-.24</td>
<td>.53</td>
</tr>
<tr>
<td>06 When I think about eating &quot;bad foods&quot; I must change the thought into eating something healthy.</td>
<td>.69</td>
<td>.21</td>
<td>.45</td>
<td>-.40</td>
<td>.53</td>
</tr>
<tr>
<td>Factor 2: Abnormal Self-Inferences (n = 6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 I believe that thinking about food is as bad as actually eating.</td>
<td>.31</td>
<td>.88</td>
<td>.34</td>
<td>-.26</td>
<td>.77</td>
</tr>
<tr>
<td>32 I do not deserve to be thinking about food.</td>
<td>.30</td>
<td>.85</td>
<td>.27</td>
<td>-.35</td>
<td>.75</td>
</tr>
<tr>
<td>18 I worry that my food thoughts will make me go crazy.</td>
<td>.40</td>
<td>.79</td>
<td>.36</td>
<td>-.49</td>
<td>.71</td>
</tr>
<tr>
<td>09 My thoughts about food make me abnormal compared to other people.</td>
<td>.44</td>
<td>.78</td>
<td>.34</td>
<td>-.23</td>
<td>.65</td>
</tr>
<tr>
<td>16 I must stay aware of my thoughts about food, or else I will feel like a failure.</td>
<td>.51</td>
<td>.72</td>
<td>.48</td>
<td>-.48</td>
<td>.65</td>
</tr>
<tr>
<td>12 I believe that thinking about food can make me fat.</td>
<td>.20</td>
<td>.69</td>
<td>.37</td>
<td>-.24</td>
<td>.56</td>
</tr>
<tr>
<td>Factor 3: Displacement of Problematic Thinking (n = 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 Having food thoughts on my mind means that I do not have to think about other problems.</td>
<td>.35</td>
<td>.35</td>
<td>.86</td>
<td>-.40</td>
<td>.78</td>
</tr>
<tr>
<td>07 Thinking about food blocks out other worries in my life.</td>
<td>.37</td>
<td>.29</td>
<td>.86</td>
<td>-.20</td>
<td>.74</td>
</tr>
<tr>
<td>19 Thinking about food is less scary than thinking about other issues in my life.</td>
<td>.41</td>
<td>.48</td>
<td>.72</td>
<td>-.33</td>
<td>.58</td>
</tr>
<tr>
<td>Factor 4: Intrusive Interference with Cognitive Functioning (n = 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 I cannot stop thinking about food.</td>
<td>.47</td>
<td>.32</td>
<td>.30</td>
<td>-.88</td>
<td>.79</td>
</tr>
<tr>
<td>26 Thoughts about food pop into my head even when I do not want them to.</td>
<td>.61</td>
<td>.26</td>
<td>.38</td>
<td>-.83</td>
<td>.76</td>
</tr>
<tr>
<td>31 I cannot control thoughts about food when they pop into my head.</td>
<td>.47</td>
<td>.28</td>
<td>.28</td>
<td>-.82</td>
<td>.69</td>
</tr>
<tr>
<td>20 Thinking about food so much prevents me from concentrating on other important things that I would like to do.</td>
<td>.43</td>
<td>.41</td>
<td>.54</td>
<td>-.76</td>
<td>.70</td>
</tr>
</tbody>
</table>

Note:  
CM = Communalities
3.7.5 subscale inter-correlations

Spearman’s rho correlations between the subscales of the FE-MCQ were computed (n = 264) and are presented in Table 8. Although there were significant correlations (p<.01) between the subscales of the FE-MCQ, none of the correlations exceeded a correlation of .63. This indicated that there were degrees of overlap between the subscales. However, the correlations were not sufficiently large to erode the empirical distinction between the subscales. None of the inter-correlations exceeded .8 and this indicated that there was no multicollinearity present, which would violate the assumptions of using multivariate statistics (Bryman and Cramer, 1994; Clark-Carter, 1997).

Table 8 Subscale inter-correlations for the FE-MCQ (n = 264)

<table>
<thead>
<tr>
<th>Correlations</th>
<th>MTE</th>
<th>ASI</th>
<th>DPT</th>
<th>ICF</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTE</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASI</td>
<td>.50**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPT</td>
<td>.51**</td>
<td>.53**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>ICF</td>
<td>.63**</td>
<td>.49**</td>
<td>.49**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: ** p<.01

3.8 Reliability of the FE-MCQ

3.8.1 Internal reliabilities

Cronbach coefficient alphas for each of the FE-MCQ and each of its subscales were computed from the sample of 264 participants. These values suggested that the
internal consistency of the scale was high: monitoring threat of eating ($\alpha = .84$), abnormal self-inferences ($\alpha = .88$), displacement of problematic thinking ($\alpha = .77$), intrusive interference with cognitive functioning ($\alpha = .87$), FE-MCQ total score ($\alpha = .92$).

3.8.2 Inter item reliability

Inter item reliability was ascertained by calculating item total correlations using Spearman's rho correlations. Item total scale correlations provide a measure of the degree to which items measure a homogenous or common core attribute. As presented in Table 9, all item total correlations were high and significant at the $p<.0001$ level.

Table 9  Item Total Correlations for each subscale and Cronbach’s $\alpha$ ($n = 264$)

<table>
<thead>
<tr>
<th>Factor 1: MTE ($\alpha = .84$)</th>
<th>Factor 2: ASI ($\alpha = .88$)</th>
<th>Factor 3: DPT ($\alpha = .77$)</th>
<th>Factor 4: ICF ($\alpha = .87$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 02 .80*</td>
<td>Item 35 .86*</td>
<td>Item 25 .85*</td>
<td>Item 21 .89*</td>
</tr>
<tr>
<td>Item 23 .78*</td>
<td>Item 32 .85*</td>
<td>Item 07 .86*</td>
<td>Item 26 .89*</td>
</tr>
<tr>
<td>Item 14 .75*</td>
<td>Item 18 .82*</td>
<td>Item 19 .79*</td>
<td>Item 31 .86*</td>
</tr>
<tr>
<td>Item 08 .76*</td>
<td>Item 09 .80*</td>
<td>Item 20 .79*</td>
<td>Item 04 .67*</td>
</tr>
<tr>
<td>Item 04 .71*</td>
<td>Item 16 .81*</td>
<td>Item 06 .66*</td>
<td>Item 12 .66*</td>
</tr>
</tbody>
</table>

Note: all correlations are significant at $p<.0001$

3.9 Validity of the FE-MCQ

3.9.1 Concurrent validity

In this section the relationship between the Food and Eating Meta-Cognitive Questionnaire (FE-MCQ) and other measures of meta-cognition and eating psychopathology are explored. However, as it has been argued in previous sections (Chapter 1), the content of the Food and Eating Meta-Cognitive Questionnaire is conceptually and clinically distinct from that of other measures of meta-cognition and eating disorder pathology. Consequently, it would be predicted that there would be only moderate to low correlations between these measures. However, relationships between specific individual subscales might strengthen the construct validity of the FE-MCQ.

3.9.1.1 The FE-MCQ and the Meta-Cognitive Questionnaire (MCQ; Cartwright-Hatton and Wells, 1997)

Spearman’s rho correlations were calculated between the total score and the subscales of the FE-MCQ with the Meta-Cognitive Questionnaire and its subscales.

The results are presented in Table 10.

The total FE-MCQ correlated significantly with the total MCQ ($r = .37, p<.0001$) and all of the subscales of the MCQ. This is not surprising as the MCQ measures generic meta-beliefs associated with worry and intrusive thoughts. The FE-MCQ measures specific meta-beliefs associated with food and eating. The low, yet significant
correlations indicate that both scales measure similar but distinct constructs. The monitoring threat of eating subscale appears to measure a construct related to regulation of eating, by referencing the threat of food-related cognition and interoceptive cues. Therefore a degree of correlation with MCQ subscales of positive beliefs \((r = .27, p<.0001)\), uncontrollability and danger beliefs \((r = .24, p<.0001)\), and negative beliefs \((r = .23, p<.0001)\), may have been expected, as these relate to regulatory efficiency and threat respectively. The abnormal self-inference subscale correlated with all MCQ subscales at \((r = .23-.34, p<.0001)\) these correlations may reflect a general tendency to appraise the experience of relevant thoughts as attributable to the self. The displacement of problematic thoughts subscale correlated with positive beliefs \((r = .35, p<.0001)\), and cognitive confidence \((r = .22, p<.0001)\), perhaps reflecting the conviction that this strategy has functional value. However, it also correlated with negative beliefs \((r = .29, p<.0001)\), perhaps indicating that this strategy incurs recognisable costs. The intrusive interference with cognitive function subscale correlated with positive beliefs \((r = .22, p<.0001)\), perhaps indicating that inhibition of other cognitive functions allows exclusive focus on regulation of eating. The correlation of this subscale with negative beliefs \((r = .19, p<.001)\), may have been expected as there is acknowledgement that other cognitive functions are compromised.
### Table 10: Correlations between the FE-MCQ and the MCQ (n = 264)

<table>
<thead>
<tr>
<th></th>
<th>FE-MCQ</th>
<th>MTE</th>
<th>ASI</th>
<th>DPT</th>
<th>ICF</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCQ_TOT</td>
<td>.37*****</td>
<td>.32*****</td>
<td>.34*****</td>
<td>.33*****</td>
<td>.25*****</td>
</tr>
<tr>
<td>MCQ_POS</td>
<td>.34*****</td>
<td>.27*****</td>
<td>.32*****</td>
<td>.35*****</td>
<td>.22*****</td>
</tr>
<tr>
<td>MCQ_UNC</td>
<td>.29*****</td>
<td>.24*****</td>
<td>.25*****</td>
<td>.26*****</td>
<td>.18**</td>
</tr>
<tr>
<td>MCQ_CON</td>
<td>.31*****</td>
<td>.29*****</td>
<td>.23*****</td>
<td>.22*****</td>
<td>.25*****</td>
</tr>
<tr>
<td>MCQ_NEG</td>
<td>.27*****</td>
<td>.23*****</td>
<td>.25*****</td>
<td>.29*****</td>
<td>.19***</td>
</tr>
<tr>
<td>MCQ_SCO</td>
<td>.22*****</td>
<td>.20*****</td>
<td>.28*****</td>
<td>.12*</td>
<td>.12*</td>
</tr>
</tbody>
</table>

Note: significance levels: **** p<.0001, *** p<.001, ** p<.01, * p<.05


#### 3.9.1.2 FE-MCQ and the Thought Control Questionnaire (TCQ; Wells and Davies, 1994)

Spearman’s rho correlations were calculated between the total score and the subscales of the FE-MCQ with the Thought Control Questionnaire and its subscales. The results are presented in Table 11.

The total FE-MCQ significantly correlated with the total TCQ ($r = .22$, $p<.0001$), as did three of the subscales of the FE-MCQ, displacement of problematic thoughts ($r = .23$, $p<.0001$), abnormal self-inferences ($r = .22$, $p<.0001$), and interference with cognitive function ($r = .26$, $p<.0001$). Correlations between the subscales were largely non significant, or of slight significance. The exceptions were the worry and punishment subscales, and these subscales have been found to be associated with emotional vulnerability and impaired control over cognition (Wells and Davies, 2012).
The worry subscale correlated significantly with the total FE-MCQ \( r = .32, p < .0001 \), monitoring threat of eating \( r = .20, p < .001 \), abnormal self-inference \( r = .34, p < .0001 \), displacement of problematic thoughts \( r = .32, p < .0001 \), and intrusive interference of cognitive function \( r = .26, p < .0001 \). The worry subscale of the TCQ measures the tendency to displace aversive thoughts by engaging in general worry, while the displacement of problematic thoughts subscale of the FE-MCQ involves the direct substitution of food thoughts for problematic/aversive thoughts. The correlation with the monitoring threat of eating subscale might involve a concern to displace food-related thoughts, or relate to the power of food thoughts to displace more problematic concerns. This may also account for the correlation with the intrusive interference of cognitive function subscale, and may reflect awareness that competing thoughts can be exert mutual interference effects. While the correlation with the abnormal self-inferences subscale might involve individual's tendencies to derive negative self-evaluations from the content of aversive thoughts. The punishment subscale correlated significantly with the total FE-MCQ \( r = .27, p < .0001 \), monitoring threat of eating \( r = .18, p < .01 \), abnormal self-inference \( r = .24, p < .0001 \), displacement of problematic thoughts \( r = .19, p < .001 \), and intrusive interference of cognitive function \( r = .27, p < .0001 \). The punishment subscale of the TCQ measures the tendency toward self-rapproch and self-denigration related to the occurrence of certain thoughts. The correlation with the monitoring threat of eating subscale perhaps relates to a judgement that thinking about eating is a reprehensible as actually eating. The correlation with the interference of cognitive function perhaps
relates to acknowledgement that cognitive performance is compromised. The correlation with the displacement of problematic thoughts subscale perhaps indicates a concern to be rid of aversive thoughts. While the correlation with the abnormal self-inference subscale shares the self-denigratory component of the punishment subscale of the TCQ, but is solely confined to the experience of food-related thoughts.

Table 11 Correlations between the FE-MCQ and the TCQ (n = 264)

<table>
<thead>
<tr>
<th>FE-MCQ</th>
<th>MTE</th>
<th>ASI</th>
<th>DPT</th>
<th>ICF</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCQ_TOT</td>
<td>.22****</td>
<td>.11</td>
<td>.22****</td>
<td>.23****</td>
</tr>
<tr>
<td>TCQ_DIS</td>
<td>.01</td>
<td>-.05</td>
<td>.10</td>
<td>.09</td>
</tr>
<tr>
<td>TCQ_SOC</td>
<td>-.03</td>
<td>-.06</td>
<td>-.05</td>
<td>-.02</td>
</tr>
<tr>
<td>TCQ_WOR</td>
<td>.32 ****</td>
<td>.20***</td>
<td>.34****</td>
<td>.32****</td>
</tr>
<tr>
<td>TCQ_PUN</td>
<td>.27 ****</td>
<td>.18**</td>
<td>.24****</td>
<td>.19***</td>
</tr>
<tr>
<td>TCQ_RAP</td>
<td>.09</td>
<td>.06</td>
<td>.07</td>
<td>.09</td>
</tr>
</tbody>
</table>

Note: significance levels: **** p<.0001, *** p<.001, ** p<.01, * p<.05


3.9.1.3 The FE-MCQ and the Eating Attitudes Test-26 (EAT-26: Garner and Garfinkel, 1979)

Spearman’s rho correlations were calculated between the total score and the subscales of the FE-MCQ with the Eating Attitudes Test-26. The EAT-26 was significantly correlated with the Total FE-MCQ and each of the subscales: total score ($r = .48$), monitoring threat of eating ($r = .42$), abnormal self-inferences ($r = .47$), displacement of problematic thoughts ($r = .27$), intrusive interference with cognitive function ($r = .35$). All correlations were significant at $p<.0001$. 

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3.9.1.4 The FE-MCQ and the Eating Disorder Inventory – 2 (EDI-2; Garner, 1991)

Spearman's rho correlations were calculated between the total score and the subscales of the FE-MCQ with the subscales of the Eating Disorder Inventory-2. The results are presented in Table 12.

<table>
<thead>
<tr>
<th></th>
<th>FE-MCQ</th>
<th>MTE</th>
<th>ASI</th>
<th>DPT</th>
<th>ICF</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDI2_DFT</td>
<td>.53****</td>
<td>.48****</td>
<td>.51****</td>
<td>.34****</td>
<td>.40****</td>
</tr>
<tr>
<td>EDI2_BDIS</td>
<td>.30****</td>
<td>.33****</td>
<td>.26****</td>
<td>.19**</td>
<td>.18**</td>
</tr>
<tr>
<td>EDI2_BUL</td>
<td>.53****</td>
<td>.48****</td>
<td>.49****</td>
<td>.33****</td>
<td>.42****</td>
</tr>
<tr>
<td>EDI2_PER</td>
<td>.24****</td>
<td>.22****</td>
<td>.23****</td>
<td>.06</td>
<td>.17**</td>
</tr>
<tr>
<td>EDI2_INEF</td>
<td>.32****</td>
<td>.21****</td>
<td>.41****</td>
<td>.20****</td>
<td>.21**</td>
</tr>
<tr>
<td>EDI2_DIS</td>
<td>.24****</td>
<td>.12</td>
<td>.32****</td>
<td>.13*</td>
<td>.18**</td>
</tr>
<tr>
<td>EDI2_INT</td>
<td>.51****</td>
<td>.43****</td>
<td>.53****</td>
<td>.28****</td>
<td>.39****</td>
</tr>
<tr>
<td>EDI2_MAT</td>
<td>.40****</td>
<td>.33****</td>
<td>.44****</td>
<td>.30****</td>
<td>.24****</td>
</tr>
<tr>
<td>EDI2_ASC</td>
<td>.30****</td>
<td>.27****</td>
<td>.33****</td>
<td>.26****</td>
<td>.19**</td>
</tr>
<tr>
<td>EDI2_REG</td>
<td>.29****</td>
<td>.21****</td>
<td>.35****</td>
<td>.27****</td>
<td>.22****</td>
</tr>
<tr>
<td>EDI2_SOC</td>
<td>.32****</td>
<td>.48****</td>
<td>.32****</td>
<td>.25****</td>
<td>.10</td>
</tr>
</tbody>
</table>

Note: significance levels: **** p<.0001, *** p<.001, ** p<.01, * p<.05


3.9.2 Correlation with anxiety, depression, age, and body mass index (BMI)

In this section individual differences in food and eating meta-cognitions as measured by the FE-MCQ are investigated.
3.9.2.1 The FE-MCQ and the Beck Anxiety Inventory (BAI; Beck, et al., 1988)

To examine whether the FE-MCQ was related to anxiety, Spearman’s rho correlations were performed and suggested that anxiety was related to: the total FE-MCQ score ($r = .23$, $p<.0001$), the abnormal self-inference subscale ($r = .21$, $p<.0001$), the intrusive interference with cognitive functioning subscale ($r = .23$, $p<.0001$), the monitoring threat of eating subscale ($r = .1$, $p<.001$). Anxiety was not however related to the displacement of problematic thoughts (DPT) subscale. This is conceptually consistent as displacement of problematic thoughts would be expected to attenuate anxiety.

3.9.2.2 The FE-MCQ and the Beck Depression Inventory (BDI; Beck, et al., 1979)

To examine whether the FE-MCQ was related to depression, Spearman’s rho correlations were performed and suggested that depression was related to the FE-MCQ and each subscale: the total FE-MCQ score ($r = .43$, $p<.0001$), the abnormal self-inference subscale ($r = .40$, $p<.0001$), the monitoring threat of eating subscale ($r = .37$, $p<.0001$), the intrusive interference with cognitive functioning subscale ($r = .32$, $p<.0001$), and the displacement of problematic thoughts subscale ($r = .30$, $p<.0001$). The correlation between the BDI and the FE-MCQ suggests that the meta-cognitions were positively correlated with depression. The highest correlation involved the abnormal self-inferences subscale, which might be expected as pejorative self-evaluation is a component of depression.
3.9.2.3 Summary of correlations with anxiety and depression

There were low but significant correlations between the FE-MCQ and both the BDI and BAI. Symptoms of depression and anxiety have been found to be prominent features of eating disorder (Laessle et al., 1987). Although the precise nature of the inter-relationship between the disorders is uncertain (Swift, Andrew, and Barklage, 1986) and may result from a number of factors (e.g. starvation, psychological distress related to eating). Negative self-beliefs relating to self-deprecation and shame, have been found in individuals with eating disorder (Cooper et al., 1997). Those with eating disorders have also been found to have a greater tendency toward self-rapprochement and self-punishment, than do dieters and non clinical controls (Lovell and Hill, 1994). It is also likely that high degrees of anxiety results from a number of sources (e.g. the threat of eating, the presence of food cues, social context) largely related to dietary restriction (Swift, Andrew, and Barklage, 1986). Affective disorder rarely predates the eating disorder, and qualitatively the experience and manifestation of affect may be relatively restricted (Steere, Butler, and Cooper. 1990: Halmi et al., 1991). Therefore, it was concluded that the FE-MCQ was measuring distinct, but secondary, negative affect.

3.9.2.4 The FE-MCQ in relation to age

There was no significant relationship between age and the FE-MCQ total or subscale scores. The FE-MCQ does not therefore appear to be influenced by age.
3.9.2.5 The FE-MCQ in relation to body mass index (BMI)

There was no significant relationship between BMI and the FE-MCQ total or subscale scores, except for the abnormal self-inference subscale which correlated very weakly with BMI ($r = .15; p<.05$). The FE-MCQ does not therefore appear to be influenced by individuals’ BMI status.

3.10 Discriminant validity

The ability of the FE-MCQ and its subscales to discriminate between different groupings of people was examined in this section. In all cases between-subjects Mann-Whitney tests were used. As a number of simultaneous tests ($n = 5$) were to be computed, a Bonferroni correction was performed to reduce the probability of a Type I error. A significance level of 0.01 ($0.05/5 = 0.01$) was adopted on the basis of this procedure.

Firstly, the ability of the FE-MCQ and its subscales to discriminate between different degrees of disordered eating symptomatology was explored.

3.10.1.1 Can the FE-MCQ discriminate between high EAT-26 ($>30$) and low EAT-26 ($<30$)?

The usual cut off point for the EAT-26 is a score of 14 (Garner and Garfinkel, 1979), however due to the unusual scoring procedure employed within the present study a cut off point of 30 was used to divide the sample into two groups: people with distorted
attitudes toward food \((n = 93)\) with an EAT-26 score of more than 30, and people
with less problematic attitudes toward food \((n = 171)\) with an EAT-26 score of less
than 30. The results are presented in Table 13.

### Table 13

<table>
<thead>
<tr>
<th></th>
<th>High EAT &gt; 30 ((n = 93))</th>
<th>Low EAT &lt; 30 ((n = 171))</th>
<th>Mann Whitney ((U))</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOT</strong></td>
<td>43.21 17.28</td>
<td>26.16 15.96</td>
<td>(u = -7.16)</td>
<td>(&lt; 0.0001)</td>
</tr>
<tr>
<td><strong>MTE</strong></td>
<td>67.07 21.25</td>
<td>48.40 23.65</td>
<td>(u = -6.04)</td>
<td>(&lt; 0.0001)</td>
</tr>
<tr>
<td><strong>ASI</strong></td>
<td>26.15 20.75</td>
<td>8.34 12.94</td>
<td>(u = -8.08)</td>
<td>(&lt; 0.0001)</td>
</tr>
<tr>
<td><strong>DPT</strong></td>
<td>30.38 24.08</td>
<td>19.65 22.68</td>
<td>(u = -4.34)</td>
<td>(&lt; 0.0001)</td>
</tr>
<tr>
<td><strong>ICF</strong></td>
<td>42.62 27.31</td>
<td>23.66 22.22</td>
<td>(u = -5.58)</td>
<td>(&lt; 0.0001)</td>
</tr>
</tbody>
</table>

*Note:*

3.10.1.2 Can the FE-MCQ discriminate between high EDI-EAT (>30) and low EDI-EAT (<30)?

The following procedure was used to assign participants into either higher or lower eating psychopathology groups. This procedure has been used by (Patton, 1992; Waller and Mijatovich, 1998) and involves aggregating the drive for thinness, bulimia and body dissatisfaction subscales of the EDI-2. Waller and Mijatovich (1998) reported their high eating psychopathology group as scoring \((M = 22.4; SD = 11.4)\), and on this basis a combined score of more than 30 was adopted as a cut off point for
the high EDI-EAT group. The results are presented in Table 14.

Table 14 Means, standard deviations, values, and statistical differences between high EDI-EAT (n = 114) and low EDI-EAT (n = 150).

<table>
<thead>
<tr>
<th></th>
<th>High EDI-EAT</th>
<th>Low EDI-EAT</th>
<th>Mann Whitney</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; 30 (n = 114)</td>
<td>&lt; 30 (n = 150)</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Mean SD</td>
<td>Mean SD</td>
<td>u = -5.83</td>
<td>p&lt;.0001</td>
<td></td>
</tr>
<tr>
<td>TOT</td>
<td>38.81 17.51</td>
<td>25.41 16.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTE</td>
<td>63.69 21.14</td>
<td>46.34 24.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASI</td>
<td>20.19 20.30</td>
<td>8.78 13.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPT</td>
<td>28.19 23.39</td>
<td>18.80 23.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICF</td>
<td>37.40 26.42</td>
<td>23.02 22.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


3.10.1.3 Can the FE-MCQ discriminate between high EDI-EGO (>30) and low EDI-EGO (<30)?

The same procedure was used to assign participants into either higher or lower ego dysfunction as defined by Valdiserri and Kihlstrom (1995). This procedure has been used by (Patton, 1992) and involves aggregating the perfectionism, ineffectiveness, interpersonal distrust, interoceptive awareness, maturity fears, asceticism, impulse regulation, and social insecurity subscales of the EDI-2. For the purposes of this study a combined score of more than 30 was adopted as a cut off point for the high EDI-EGO group. The results are presented in Table 15.
Table 15 Means, standard deviations, values, and statistical differences between high EDI-EGO (n = 73) and low EAT-EGO (n = 191).

<table>
<thead>
<tr>
<th></th>
<th>High EDI-EGO &gt; 30 (n = 73)</th>
<th>Low EDI-EGO &lt; 30 (n = 191)</th>
<th>Mann Whitney U</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>TOT</td>
<td>42.19</td>
<td>17.26</td>
<td>28.60</td>
<td>16.94</td>
</tr>
<tr>
<td>MTE</td>
<td>64.71</td>
<td>21.24</td>
<td>50.82</td>
<td>24.44</td>
</tr>
<tr>
<td>ASI</td>
<td>25.74</td>
<td>20.92</td>
<td>9.58</td>
<td>14.20</td>
</tr>
<tr>
<td>DPT</td>
<td>29.80</td>
<td>24.00</td>
<td>21.31</td>
<td>23.86</td>
</tr>
<tr>
<td>ICF</td>
<td>38.81</td>
<td>26.13</td>
<td>26.87</td>
<td>24.82</td>
</tr>
</tbody>
</table>

Note:

3.10.1.4 Can the FE-MCQ discriminate between those who avoid eating for long periods of time and those who eat regularly?

Deprivation of food over prolonged periods of time is indicative of disordered eating and potentiates ultimate overeating. This was defined as regularly (i.e. at least 3 times per week) depriving oneself of food for periods of time in excess of 8 hours, and/or eating no more than twice daily. Those who met the criteria for engaging in this dietary practice were compared with those who did not. Group analyses were performed on the total FE-MCQ and its subscales, and these are presented in Table 16.
Table 16  Means, standard deviations, values, and statistical differences between those who avoid eating for long periods (n = 130) and those who eat regularly (n = 134).

<table>
<thead>
<tr>
<th>Avoid eating for long periods (n = 130)</th>
<th>Eat regularly (n = 134)</th>
<th>Mann Whitney (U)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean SD</td>
<td>Mean SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOT 40.19 16.45</td>
<td>22.28 15.04</td>
<td>u = -8.41</td>
<td>p &lt; .0001</td>
</tr>
<tr>
<td>MTE 65.57 20.48</td>
<td>42.47 22.16</td>
<td>u = -7.77</td>
<td>p &lt; .0001</td>
</tr>
<tr>
<td>ASI 20.16 19.43</td>
<td>7.09 12.64</td>
<td>u = -6.84</td>
<td>p &lt; .0001</td>
</tr>
<tr>
<td>DPT 30.06 25.16</td>
<td>15.72 19.54</td>
<td>u = -5.21</td>
<td>p &lt; .0001</td>
</tr>
<tr>
<td>ICF 39.77 25.77</td>
<td>18.93 20.12</td>
<td>u = -6.87</td>
<td>p &lt; .0001</td>
</tr>
</tbody>
</table>


3.10.1.5 Can the FE-MCQ discriminate between those who binge eat and those who do not?

Binge eating is a common feature of disordered eating commonly found in the general population. As mentioned in Chapter 1 binge eating has a number of important precursors and consequences. This was defined as episodes of eating amounts significantly in excess of normal dietary intake, and accompanied by a perceived loss of control over eating. Those who met the criteria for engaging in binge eating were compared with those who did not. Group analyses were performed on the total FE-MCQ and its subscales, and these are presented in Table 17.
Table 17 Means, standard deviations, values, and statistical differences between those who binge eat (n = 42) and those who do not (n = 222).

<table>
<thead>
<tr>
<th></th>
<th>Binge group (n = 42)</th>
<th>Non-binge group (n = 222)</th>
<th>Mann Whitney (U)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOT</td>
<td>47.76 16.64</td>
<td>28.00 16.61</td>
<td>u = -6.20</td>
<td>p &lt; .0001</td>
</tr>
<tr>
<td>MTE</td>
<td>73.75 17.71</td>
<td>50.08 23.75</td>
<td>u = -5.89</td>
<td>p &lt; .0001</td>
</tr>
<tr>
<td>ASI</td>
<td>27.63 22.35</td>
<td>10.89 15.17</td>
<td>u = -5.83</td>
<td>p &lt; .0001</td>
</tr>
<tr>
<td>DPT</td>
<td>32.46 23.78</td>
<td>20.95 23.14</td>
<td>u = -3.24</td>
<td>p &lt; .005</td>
</tr>
<tr>
<td>ICF</td>
<td>50.44 27.89</td>
<td>25.18 22.68</td>
<td>u = -5.34</td>
<td>p &lt; .0001</td>
</tr>
</tbody>
</table>


3.10.1.6 Can the FE-MCQ discriminate between those who vomit/purge and those who do not?

Vomiting behaviour may be used by individuals to negate the consequences of ingesting food appraised as dangerous in terms of the type and/or amount of food eaten. This behaviour was defined as being confined to vomiting motivated by attempts at weight loss by purgation of food eaten prior to the vomiting episode.

Group analyses were performed on the total FE-MCQ and its subscales, and these are presented in Table 18.
Table 18 Means, standard deviations, values, and statistical differences between those who engage in vomiting behaviour (n = 25) and those who do not (n = 239).

<table>
<thead>
<tr>
<th>Vomit Group (n = 25)</th>
<th>Non-vomit group (n = 239)</th>
<th>Mann Whitney (U)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tot 43.31 22.71</td>
<td>30.00 17.21</td>
<td>u = -2.79</td>
<td>p&lt;.0001</td>
</tr>
<tr>
<td>MTE 63.76 28.04</td>
<td>52.81 23.88</td>
<td>u = -2.10</td>
<td>p&lt;.05</td>
</tr>
<tr>
<td>ASI 29.20 28.50</td>
<td>12.07 15.44</td>
<td>u = -3.28</td>
<td>p&lt;.0001</td>
</tr>
<tr>
<td>DPT 21.73 27.56</td>
<td>22.89 23.17</td>
<td>u = -0.23</td>
<td>ns</td>
</tr>
<tr>
<td>ICF 40.45 32.23</td>
<td>52.81 23.88</td>
<td>u = -1.71</td>
<td>ns</td>
</tr>
</tbody>
</table>


The ability of the FE-MCQ to discriminate between those reporting high and low scores on affective measures was also explored. Again between-subjects Mann Whitney tests were performed.

3.10.1.7 Can the FE-MCQ discriminate between clinical BDI (>9) and non-clinical BDI (<9)?

The cut off point of 9 points on the BDI was used to divide the sample into two groups: people with depression (n = 135) with an BDI score of more than 9, and people with no clinically significant (n = 126) with an BDI score of less than 9. The results are presented in Table 19.
### Table 19
Means, standard deviations, values, and statistical differences between clinical BDI (n = 135) and non clinical BDI (n = 126).

<table>
<thead>
<tr>
<th></th>
<th>Clinical BDI (n = 135)</th>
<th>Non-Clinical BDI (n = 126)</th>
<th>Mann Whitney (U)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>TOT</td>
<td>38.14</td>
<td>17.08</td>
<td>23.60</td>
<td>16.13</td>
</tr>
<tr>
<td>MTE</td>
<td>61.93</td>
<td>22.14</td>
<td>44.92</td>
<td>23.86</td>
</tr>
<tr>
<td>ASI</td>
<td>18.36</td>
<td>18.81</td>
<td>8.43</td>
<td>14.68</td>
</tr>
<tr>
<td>DPT</td>
<td>29.37</td>
<td>24.84</td>
<td>15.44</td>
<td>19.79</td>
</tr>
<tr>
<td>ICF</td>
<td>37.07</td>
<td>26.56</td>
<td>20.51</td>
<td>20.78</td>
</tr>
</tbody>
</table>

**Note:**

#### 3.10.1.8 Can the FE-MCQ discriminate between clinical BAI (>7) and non-clinical BAI (<7)?

Again, the clinically relevant cut off point of 7 points on the BAI was used to divide the sample into two groups: people with at least mild anxiety (n = 77) with an BAI score of more than 7, and people with no anxiety (n = 187) with an BAI score of less than 7. The results are presented in Table 20.

### Table 20
Means, standard deviations, values, and statistical differences between clinical BAI (n = 135) and non clinical BAI (n = 126).

<table>
<thead>
<tr>
<th></th>
<th>High BAI-CLI BAI &gt; 7 (n = 137)</th>
<th>Low BAI-CLI BAI &lt; 7 (n = 127)</th>
<th>Mann Whitney (U)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>TOT</td>
<td>34.12</td>
<td>17.33</td>
<td>27.94</td>
<td>18.44</td>
</tr>
<tr>
<td>MTE</td>
<td>57.56</td>
<td>24.13</td>
<td>49.84</td>
<td>24.27</td>
</tr>
<tr>
<td>ASI</td>
<td>15.55</td>
<td>19.89</td>
<td>11.41</td>
<td>16.96</td>
</tr>
<tr>
<td>DPT</td>
<td>24.73</td>
<td>22.70</td>
<td>20.68</td>
<td>24.36</td>
</tr>
<tr>
<td>ICF</td>
<td>33.85</td>
<td>25.72</td>
<td>24.18</td>
<td>23.91</td>
</tr>
</tbody>
</table>

**Note:**
3.11 Prediction of eating psychopathology and ego dysfunction

As discussed above, it had been ascertained that there was no multicollinearity (i.e. excessively high inter-correlations between the independent variables) present. Therefore, it was possible to perform two stepwise multiple regression analyses to determine which of the four FE-MCQ subscales predicted eating psychopathology and ego dysfunction. The subscales were used as independent variables, while the two aggregated EDI-2 dimensions were the dependent variables.

Eating psychopathology (as represented by the aggregate of the drive for thinness, bulimia and body dissatisfaction subscales of the EDI-2) was found to be predicted by the monitoring threat of eating subscale ($\beta = .37; t = 6.01; p < .001$), and the abnormal self-inference subscale ($\beta = .20; t = 3.25; p < .001$), the multiple $R = .51$ was significant $F (2, 264) = 44.99$, $p < .001$, and the value of $R^2 = .26$ indicated that 26% of the variance in the EDI-EAT score was accounted for. While ego dysfunction (as represented by the aggregate of the remaining eight subscales of the EDI-2) was found to be predicted solely by the abnormal self-inference subscale ($\beta = .29; t = 9.54; p < .001$), the multiple $R = .53$ was significant $F (2, 264) = 91.11$, $p < .001$, and the value of $R^2 = .28$ showed that abnormal self-inference accounted for 28% of the variance in the total EDI-EGO score. Neither of the remaining FE-MCQ subscales (displacement of problematic thinking, or intrusive interference of cognitive function) predicted the aggregated EDI-2 dimensions.
4. DISCUSSION

4.1 Findings

4.1.1 Multidimensionality of meta-cognitive beliefs in eating disorder thinking

The primary aim of this study was an examination of meta-cognitive associates of food- and eating-related thoughts. Semi-structured interviews were conducted with a representative sample of individuals with eating disorders, in order to elicit meta-cognitive dimensions associated with food- and eating-related cognitions. As a result, 12 conceptually distinct categories were derived from the interview data. Inter-rater agreement on the classification of interview units was high. The extracted categories were (1) cognitive neutralisation, (2) self-inferences, (3) displacement of worries, (4) social comparison, (5) body information, (6) punishment, (7) fusion, (8) intrusion, (9) monitoring and control over eating, (10) monitoring and emotional control, (11) illness, and (12) functional interference. These findings from study 1 imply that individuals perceive a range of meta-cognitive beliefs about their own food-related thoughts. There were both positive and negative elements to these meta-beliefs and individuals considered there to be both beneficial and detrimental aspects to food thoughts. The findings of the study suggest that individuals with eating disorder appraise their food-related thinking in a variety of ways that might contribute to eating disorder. In identifying both positive and negative meta-beliefs, the findings of this
study support the range of studies (e.g. Vitousek and Hollon, 1990; Serpell, 1999; Meyer and Waller, 1998) suggesting that eating disorder symptomatology may be appraised by the individual as offering a range of functional benefits. These perceived benefits may also incur detriments for the individual (Serpell, 1999; Green et al., 1996) by the compromising interference with cognitive, affective, behavioural, and social functioning. The current findings also suggest that much previous research in eating disorders has adopted a rather restricted focus. This has been especially apparent in the following areas highlighted by the current study. In concentrating primarily upon cognitive content past research has adopted an overly narrow perspective. The results presented in chapter 2 suggest that a number of metacognitive processes are important in eating disorder.

Within conventional cognitive models (e.g. Garner and Bemis, 1982) it has been assumed that the core psychopathology of eating disorders relates to weight and body shape. Further models (e.g. Vitousek and Ewald, 1993) have stated that weight and shape concerns become entwined with self-schemata, and as a result the individual’s self-concept is determined by weight and shape. As a consequence the relative importance of factors related to food and eating has been neglected. This is especially surprising as dietary restriction appears to be the most common method of weight loss attempts (McGuire and Wing, 1998). The findings of the current study suggest that by neglecting the regulatory processes involved in dietary restriction, an important facet of eating disorders has been under-researched.
An unexpected finding was that the range of self-inferences drawn from the experience of food-related cognitions was invariably negative. On the basis of previous research a number of positive self-inferences may have been expected. These may have related to themes of restraint equating to accomplishment and affirmation of a positive self-concept (e.g. Garner and Bemis, 1882; Slade, 1982; Serpell, 1999). The experience of hunger and subsequent behavioural restraint, and weight loss or maintenance may indeed offer positive experiences of triumph and control. However, due to paradoxical cognitive effects of cognitive regulation attempts, the experience of food thoughts as uncontrollable and intrusive may lead to self-criticism and self-devaluation.

Serpell (1999) noted that a major perceived cost of eating disorder included experiencing constant thoughts about food. This effect has also been found in dieters (Polivy and Herman, 1993). Within the present study it was apparent that individuals were caught in a bind regarding the experience of food thoughts. It was interesting that ongoing self-monitoring of food-related cognition was considered to be important in avoiding actual eating. This was consistent with Serpell’s (1999) “control” code which entails the use of self-regulation to provide control, willpower, and structure, (e.g. determining type, amount, and timing of food eaten). This feature also has linkages with other characteristics of eating disorder e.g. perfectionism (Srinivasagam et al., 1995). obsessionality, (Bastianti et al., 1996) and the preference for simplicity and certainty (Vitousek and Ewald, 1993). However, there were a number of perceived dangers in thinking about food. For example, these included an appraisal of
increased likelihood of eating, and threats to the self-concept. In agreement with (Serpell, 1999; Meyer and Waller, 1998) eating disorder symptomotology was appraised as offering avoidance of aversive thoughts and emotions. Unlike Serpell (1999) there was no stated concern about other emotions being stifled, but there was concern that other cognitive capacities were significantly compromised, a phenomenon that has been noted in experimental studies (e.g. Green et al., 1996). The thoughts themselves appeared to be appraised as threats in many instances, and abnormal self-inferences related to the experience of food-related thoughts is perhaps linked to Waller and Meyer's (1997) finding that self-directed ego threat was most predictive of psychological distress.

4.1.2 Factorially derived dimensions of meta-cognitive beliefs of food related thinking in dieters.

The newly developed questionnaire was administered to a large group of current dieters (n = 264). Factor analyses of the responses to the FE-MCQ demonstrated that this questionnaire reduced the original twelve dimensions, to four empirically distinct categories of beliefs, processes, and strategies concerned with meta-cognitions associated with food- and eating-related cognition. The four categories, or subscales are as follows.

4.1.2.1 Monitoring threat of eating

This factor consists of regulatory endeavours guided by monitoring of ongoing cognition and parallel monitoring of interoceptive information. This factor pertains to it is about prediction and regulation of eating.
Preoccupation with food is a key feature of the eating disorders (Polivy and Herman, 1993). Considering that individuals for whom food is especially salient exhibit characteristic food-related beliefs (e.g. Tepper et al., 1992) then the appraisal of the experience of these thoughts becomes an issue of importance. It was not possible to find studies investigating the personal meaning of constant preoccupation with food thoughts in eating disorder. However, the present studies suggest that one appraisal of food-related thoughts is concerned with the idea that these potentate actual eating.

There are a number of issues related to this factor. One issue pertains to an appraisal related to the concept of fusion. This concerns the meta-belief that thinking about food and actual eating behaviours are causally linked, that is to say the likelihood of eating is increased by the experience thinking about food. Shafran et al. (1999) provided evidence of a cognitive distortion related to disturbed eating. However, thought-shape fusion (TSF) is concerned with appraisals that intrusive thoughts about food have direct consequences for body shape, rather than actual eating behaviour. The nature of the fusion distortion found within this study more directly relates to the concept of thought-action fusion (Rachman and Shafran, 1999) as the appraisal appears to relate to a perceived increase in the likelihood of actually eating. There are two related forms of thought-action fusion (TAF) these are (1) probability TAF in which the experience of intrusive thoughts is appraised as increasing the probability that the disturbing event will occur. (2) morality TAF in which the experience of intrusive thoughts is appraised as morally equivalent to actually engaging in the prohibited act. It is of interest that TAF is a well documented feature of obsessive-
compulsive disorder (OCD) (Rachman and Shafran, 1999), and that a number of individuals with eating disorders have been found to have co-morbid OCD (Hsu, Kayne, and Weltzin, 1993). Disentangling the nature of these fusion-type cognitive distortions may be a fruitful area for future research, as the tendency to engage in this type of meta-cognitive appraisal appears to be associated with vulnerability to disturbed eating. The response of the individual to threats related to the experience of food-related thinking is also an area of importance. Within this factor individuals reported the use of both cognitive neutralisation and thought suppression. Cognitive neutralisation represents an attempt to attenuate or displace the discomforting effects of an intrusive thought by cognitive means. While thought suppression represents an attempt to remove or prevent the occurrence of intrusive thoughts. Both strategies are likely to be involved in maintenance.

Paradoxically it appears that successful regulation of eating requires the individual to engage in high levels of self-monitoring (Polivy and Herman, 1993; Kayman et al., 1990). This infers that cognitive mediation and regulation is vital to dietary restriction, and it has been suggested that often this must occur in the presence of physiological cues to eat (Heatherton, 1993). Evidence to support the requirement for attentional focus on restraint, is derived from studies that have shown inhibition of eating by experimental induction of other concerns to consume attentional capacity (e.g. Scattolon and Nicki, 1995). The requirement for increased regulation is likely to prime food-related thoughts, which may be appraised as intrusive.
Body information e.g. hunger may be appraised as dangerous as the likelihood of eating is considered to be greater. Parallel processing of interoceptive information possibly represents associative learning and may elicit anticipation of eating. If this is accompanied with an increase in intrusive food thoughts then the meta-cognitive distortion of fusion may motivate control attempts. The maladaptive cycle may be completed if the paradoxical effect of thoughts suppression resulted in further increases in intrusive thoughts. Theoretically the resulting increase in self-awareness would also result in an intensification of subjective sensation (i.e. hunger). The findings reported in chapter 2 suggested that interoceptive information might be processed in parallel and influence the appraisal of food-related thoughts. This effect has been found in other studies. Clark and Purdon (2000) found that sexual thoughts were appraised as less controllable in the subjective presence of increased physiological arousal. Wells (1997) has also implicated the processing of physiological cues in the appraisals of individuals with social phobia. Conversely defiance of the experience of hunger may be appraised as evidence of self-control.

4.1.2.2 Abnormal self-inferences

This factor testified to the tendency to derive negative self-evaluation from the experience of food-related cognition. This finding is in agreement with previous research suggesting that people might appraise their thoughts negatively and consequently experience psychological distress.
It has been suggested that individuals with eating disorder hold fixed and inflexible self-schemata, and that self- and weight-related schemata become enmeshed (Vitousek and Ewald, 1993). An attentional focus restricted to food, weight, and shape may lead to the individual becoming overly reliant on these as indices of self-worth. Therefore, the occurrence of food-related thoughts appraised as incongruous may violate the individual’s self-concept. Appraisal of the thought as egodystonic and incompatible with goals and related regulatory endeavours, may result in the individual being motivated to engage in control strategies. Failure to moderate relevant aspects of eating in the desired fashion may compromise an already impoverished self-image.

Concepts related to thought-shape fusion Shafran et al. (1999) were found within this factor. There were indications that the experience of food thoughts was appraised as reprehensible, and denigrating. Items related to morality TSF (within which the individual appraises the experience of food-related thinking as morally equivalent to actual eating the prohibited food), and perceptual TSF (within which the experience of thoughts about eating prohibited foods increases the perception of fatness) were apparent. These conveyed a theme of self-punishment. This theme has been associated with psychopathology (Wells and Davies, 1994; Amir, Cashman, and Foa, 1997). Furthermore, self-directed ego threat has been found to be the best predictor of bulimic behaviours (Waller and Meyer, 1997).
Negative self-beliefs have been found in individuals with eating disorders (e.g. Cooper et al., 1997) involving themes of self-denigration and shame. Shame has been found to correlate positively with all of the EDI-2 subscales except maturity fears (Sanfter et al., 1995). Furthermore, Barney and Irwin (2000) found that although eating disturbance was unrelated to proneness to shame and guilt in a global sense, shame associated with eating behaviour was the strongest predictor of severity of eating disorder symptomatology. To a lesser extent guilt associated with eating behaviour and shame related to body perception were also predictive. These findings are supportive of findings in the current studies that determined that eating psychopathology was partly predicted by abnormal self-inference, and ego dysfunction related to eating disturbance was solely predicted by abnormal self-inference. Two primary aspects of shame have been identified in the literature. Some authors (e.g. Allan and Gilbert, 1995) consider social comparison to be a key element of shame. While others (e.g. Tangney and Fisher, 1995) view shame as primarily derived from self-conscious processes. Within this view attentional processes in shame involve heightened self-consciousness, and intensified awareness of flaws and deficits in the self. Indeed, self-focused attention has been implicated in a range of psychological disorders (Ingram, 1990). In a review of the literature involving self-focused attention Wells and Mathews (1994) reported that self-focus involves (a) an intensification of somatic sensations and affect, (b) the domination of attentional capacity and consequently results in cognitive attentional deficits, (c) enhances avoidance and impairs effortful coping, (d) the activation and elaboration of self-relevant cognitive
structures. Each of these factors has been evinced in the present study and are considered to be important areas for detailed investigation in future studies.

4.1.2.3 Displacement of problematic concerns

Displacement of problematic concerns: which was comprised of items that suggested that (due to attentional capacity limitations) food-related cognition could supplant more aversive and upsetting cognitions.

Individuals may attempt to regulate their cognitive and affective states by a number of means. These include the use of drugs and alcohol (Tonneatto, 1995), or binge eating (Hsu, 1990; Schlundt and Johnson, 1990). Several studies (e.g. Waller et al., 1995; McManus, Waller, and Chadwick, 1996), have found that attentional bias to threat, and particularly self-directed ego threat, are most directly associated with bulimic behaviours. The findings of the present studies suggest that individuals may consciously engage in the strategic use of cognitive phenomena related to restricted eating. Indeed, meta-cognitive beliefs and knowledge concerning particular cognitive activities should influence the level of engagement or disengagement in that activity. Over time the individual may acquire meta-cognitive knowledge about the advantages and disadvantages of being preoccupied by cognitions related to food and eating, a knowledge about the cognitive consequences of failing to engage in these, and relevant cognitive strategies. Due to appraisals of the positive functions of food-related cognition, consequent meta-cognitive beliefs (e.g. beliefs about the consequences of not cognitively regulating or inhibiting eating) may constitute a significant barrier to therapeutic intervention in eating disorders. In stating that
individuals with eating disorders may learn to use phenomena (e.g. the relationship between hunger and increased preoccupation with food) resulting from restricted eating in a functional manner, it will be necessary to detail the processes involved.

This suggestion is related to the findings of Borkovec and Inz (1990) who suggested that a function of worry may be to preclude the experience of more distressing concerns. Findings suggest that the functional uses of self-regulation of food-, and eating-related cognition may create further difficulties. Within the research literature concerned with the construct of worry, the use of worry as a coping strategy has been associated with increases in intrusive thoughts (Wells and Papageorgiou, 1995). It has been argued that worry as a predominant means of coping contributes to a proliferation of intrusive thoughts. It has been further argued that this results in appraisals of diminished control and may, over a period of time contribute to the development of negative meta-beliefs and appraisals concerning the consequences of worrying. In future studies it will be important to discern the meta-cognitive characteristics and inter-relationships between both core self-cognition and eating disorder cognition.

4.1.2.4 Intrusive interference of cognitive function

This factor consists of items that suggest an awareness that overall cognitive function is compromised by intrusive food-related cognition, that is appraised as uncontrollable and unwanted.
The function of the S-REF in disordered eating would involve the cognitive regulation of goal-directed behaviour. Therefore the personal significance of thoughts would be appraised. This may involve heightened sensitivity to, and preoccupation with, food- and eating-related thoughts. Thought-relevant stimuli become hyperaccessible resulting in mental preoccupation with the thought, and repeated recurrence of the thought may strengthen the appraised meaning (Wells and Mathews, 1994). However, when food thoughts are appraised as threatening and dangerous then attempts may be made to inhibit/suppress these thoughts to aid weight control, and such attempts may result in increased frequency of the target thoughts (Wegner, 1989) by the mechanism of paradoxical rebound (Wegner, 1994). This effect has been observed in other psychological disorders (e.g. Wells, 1999; Purdon and Clark, 1999).

The individual may be aware that competing cognitions can dominate attentional capacity and potentate the inhibition of eating controls. The consequent motivated regulatory attempts may prime further intrusions of both food-related thoughts and core concerns. Boon et al., (1998) proposed that restrained eaters who frequently and consistently try to control their food intake and their weight, may be expected to have highly accessible restraint- and weight-related constructs. Chronically accessible constructs are believed to develop from frequent and consistent direct experience with specific domains of behaviour (Bargh et al., 1988), e.g. the range of cognitive and behavioural controls related to purposeful dietary restriction. The self-referent nature of food-related thoughts is likely to result in their preferential processing (Wells and Mathews, 1994), and consequent consumption of attentional capacity by food-related
cognitions precludes or compromises the pursuit of other meaningful cognitive activities. Cognitive interference effects are well recognised phenomena resulting in impaired cognitive performance (Sarason, Pierce, and Sarason, 1996; Wells and Mathews, 1994). Engrossment in both food-related (e.g. Green et al., 1997), and self-referent thoughts (Mathews et al., 1999), have been observed to result in detriments to cognitive performance. From a self-evaluative perspective, appraisals of food-related cognitions (with respect to issues of self-control, etc.) and appraisals of diminished cognitive capacity are used in self-evaluation and may contribute to negative self-inferences.

4.1.3 Psychometric properties of the FE-MCQ

The FE-MCQ subscales showed good psychometric properties of reliability and validity. The inter-correlations between the individual subscales were moderate yet significant at the p<.01 level, this supports an empirical distinction between subscales, and suggests that it may be possible to construct specific meta-cognitive profiles for individuals, and perhaps different forms of eating disorder. This could potentially elucidate the variables associated with different types of regulatory and intrusive thoughts and consequent safety behaviour. Such a development would of course be of both theoretical and clinical significance.

The internal reliability of the scale was high with Cronbach alphas ranging from (α = .92 - .77). The inter item reliability measuring the correlations between items and the
factor they load upon were also high and significant at \( p < 0.0001 \). There were low, yet significant correlations between the FE-MCQ and both the MCQ and the TCQ, indicating that the newly developed scale was measuring related, but conceptually and empirically distinct constructs. Both the MCQ and the TCQ measure generic types of meta-cognitive thinking. The FE-MCQ was also related to all the subscales of eating disorders measures suggesting high correlations with eating disorder psychopathology. Furthermore, the FE-MCQ was related to depression and anxiety and unrelated to contaminating factors such as body mass index or age.

The FE-MCQ was also able distinguish between disordered eating psychopathology and behaviours. Furthermore, using multiple regression, the two subscales that accounted for the majority of the variance, were shown to predict both eating psychopathology (monitoring threat of eating, and abnormal self-inference), and ego dysfunction (abnormal self-inference). The findings suggest that themes of perfectionism, morality, self-control, self-denial, etc. that are applied to eating behaviour may also be applied to food- and eating-related thoughts, which are problematic (Wegner, 1994). Therefore, the present results support the proposal that meta-cognitive constructs may contribute to eating disorder.

4.2 Recommendations for future studies

4.2.1 Sampling

There are a number of potential sampling biases to be considered within the present studies. Firstly, there are questions related to the representative nature of the samples
in both studies. Both studies were exploratory in nature, and it was considered appropriate to sample a range of eating psychopathology in the development of the questionnaire. In defining the inclusion and exclusion criteria a compromise between under-inclusiveness and over-inclusiveness was sought. If inclusion criteria are overly narrow then the sample may not represent the larger population in a valid manner, and limit subsequent generalisations. The clinical participants in study 1 had been screened by clinical interview by experienced clinicians and by collateral administration of clinical measures. A range of eating disorder subtypes was included in an effort to sample a wide range of meta-cognition related to eating disorder psychopathology. Eating disorder classifications have been the subject of controversy and contention. Psychopathological distinctions with sufficient explanatory value have not been made between variations in eating disorder (Shaw and Garfinkel, 1989). In addition, Waller (1993) has argued against the premature acceptance of eating disorder syndromes, and suggested an alternate focus upon how individual features might inter-relate in clusters. This may be especially important as partial syndromes are more common than anorexia nervosa and bulimia nervosa (Szmuckler, 1985). It was hoped that the questionnaire might eventually highlight differential meta-cognitive profiles, and offer useful distinctions between types of eating disorder.

Further potential biases were introduced in the selection procedure. The clinical sample were recruited from specialist eating disorder services, and by the nature of such tertiary services, there was potentially an overrepresentation of the most serious
cases. Furthermore, there was also an element of self-selection within the sample as approximately half (51%) of those approached actually participated. It was not possible to ascertain how the non participants differed from the participant group. The dieter sample was recruited from dieting/slimming groups rather than a community recruitment (e.g. by advertising). It is possible that dieters who attend these groups are different from those who do not. For example, McGuire and Wing (1998) found that dieters not involved in dieting groups made more use of exercise as a strategy for weight loss. It would certainly be the case that members of diet groups would be exposed to a range of intra-group processes that would not be relevant for the individual dieter. The three dieting organisations involved in study 2 have different approaches to weight loss (e.g. different emphases on the ratio of dietary restriction and exercise). It would also be impossible to exclude the possibility that intra-group dynamics could have resulted in biases in self-report.

There is also a need to emphatically qualify that those in the dieter group with high scores derived from both the EAT-26 and EDI-2 may not be regarded as having an eating disorder. Dieting groups may be a legitimate analogue group (Cooper, 1997), but constructs identified in eating disorder may differ along both qualitative and quantitative dimensions from non clinical samples, and the identified construct may not have the same patterns of association for the eating disorder and dieter groups. It is therefore likely that this group is only partially representative of elements eating disorder psychopathology, consequently it would not be possible to generalise the findings of Study 2 to those with an eating disorder.
None of the clinical participants involved in study 1 had received a co-morbid diagnosis, but all scored within the clinical range of depression (BDI) and anxiety (BAI). The influence of affective factors was not certain and it is not known whether similar results would have emerged from a sample with no comorbid affective disorder.

4.2.2 Methodological improvements

There are also a number of methodological concerns that merit consideration. Within study 1 there were a range of potential moderating variables that were not included in the analysis. These included age of onset of eating disorder, age of presentation to services, the individual's eating disorder history, weight range history, alcohol/drug use. In clinical terms this would constitute an insufficient history of the individuals' condition. For example, many patients have met other eating disorder diagnoses, individuals with anorexia nervosa who starve themselves to the point of emaciation frequently become bulimic (Garner, Molodofsky, and Garner, 1980) and alternate between periods of starvation and eating binges, that are often compensated for by purging behaviours. It will almost certainly emerge that an individual's eating disorder history exerts a major influence on their present condition. However, the influence of these omissions is not certain at this time, and may be partly offset against the inclusion of a range of individuals.

The semi-structured interview was focal and may not have elicited themes that were of importance to individuals, however given the broad range of themes explored this is considered unlikely. Furthermore, the semi-structured interview format may have
suffered from the requirement of retrospective report, future studies might employ the use of alternate strategies of data collection e.g. a thought diary format. A more problematic concern relates to the possibility that the meta-cognitive dimensions elicited from the eating disorder sample (and the derived questionnaire), were not able to comprehensively sample the complete range of concerns that may have been salient for the dieting group. Regardless of this concern the dieting participants in study 2 clearly endorsed a range of the identified dimensions, vindicating the rationale for using this group of participants. Future studies might replicate study 1 with a group of dieters, in order to investigate the range of meta-cognitive beliefs that may emerge within this group.

The studies were exploratory and the methodology limits the conclusions that can be drawn. The method of factor analysis utilised was exploratory-descriptive in nature, and consequently generalisation of the results from these procedures is prohibited. Such generalisation of the results to other samples would require replication, and the extent to which the same factors emerge can be determined only following a number of further studies using different samples. There is also a tension between reducing data to the most parsimonious number of higher-order factors with which to conceptualise underlying cognitive processes and construct models of psychopathology, and acknowledging the idiosyncratic nature of individual experience.
Future studies should attempt to refine the measurement of meta-cognition and investigate further the significance of these constructs in the development and maintenance of eating disorder. This will require the development and refinement of appropriate measurement instruments. Despite the encouraging initial psychometric properties of the newly developed questionnaire, a major weakness of the study is the uncertain validity and reliability of the questionnaire developed to measure meta-cognitive beliefs. Future refinement of the scale is essential, and reliability and validity need to be established with a larger sample of patients with eating disorders. The factor structure needs to be established with clinical samples and the ability of the questionnaire to differentiate patients with eating disorders from dieters, restrained eaters and patients with other psychological disorders needs to be investigated. Further studies would incorporate control groups with other psychological disorders in order to establish the specificity of the hypothesised components. It would also be appropriate to include groups of eating disorder participants with either no co-morbidity, or non clinical levels of co-morbidity.

4.3 Clinical implications

4.3.1 The S-REF model applied to the treatment of eating disorders

Conventional cognitive models of eating disorder concentrate on challenging and restructuring cognitions related to food, weight, and body shape. These cognitive-behavioural methods which challenge the content of thoughts may merely be challenging the products of relevant cognitive processes. Generally intervention based upon the S-REF model would concentrate on addressing the maintaining
influence of the cognitive-attentional syndrome and counterproductive control attempts. The use of meta-cognitive concepts offer the potential to extend cognitive-based therapies beyond the restructuring of beliefs that are content-specific, into direct address of specific information-processing styles. In chapter 1 it was argued that food-related cognitions are regulatory in nature, and it was also argued that a range of meta-regulatory beliefs and strategies develop within eating disorder. This assertion was supported by the findings reported in chapter 2 (eating disorder patients) and chapter 3 (dieters). Conventional cognitive-behavioural therapies fail to directly change both positive and negative appraisals about meta-regulation, which perhaps results in the continued use of meta-regulation in attempts to both exert control and avert threat. Therefore, it may be more effective to direct interventions toward these cognitive processes themselves. On the basis of the findings of the current research it would appear to be necessary to assess meta-beliefs in individuals with eating disorders. This would necessarily involve an assessment of the functions of meta-cognitive regulation, the meta-beliefs associated with food-, and eating-related cognition, and the perceived functions and costs of meta-cognitive regulation.

4.3.2 Informed treatment decisions

Assessment of meta-cognitive components of eating disorder may facilitate treatment decisions in determining the relative importance and function of eating disorder symptomatology. Such an assessment might result in very different forms of intervention. For example, therapeutic interventions involving meta-cognitive components might be directed toward cyclic maladaptive meta-regulatory attempts
and may be an important additional component to conventional cognitive-behavioural therapy for eating disorder. Conversely if the symptoms of eating disorder provide the function of cognitive and affective blocking then intervention may perhaps proceed at a schema-focused level (Young, 1994) with the meta-cognitive adjunct directed toward meta-cognitive appraisals of the consequences of experiencing aversive cognitive and affective states.

4.3.3 Stepwise treatment and stages of change
An assessment of meta-cognitive considerations might also be used to inform the initiation and progress of therapeutic endeavours. As mentioned above it would be necessary to not only address the content of food thoughts (i.e. beliefs and attitudes) but also meta-cognitive monitoring, appraisal, and control attempts. The research suggests that therapeutic intervention might appropriately include a consideration of meta-cognitive appraisal and regulation of food thoughts, and that both positive and negative meta-cognitions should be made explicit. From this a greater understanding of relative contributions of beneficial and detrimental meta-cognitions in individuals with eating disorders may follow. This may be a necessary first step in defining treatment sequence and goals, and this would offer some understanding of the individual’s readiness for engagement in therapy and commitment to change, or resistance to change. Prochaska and Di Clemente (1982, 1986) stages of change model is a useful way of locating individuals in a cycle of change processes, and an examination of meta-cognitions might be useful at the precontemplative or contemplative stages. as well as the action stage.
4.3.4 Meta-cognitive intervention

A psychoeducational component may be derived from meta-cognitive theory. Information to develop awareness of the characteristics and processes of cognitions (i.e. these are subjective events, ephemeral, difficult to control, but harmless in themselves) may be given. Education about the nature of cognitive resources e.g. capacity limitations in attention, may be provided in order to allay self-inferences of failure to achieve satisfactory performance in other areas of function.

Generally treatment efforts might be directed at restructuring meta-cognitive beliefs. A series of therapeutic techniques (detailed in Wells, 1997) might be directed at challenging both positive and negative meta-beliefs. Within the present studies, certain meta-cognitive categories were observed to be diametrically opposed e.g. displacement of worries and cognitive intrusion/interference. While some food-related thoughts were positively reinforced through their association with control and regulation while other food-related thoughts were negatively reinforced through the avoidance or inhibition of other more negatively valenced thoughts and associated negative affect. This would suggest a necessary focus on the function of certain meta-cognitions and their ultimate costs, and working on achieving a degree of dissonance between the two.

However, it is likely that a combined approach may be necessary. Although meta-cognitive beliefs have the power to motivate the individual to persist in ruminating about food and eating as these displace more negatively valenced thoughts, the
continuing stream of cognitions related to food and eating may also be appraised by the individual as threatening, uncontrollable and dangerous, and as manifestations of underlying personal deficit. Unsuccessful control of thoughts may be appraised as further evidence of lack of self-efficacy, and lead to further maladaptive control attempts.

4.3.5 *Meta-cognitive therapy combined with schema-focused therapy*

Preoccupation with food-related thoughts may be negatively reinforced by the avoidance or inhibition of other, more aversive concerns (Wolff and Serpell, 1998; Serpell, 1999). Presumably these other concerns have been meta-cognitively appraised as dangerous, or upsetting and that the individual would experience these as uncomfortable or unwelcome. It may emerge that individuals develop a range of methods of inhibiting the conscious experience of cognitive states that are aversive and discomforting to the individual. In avoiding aversive cognitive events individuals might engaging in behavioural avoidance e.g. reduction of awareness by binge eating (Meyer and Waller, 1998) by pharmacological avoidance e.g. alcohol and/or substance misuse (Tonneatto, 1995, 1999), or by meta-cognitive avoidance e.g. generalised worry (Borkovek and Inz, 1990; Wells, 1997) in order to moderate cognitive state.

The findings reported above suggest that eating disorder symptomatology may be appraised as offering competing stimuli to occupy attentional capacity, and preclude or displace unwanted thoughts. Cognitive events such as uncomfortable and upsetting thoughts, memories, sensations, perceptions, or images may be perceived by
an individual as aversive and would result in motivation to modify these states. Therefore, meta-cognitive appraisal might result in the modification of conscious experience and the consequent removal or attenuation of cognitive experiences appraised as aversive, especially those characterised by heightened arousal e.g. stress, anxiety, anger, traumatic memories or images. Dissociative-like experiences may offer the reduction, elimination, or detachment from the negatively appraised cognitive event. Such cognitive blocking of the experience of these cognitions and affect may not only be used to escape noxious conscious experiences but also to avoid them. This emphasises the need to identify the specific cognitive events and attendant meta-beliefs that the individual is self-regulating against. Exposure to avoided cognitive states might be undertaken in order to disconfirm maladaptive meta-cognitive beliefs related to perceived aversive consequences of experiencing these states. A concentration upon meta-cognitive factors might facilitate the address of each of the three cognitive processes (schema-maintenance, schema-avoidance, and schema-compensation) posited to maintain psychological disorder (Young, 1994).

4.3.6 Conclusions

As discussed in chapter 1 individuals develop many food-related cognitions: attitudes toward food; beliefs about the properties of specific food groups: beliefs about the consequences of consuming or restricting consumption of specific foods. Within conventional cognitive models the content of such beliefs has been implicated in the development and maintenance of eating disorder. Furthermore, in those who restrict their food intake over a period of time (i.e. dieters or those with eating disorders)
various physiological and psychological have been observed. Generally these effects (e.g. the preoccupation with thoughts of food and eating) and attendant effects (e.g. diminished attentional capacity) have been presented as undermining influences to further dietary restriction. However, the findings of the present studies suggest that the relationship between these phenomena and eating disorder may be far more complex.

According to Wells and Mathews (1994) Self-Regulation of Executive Function (S-REF) model, individual's appraisals of their own cognitive processes may contribute to the development and maintenance of psychological disorder. It is therefore important to understand how phenomena related to disordered eating e.g. preoccupation with food thoughts to an obsessive degree, or interference of normal cognitive function, and intensified self-focus, are appraised by individuals for whom food and eating are salient concerns. It has been argued that meta-cognitive beliefs are not just a passive registration of inputs from lower level processing, but are actively construed plans retrieved from self-knowledge (Wells and Mathews, 1994). Within the S-REF model the uppermost level comprised of self-beliefs contained in long-term memory correspond to the construct of self-schemata. The architecture of this model may facilitate elucidation of the linkages between disorder-specific psychopathology and more general underlying psychopathology. Furthermore, according to the S-REF model (Wells and Mathews, 1994) the strategies that individuals implement to reduce perceived ideal-actual discrepancies may actually exacerbate their condition.
The concept of meta-cognition offers the possibility of developing a specific model of the pertinent cognitive processes involved in the maintenance of disordered eating. A meta-cognitive analysis that focuses upon the perceived benefits and detriments associated with food-related cognition, is consistent with other functional analyses involving other forms of eating disorder symptomatology (Slade, 1995, Waller and Meyer, 1997). In contrast to these, the meta-cognitive analysis focuses exclusively on the moderation of cognitive events by cognitive means, rather than by the secondary effects of for example behavioural strategies (i.e. binge episodes) to moderate levels of aversive self-awareness (e.g. guilt, shame, humiliation). Indeed, an appraisal that cognition and affect can be blocked through engrossment in an awareness-reducing behaviour (e.g. binge eating) presumably involves a sequence of meta-cognitive beliefs that (1) the present or anticipated cognitive or affective state is associated with aversive consequences, (2) the individual believes that there are strategies to avert or minimise the impact of these experiences, (3) the individual believes that by engaging a strategy, i.e. binge eating, the primary aversive consequences may be avoided. This implies a learning history, perhaps related to a history of dieting (with consequent phenomena), which is often associated with the development of eating disorder (e.g. Hill et al., 1996). Such associative learning in influencing cognitive state has been reported in alcohol and drug use (e.g. Tonneatto, 1995) where the individual learns that aversive cognitive states may be modified by pharmacological means.

The findings of this study suggest that, the utility of meta-cognitive constructs might be usefully extended to consideration of psychological disorders characterised by
excessive cognitively-mediated regulation, as well as those characterised by intrusive thoughts. An emphasis on meta-cognitive beliefs advances understanding in two main areas: (1) the identification of beliefs about thoughts provides some explanatory value in illuminating possible sources of appraisals of food-related thinking that is implicated in disorder development and maintenance within conventional models of eating disorder; (2) individuals may actively select ameliorative or reparative strategies on the basis of meta-beliefs that are related to the expected cognitive, affective, or behavioural consequences of either employing, or failing to employ such self-regulation.
REFERENCES


APPENDICES

Appendix 1: DSM IV criteria for anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified (EDNOS)

Appendix 2: Information leaflet, invitation to participate, and contact letter

Appendix 3: Semi-structured interview

Appendix 4: Definitions of meta-cognitive dimensions

Appendix 5: Codeable thoughts extracted from semi-structured interviews

Appendix 6: Food and Eating Meta-Cognitive Questionnaire (FE-MCQ)

Appendix 7: Demographic information sheet for study 2

Appendix 8: Ethical approval
Appendix : DSM IV criteria for anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified (EDnoS)

DSM-IV Diagnostic criteria for Anorexia Nervosa

(a) Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g. weight loss leading to maintenance of body weight less than 85% of that expected or, failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).

(b) Intense fear of gaining weight or becoming fat, even though underweight.

(c) Disturbance in the way in which one’s body weight or shape is experienced, undue influence of body weight or shape in self-evaluation, or denial of the seriousness of the current low body weight.

(d) In postmenarchal females, amenorrhea, i.e. the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g. estrogen administration).

Type:

Restricting Type: during the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behaviour (i.e. self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

Binge-Eating/Purging Type: during the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behaviour (i.e. self-induced vomiting or the misuse of laxatives, diuretics, or enemas).
DSM-IV Diagnostic criteria for Bulimia Nervosa

(a) Recurrent episodes of binge-eating. An episode of binge-eating is characterised by both the following:
(1) eating, in a discrete period of time (e.g. within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances
(2) a sense of lack of control over eating during the episode (e.g. a feeling that one cannot stop eating or control what or how much one is eating).
(b) Recurrent inappropriate compensatory behaviour in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or enemas, or other medications; fasting; or excessive exercise.
(c) The binge eating and inappropriate compensatory behaviours both occur, on average, at least twice a week for at least 3 months.
(d) Self-evaluation is unduly influenced by body shape and weight.
(e) The disturbance does not occur exclusively during periods of Anorexia Nervosa.

Type:

Purging Type: during the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

Nonpurging Type: during the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory behaviours, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.
DSM-IV Diagnostic criteria for Eating Disorder Not Otherwise Specified

The Eating Disorder Not Otherwise Specified category is for disorders of eating that do not meet the criteria for any specific eating disorder. Examples include:

(1) For females, all of the criteria for Anorexia Nervosa are met except that the individual has regular menses.

(2) All of the criteria for Anorexia Nervosa are met except that, despite significant weight loss the individual’s current weight is in the normal range.

(3) All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur at a frequency of less than twice a week, or for a duration of less than 3 months.

(4) The regular use of inappropriate compensatory behaviour by an individual of normal body weight after eating small amounts of food (e.g. self-induced vomiting after the consumption of two cookies).

(5) Repeatedly chewing and spitting out, but not swallowing, large amounts of food.

(6) Binge eating disorder: recurrent episodes of binge eating in the absence of regular use of inappropriate compensatory behaviours characteristic of Bulimia Nervosa.
Appendix 2: Information leaflet, invitation to participate, and contact letter

Invitation to Participate

Dear

My name is Alan Cunningham and I am currently studying for a doctorate in Clinical Psychology. As part of my training I am required to conduct a research project. For this I have chosen to examine the kinds of ways that people react and respond to thoughts about food and eating. I have enclosed an Information Leaflet explaining the details of the study, and what taking part would entail for you. I have given the team at the Brandon unit a list of the types of people I am interested in meeting, and they have agreed to send out letters and information. By receiving this letter you meet the criteria for participation in this study, and I would like you to consider taking part.

Please take some time to read the Information Leaflet. If you agree to participate, a meeting with the researcher will be arranged (please give details below whether you would prefer to be contacted by letter or telephone), and you will be able to ask any further questions. The meeting would take place at the Brandon unit and I will ask for your written consent before continuing with the interview.

I have enclosed a stamped addressed envelope for your reply. To help with my planning I would be grateful if you could reply within a week of receiving this letter. Thank you very much for your time.

Yours sincerely

Alan Cunningham
(Trainee Clinical Psychologist)

Supervisor: Dr. Konstantine Loumidis
(Clinical Psychologist)

------------------------------------------------------------please cut here------------------------------------------------------------

I agree/do not agree to participate in this study. (please delete as appropriate.

If you agree to participate please give your name:---------------------------------------------------------------
and details of how you wish me to contact you:

Address:-------------------------------------------------------------Tel. No.---------------------------------------------------
I am currently undertaking a research project looking at the kinds of beliefs and reactions people have to thoughts related to food and eating. Technically these are known as 'meta-beliefs'. This basically means what we think about our own thoughts, e.g. are certain thoughts: good or bad; helpful or unhelpful; can we control them or are we unable to stop them constantly coming into mind; what does having these thoughts mean to us; what might happen as a result of having these thoughts; etc.. The study is part of the requirements of the Doctorate in Clinical Psychology at Leicester University.

Taking part in the study will involve one meeting with a researcher (trainee clinical psychologist), this will take about 1 hour and will be conducted at the clinic you attend. You will be asked to participate in an interview asking questions (like those above) relating to your thoughts about food and eating habits. There will be some set questions and opportunities for us both to expand on topics that arise. The interview will be audio-recorded. You are assured that all tapes will be confidential and identified by a code number only (your name will not be recorded), the tapes will be stored in a secure place, and will be erased at the end of the study. You will also be asked to fill in 5 questionnaires which ask how you are feeling at that time, about your eating, and about ways in which you cope with difficult thoughts. You shall be asked a few general questions requesting personal details, e.g. age, occupation, height, weight, etc.

If you do not wish to participate in this study or if you wish to stop at any time, you may do so without justifying your decision. Your future treatment will not be affected in any way.

- All the information that you give whilst taking part in this study will be treated in confidence and your answers will be anonymous.
- Recorded material will be identified by a code number only, the tapes will be stored securely, and will be erased at the end of the study.
- Your choice to take part (or not to) will not effect your treatment, now or in the future.
- The information will be used for research purposes only.
- You can decide to stop at any point during the questionnaires or interview.

My name is Alan Cunningham (Trainee Clinical Psychologist)
My supervisor is Dr. Konstantine Loumidis (Clinical Psychologist) and if you have any queries about the research we can be contacted at the:
University of Leicester. Centre for Applied Psychology (Clinical Section), University Road, Leicester, LE1 7RH. Tel. No. 0116 252 2492.
Personal beliefs and reactions to thoughts about food and the eating process

CONSENT FORM - STUDY 1 - CLINICAL PARTICIPANTS

Principle Investigator: Alan Cunningham (Trainee Clinical Psychologist)
Supervisor: Dr. Konstantine Loumidis (Clinical Psychologist)
University of Leicester,
Centre for Applied Psychology (Clinical Section),
University Road, Leicester, LE1 7RH.
Tel. No. 0116 252 2492.

This form should be read in conjunction with the Information Leaflet

I agree to take part in the above study as described in the Information Sheet.

I understand that I may withdraw from the study at any time without justifying my decision and without affecting my current treatment or treatment in the future.

I understand that all the information will be treated as confidential.

I understand that audio tapes and other information will be identified by code number only, will be stored in a secure location, and will be destroyed at the end of the study.

I understand medical research is covered for mishaps in the same way as for patients undergoing treatment in the NHS i.e. compensation is only available if negligence occurs.

I have read the information leaflet on the above study and have had the opportunity to discuss the details and ask any questions. The nature and the purpose of the study to be undertaken have been explained to me and I understand what will be required if I take part in the study.

Signature of participant: ........................................Date:

(Name in BLOCK LETTERS)

I confirm I have explained the nature of the Study, as detailed in the Information Sheet, in terms which in my judgement are suited to the understanding of the participant.

Signature of Investigator: ......................................Date:

(Name in BLOCK LETTERS)
Part 1: Personal beliefs and reactions to thoughts about food and the eating process

INFORMATION LEAFLET FOR CURRENT DIETERS

I am currently undertaking a research project looking at the kinds of beliefs and reactions women have to thoughts related to food and eating. The technical name for these is 'meta-beliefs'. This basically means what we think about our own thoughts, e.g. are certain thoughts: good or bad; helpful or unhelpful; can we control them or are we unable to stop them constantly coming into mind; etc. The study is part of the requirements of the Doctorate in Clinical Psychology at Leicester University.

Taking part in the study will involve one meeting with a researcher (trainee clinical psychologist) and this will take about 30-45 minutes and will be conducted at the diet club. You will be asked to complete three brief questionnaires relating to your thoughts about food and eating habits, and another two questionnaires related to how you are feeling in general. The researcher will be present to help you complete these and answer any questions. There will also be a few general questions requesting personal details, e.g. age, occupation, height, weight, etc.

If you do not wish to participate in this study or if you wish to stop at any time, you may do so without justifying your decision.

- All the information that you give whilst taking part in this study will be treated in confidence and your answers will be anonymous.
- Your choice to take part (or not to) will be accepted without question
- The information will be used for research purposes only
- You can decide to stop at any point during the questionnaires or interview
- If any areas covered within this study give rise to concern about your own eating behaviour, the researcher will be available to discuss these, and if necessary, will be able suggest further action

My name is Alan Cunningham (Trainee Clinical Psychologist) and if you have any queries about the research I can be contacted at the:

University of Leicester, Centre for Applied Psychology (Clinical Section), University Road, Leicester, LE1 7RH. Tel. No. 0116 252 2492.
**Personal beliefs and reactions to thoughts about food and the eating process**

**CONSENT FORM - STUDY 2 -DIETERS**

Principle Investigator: Alan Cunningham (Trainee Clinical Psychologist)  
Supervisor: Dr. Konstantine Loumidis (Clinical Psychologist)  
University of Leicester,  
Centre for Applied Psychology (Clinical Section),  
University Road, Leicester, LE1 7RH.  
Tel. No. 0116 252 2492.

This form should be read in conjunction with the Information Leaflet

I agree to take part in the above study as described in the Information Sheet.

I understand that I may withdraw from the study at any time without justifying my decision.

I understand that all the information will be treated as confidential.

I understand medical research is covered for mishaps in the same way as for patients undergoing treatment in the NHS i.e. compensation is only available if negligence occurs.

I have read the information leaflet on the above study and have had the opportunity to discuss the details and ask any questions. The nature and the purpose of the study to be undertaken have been explained to me and I understand what will be required if I take part in the study.

Signature of participant: ........................................Date:

(Name in BLOCK LETTERS)

I confirm I have explained the nature of the Study, as detailed in the Information Sheet, in terms which in my judgement are suited to the understanding of the participant.

Signature of Investigator: ........................................Date:

(Name in BLOCK LETTERS)
Appendix 3: Semi-structured interview

Clinical Semi-Structured Interview

Introduction

Thank you for agreeing to come along. I will explain what we are going to do today, but before we start do you have any questions about the information sheet I sent to you?

The purpose of this interview is for us to discuss the beliefs you may have about your own thinking. For example, if I had the thought that I wanted to go and throw a bucket of water all over someone. There are different ways I might react to this thought. I might think “why am I having this thought”. I might think “that’s an awful thing to think about I must be a horrible person”. I might think “that’s a terrible thought to have because it means that I might actually go and do that to someone”

More specifically I am interested in how you respond to the thoughts you have about food and eating. During the interview I will ask you some questions to help us develop a clear picture of the different ways that you might react to such thoughts, and the sense you make of them.

(1) The first thing that I would like to do is to get an idea of the types of thoughts that you typically have about food and eating.

(prompts if necessary)
What kinds of thoughts do you generally have about food and eating?
What kinds of thoughts about food and eating have you had today?
What kinds of thoughts about food and eating would you have if you were feeling O.K.?
What kinds of thoughts about food and eating would you have if you were feeling bad?
What kinds of thoughts about food and eating would you have if there was food around?
What kinds of thoughts about food and eating would you have if you were eating?

(2) O.K. we now have a good idea of the types of thoughts you have about food and eating. If you bear these thoughts in mind I would like to ask you some questions about how you experience these thoughts. There are no right or wrong answers to these questions just tell me what you think, and if a question seems silly, or does not apply to you just tell me and we will move on.
I would also like you to show me how much you believe each of the thoughts we discuss by using this scale (0% - 100% visual analogue scale). You would give a score of 0% if you do not believe this thought at all, and a score of 100% if you are completely convinced this thought is true.

So from the example above, if I thought I really was a horrible person for having the thought that I wanted to splash someone, I might say that I believed this thought at 90%.

Before we continue do you have any questions?

O.K. let’s carry on.

(sample question guide)

1. Believed origin
   What do you think makes you have these thoughts about food and eating?
   Why do you think you have these thoughts?
   Where do these thoughts come from?

2. Appraisal
   What are the good things/advantages about having thoughts about food and eating?
   What are the bad things/disadvantages about having these thoughts?

3. Derived meaning
   What is the significance of having thoughts about food and eating?
   What does having these thoughts mean?

4. Affective consequences
   How would you expect to feel when you were having thoughts about food and eating?
   How might you feel as a result of having these thoughts?

5. Value associated
   Would thoughts about food and eating be positive or negative?

6. Valence associated
   When would thoughts about food and eating be positive?
   When would thoughts be negative?
   When would you want to stay with the thoughts?
   When would you want to get rid of the thoughts?

7. Personal implications
   What does having thoughts about food and eating tell you about yourself as a person?
   What does having these thoughts tell you about your personality?
What does having these thoughts tell you about your strengths and weaknesses?

8. **Possible outcomes**
   What might happen as a result of you having thoughts about food and eating?
   What might these thoughts lead to?

9. **Strategies**
   How might you try to control thoughts about food and eating?
   What are some of the ways that you use to manage these thoughts?
Appendix 4: Definitions of meta-cognitive dimensions

1/ COGNITIVE NEUTRALISATION - Thoughts that suggest that cognitive attempts are being made to neutralise unacceptable food thoughts by replacing these with positively valenced compensatory thoughts.

2/ SELF-INFERENCES – Thoughts that are appraised as having implications for self-perception, i.e. are regarded as indicative/reflective of personal characteristics.

3/ DISPLACEMENT OF WORRIES – Thoughts that imply awareness that preoccupation with food and eating thoughts, precludes or reduces the frequency of other negatively valenced thoughts.

4/ SOCIAL COMPARISON – An implication that the experience of these thoughts, involves a negative differentiation of the individual from other people.

5/ BODY INFORMATION - Thoughts that suggest that body state information (i.e. hunger and fullness sensations) and ongoing thoughts (related to food and eating) are simultaneously processed. The manner of this suggesting, that body state information influences the appraisal/valence of the ongoing thoughts.

6/ PUNISHMENT – Thoughts that are appraised as having implications for self-perception, specifically of the self as unworthy of the pleasures involved in food and eating, or deserving some penalty for contemplating food and eating.

7/ FUSION – Thoughts that imply that thinking about food and actual eating behaviours are causally linked in a deterministic manner.

8/ INTRUSION – The appraisal of thoughts related to food and eating as intrusive/unwelcome and uncontrollable.

9/ MONITORING & CONTROL OVER EATING – Thoughts that imply the importance of regulating thoughts related to food and eating as a necessary mechanism for regulating actual eating behaviours.

10/ MONITORING & EMOTIONAL CONTROL – Thoughts that imply conscious attempts at affective regulation via the regulation of thoughts related to food and eating.

11/ ILLNESS – Thoughts that convey the notion that preoccupation with thoughts of food and eating could be detrimental to physical and/or mental health.

12/ FUNCTIONAL INTERFERENCE – Thoughts that imply an awareness that important areas of cognitive function (memory, concentration, attention, etc.) are adversely affected/compromised by the preoccupation with thoughts related to food and eating.
Appendix 5: Codeable thoughts extracted from semi-structured interviews

COGNITIVE NEUTRALISATION

☐ If I think about eating something dodgy like sweets or crisps, I’ll try to think “perhaps eating something healthy like an apple will be OK”.
☐ If I can’t stop myself thinking about eating something bad, then I try to change the thought into eating something healthy.
☐ It is always a constant battle I have in my head and it is the same every time I think about eating something....so I try to imagine myself running off the calories.
☐ When I think about eating fatty foods, I try to think about eating something that’s O.K., like some fruit or something.
☐ When I think about food or eating I’ll do mind games, you know things like alphabet games or something.
☐ If I start to think about food then I’ll do sums in my head ‘till I stop thinking about food.
☐ I would try to think about something else to take my mind of it (food and eating).

SELF-INFERENCES

☐ I know that I shouldn’t let thoughts of food and eating bother me so much.
☐ I sometimes think that it is quite pathetic. I am an intelligent woman and all I have in my mind is food, food, food.
☐ When I can resist thoughts of eating I feel strong and worthwhile, but when I feel myself been drawn towards eating I feel such a complete failure.
☐ When I think about food, and eating I feel like I’m this really terrible and greedy person.
☐ Well thinking about food all the time just means that I’m weak, and have no will power.
☐ I do think a lot about my thoughts on eating and food. Sometimes they tell me I am OK and I am doing well but other times they are telling me I am useless and out of control.
☐ Thinking about food all the time.......only someone sad and pathetic would do that wouldn’t they. Well that someone is me.
☐ I often feel greedy when I think of food.
☐ I do think a lot about my thoughts on eating and food. I think about what they tell me about myself as a person.
☐ If I was a strong person I would be able to stop myself from thinking about eating but I am too weak to do that and these thoughts overrun my mind.
☐ It is a sign of a strong character to be able to control your own thoughts and actions.
☐ I feel very, very selfish for thinking so much about food.
☐ I feel pathetic for having no control over these thoughts.
☐ Having these thoughts shows me up for the feeble person I am.
☐ Having food on my mind all the time.......well it’s another example of how inadequate I am.
☐ I sometimes think “this is ridiculous. grow up and get over it”.

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I often think this is pathetic, there’s so much silliness around these stupid thoughts.

It’s irrational to think so much about food, it has to be.

It’s insane to spend so much time worrying about something so trivial.

Having these thoughts makes me feel very selfish and self-absorbed. Because I’m always thinking about myself and food I end up feeling selfish and vain

DISPLACEMENT OF WORRIES

The sad and unhappy thoughts about my personal life are replaced with thoughts of food and eating.

Thinking about food all the time means that I do not think about other issues in my life that are difficult.

It’s your own little thing, and it protects you from having to think about some of the difficult things in your life.

If you allow yourself to think about the negative aspects of your life then you expose yourself to all sorts of feelings you can’t control.……it’s like a defence against that.

That’s the funny thing, because I hate to think about food but it’s a damn sight easier than thinking about some of the other things in my life.

I used to get worried about all sorts of things, but now I spend most of my time worrying about eating and getting fat, I don’t worry so much about these other things.

Sometimes I’ll be thinking about how pathetic I am, and I think about chucking it all in and just eating something. Then I think about food and eating, and the other things just vanish.

When I’m thinking about food nothing else seems to bother me. I don’t worry about anything else.

With food on my mind all the time I’ve got no time to think about other stuff.

It’s easier to think about food and all that, than it is to think about other things.

With my mind full of thoughts about food, there’s no space to think about anything else.

SOCIAL COMPARISON

It (thinking about food in this way) is stupid and makes me feel like a weirdo.

My thoughts about food are peculiar because I do not think that other people think about food in the same way that I do.

I wish that I did not have these concerns and that I could eat like a normal person.

Other people would find it incredible to know that I have these thoughts about food in my mind all the time. They would think that I was stupid and superficial.

I am sure that I am not very good company. I mean all I ever think about is food. I can tell you about how many calories there are in a potato but that’s not a very interesting conversation is it,……. it is just boring.

I think that others eat much less than me, and when I think that I feel greedy and guilty.

I often wonder whether other people have the same thoughts as I do. I am sure that they don’t.
Normal people don't worry about food and eating all the time.
Most people do not constantly worry about what they eat and how much they eat.
I sure that other people would laugh at me for thinking about food all the time.
I wouldn’t tell anyone I had these thoughts (food and eating), they’d think I was weird.
I suppose having food on my mind all the time tells me that I’m pretty messed up compared to other people.
It’s like it isolates you from other people, they just wouldn’t understand why I think this way.
Other people would think I was petty and pathetic for the way I think.
I’ve never asked, but I’m sure that other people don’t think about food all the time, the way I do.
It is not normal to go around and around in your head about how much you have eaten and how fat you are, it's sick, isn’t it?

BODY INFORMATION

When I am hungry and thinking about food, I get scared in case I go and eat too much.
When I have eaten and I feel full up, I am consumed by thoughts that I’ve eaten too much and I feel very guilty.
I can’t bear the feeling of my stomach being full. I can’t stop thinking that I’ve stuffed myself with food and I feel such a failure.
I love the sensation of hunger, it tells me that I am in control, and I’m succeeding.
When I feel hungry and I get thoughts of food but I do not eat anything it makes me feel strong and in control, my body is telling me that it wants food but I resist.
When I’m hungry and thinking about food that’s dangerous
When I’m felling tense or worried I get even more worried that I’ll go and eat.
The thoughts about food just get stronger and stronger the more hungry I get.
Feeling hungry is just the worst thing because my head just becomes crammed with thoughts about food and eating.
When I’ve eaten something and I feel all bloated, I can’t believe that I’m still thinking about food. That’s just the greediest thing imaginable.
When I feel things are getting to me and I’m quite stressed, I’ll start to think about food and it’s like “oh! no I think I’m going to eat something”.
I’ll be feeling quite low, and I’ll be giving myself a hard time for thinking about food, and the lower I become the more likely it is that I’ll actually eat, and I just can’t help myself.
When I feel my stomach all stretched and bloated, the last thing I want to be thinking about is more food, but that’s what happens.
Most times thinking about food isn’t too bad, but when I get hungry then I hate thinking about food then.
I’m trying my best not to think about food, but the hungry, empty feeling in my stomach won’t leave me alone.
I get disgusted with myself when I feel full, and when I’m still thinking about food I feel totally out of control.
I’ll be getting more and more worked up, then the thoughts about eating get stronger and stronger. Can you imagine? That’s the last thing I need.
Feeling hungry and knowing it’s only a matter of time before it gets too much and
I have to eat something, it’s awful.

- I’ll be hungry and I’ll be thinking about all the stuff I could end up eating. It’s horrible.
- My head gets so full of these thoughts (food and eating) and I get such a headache it feels like it might burst, but I know these are dangerous times.
- The trouble is that the more I think about food the more tense I become, and the more tense I get the more likely I am to eat something.
- On one level I’m telling myself that I’d love to go and eat something, but at another level it feels wonderful because I feel empty and in control.

- When I feel full and I’m still thinking about more food, I feel like the most flawed person there is.
- There’s such a tension when I’m really hungry. It feels great because I feel restrained and in control, but I know that it’s increasingly likely that I’ll relent and eat something.
- When I’m feeling low the thoughts (about food) are much more difficult to control.
- If I’m feeling down, or unhappy, or in any way rejected or whatever, then my thoughts will become quite obsessive about food.
- It’s good to think about food when you’re hungry, because that’s a really risky time when you might eat too much.
- It makes me feel strong when I can be hungry and not eat anything, but that all gets undone because I feel weak and pathetic when I can’t stop thinking about food.
- It follows a pattern. I start to get upset, and the more upset I become the more I try to stop thinking about food and eating, but it’s useless.

PUNISHMENT

- I think about food a lot so it is my fault when I eat something bad or when I eat too much.
- There are times that I give in and I thing “what the hell, a little bit of chocolate of a few crisps will not harm me”. So I have them and the guilt starts and the feeling that I deserve punishment.
- I should punish myself for even thinking about food.
- I do actually enjoy food but as soon as I start to think about eating, I get a voice in my head telling me: “You are fat and greedy and I don’t deserve to eat something nice”.
- It can feel incredibly self-indulgent to think about food and I feel that I must deny myself the experience of eating.
- I often think that I don’t deserve to eat.
- I get these thoughts that I really, really want some chocolate or cake or some other bad food. Then I have this other voice telling me not to be so weak and that I don’t deserve anything to eat.
- I believe that I deserve punishment for thinking about food.
I'll tell myself that I'm worthless and that I shouldn’t even be thinking about food. Half of me is thinking that wanting to eat puddings is a normal thing, and a good thing to do, but I do get guilty and tell myself that I am deranged for thinking about eating stuff like that.

I feel that these thoughts (about wanting to eat) are bad and I should pay for having them. So I'll go and do some work, I'll work really hard.

You can stay safe in your own little world, you don’t have to think about anything else.

If you allow yourself to think about the negative aspects of your life then you can get feelings and thoughts you can’t control.

I use the food thing to hide away from anything that’s real.

Focusing on food means that I don’t have to deal with uncomfortable issues or feelings.

I sometimes think that I will get fat as a punishment for thinking of food all the time.

Even thinking about food can make me feel fat.

Thinking about the kinds of food I never eat, like fatty foods ..... it upsets me because it is almost as though I will go and eat some crappy foods.

Part of me is screaming you must not eat this because you will get fat and another part of me is saying you mustn’t even think about food, it’s too dangerous.

I believe that it is important to stop myself thinking about eating fatty foods. It’s almost as if thinking about them means I intend to eat them.

I shouldn’t get so upset about the thought of eating but I do. It terrifies me to think that I could be tempted to go and actually eat something.

When I have thoughts about bad food after a while I get scared that I will go and eat something.

When I have thoughts of food and eating, I feel myself being pushed towards going to eat something.

Well it’s dangerous isn’t it, I mean there you are thinking about food and the next thing you know is that you are actually eating.

I mustn’t think about eating because I could easily slip up and eat something.

I find myself thinking about food, and all the foods I know I mustn’t eat come into my mind, and I become very concerned because it means that I might eat something bad.

What I can’t understand is why I can’t stop thinking about the kinds of food I never eat, like fatty foods.

I can’t stop thinking about food.

I sometimes think “what’s wrong with me, why can’t I stop thinking about food all the time”.

I’m always telling myself “I can’t eat this food”, or “I must not eat this food”, but I can’t stop thinking about it.

My is taken over by these thoughts and there are times when I think that I’m
heading for a nervous breakdown.

I want to be able to control my thoughts about food and not have them controlling me.

As soon as I start to think about food I say to myself “come on don’t think about this”, but it comes back even more and I’m saying “go away, go away”.

I should be able to stop myself thinking about eating but I can’t control these thoughts, they are always on my mind.

They (thoughts of bad food) come into my head and I can’t get rid of them

I don’t want to be thinking about food all the time, but it’s always there.

You can control how much food you actually eat but you can’t control how much you think about it.

The thoughts are very difficult to dismantle.

I’m ashamed that I can’t control these thoughts.

It is like my mind is taken over by thoughts of food and eating, the harder I try to stop it the harder it pushes.

I wake up every morning and straight away I’ll be thinking about food, it’s instant and it’s like that all day.

It concerns me that I am so preoccupied about food, I just think about it all the time.

It is such an intolerable position to be convinced that you must not eat but to have food on your mind constantly.

No matter how hard I try, I just can’t stop thinking about food.

I doesn’t matter what I’m doing, these thoughts (food and eating) just come rushing onto my mind.

I feel like my mind is being taken over by food, food, food.

I am not as much in control as I would like to be.

I always have thoughts about eating on my mind.

They (food thoughts) just come time after time.

The last thing I want to be thinking about is food, but it’s there all the time.

I can try, and try, and try, but I can’t get rid of these thoughts.

The worst thing is that it’s always thoughts about the kinds of food I would never eat, that come into my mind.

I can’t stop myself from thinking about food.

I wake up in the morning and the first thing into my head is food, and the last thing I think about at night is food. It’s there all the time.

MONITORING & CONTROL OVER EATING

Keeping control of thoughts about food is as important as controlling eating.

If I keep these thoughts in my mind then I’ll be able to stop myself from eating these things.

It is absolutely essential for me to be vigilant and aware about my thoughts about food, so I am not taken by surprise and eat something bad.

It is quite bizarre actually because without thinking about food all the time I couldn’t keep my eating in check.

Without careful consideration my food intake would be thrown into confusion.

Everything I eat must be thoroughly though and planned.

I am very aware that I am always thinking about food, the type of food, whether or
not it is fatty, the number of calories and what it is going to do to my body.

- It seems to me that if I can control what I eat then I should be able to control the thoughts I have about food.
- If I think or see one of the bad types of food I have to say to myself over and over that it is bad for me and that I must not have it.
- I love food but I get all these thoughts that it is bad for me so I do not eat it.
- To stay in control of eating I need these thoughts to be there warning me of the dangers.
- It would be so easy to be complacent, but I know that I must remain aware if I'm to stay in control.
- If I didn't think about food so much, I would eat more and I would get fatter.
- I think that I would be quite a glutton if I didn't keep it (food) on my mind.

MONITORING & EMOTIONAL CONTROL

- I need to keep track of what I have eaten and what I will eat because if I eat too much I feel very guilty.
- I know that I will feel awful if I overeat so I make sure that I do not eat by paying attention to thoughts of wanting to eat.
- I know that I'd feel awful if I ate too much so I have to keep track of food thoughts.
- I can imagine how bad I would feel if I didn't do my best to stay on top of this thinking about food.
- It can be awful to have thoughts about food on my mind all the time, but that's not as bad as if I actually ate something dodgy.
- I know that if I give in and eat something then I'll feel terrible. so I need these thoughts to help me stay conscious of how much I want to eat.
- I can't just rely on my will power, that's not enough, I need to constantly remind myself about how dangerous food is.
- I think about food because if I didn't, then I'd eat too much and I'd feel like such a failure.
- I feel absolutely horrible when I've eaten too much, so I keep aware of what I'm thinking about in case I do eat too much.

ILLNESS

- I think that my mind is all messed up because I cannot stop myself from thinking about food.
- Every time I get into this track of thinking constantly about food it just tells me that I am not getting any better.
- Each thought reminds me that I am totally messed up.
- I get worried that thinking about food all the time will drive me crazy.
- A big part of why I have this psychological problem is because I can't stop thinking about food.
- I believe that constantly being obsessed about thoughts of food could be detrimental to my health.
- I think that worrying about food has a negative effect upon my health.
- I suppose I am pretty fucked up (for thinking these thoughts).
- Even when you’re physically well and eating OK, these thoughts still plague you. The mind set has changed very little and you get scared in case you’re
going to become ill again.

☐ Sometimes it (thoughts of food) drives me to the point where I feel so out of control, I think I'm going crazy.

☐ It's even worse when you're underweight, I'm sure that your mind does go……I'm sure you do go slightly mad when you're very thin.

FUNCTIONAL INTERFERENCE

☐ I go to bed my head is full of these worries (about food) and I can't go to sleep. I feel crap the next day because I am so tired.

☐ I just feel that being so concerned about food deprives me of the opportunities to do so many things. I can't even read a book without being continually interrupted by these stupid thoughts.

☐ Constantly thinking about food affects the way I function about other things.

☐ Worrying about food decreases my concentration on other things.

☐ It (food thoughts) detracts from my work

☐ It (thinking about food) just takes over everything. It prevents you from thinking about things.

☐ Time spent thinking about food is time not spent thinking about more important things.

☐ It's hard to have time to think about the good things in life that I could enjoy. Your memory becomes less good for day to day things but not about food. Your memory about food stays razor sharp, I mean you know exactly what you've eaten and exactly what you're going to eat.

☐ Your memory for anything other than food becomes completely ruined. Sometimes you can't remember if something happened in a dream or whether you actually did it, and names and stuff like that.

☐ It's almost as though you sacrifice your memory for other things so that you can concentrate on food.

☐ Your memory for general things becomes very impoverished. When you want to get more things done in your life, the last thing you want to be bloody thinking about is food, food, food.

☐ Being so preoccupied with food affects your relationships with others. It's like I have no time for anything else.

☐ You can't distract yourself from thinking about food just by thinking of other things, it just doesn't work.

☐ I'm knackered all the time because all my energy is taken up by thinking and worrying about food.

☐ It's a real struggle to concentrate on anything with all these thoughts of food in my mind all the time.

☐ I should be thinking about other things,…… more important things.
Appendix 6: Food and Eating Meta-Cognitive Questionnaire (FE-MCQ)

**THOUGHTS ABOUT “FOOD THOUGHTS”**

This questionnaire is looking at the beliefs that people have about “Food Thoughts”. Please read each statement and indicate how strongly you believe this thought to be personally true or not by filling in the column next to it.

I do not believe this thought at all (0%)  
I am completely convinced this thought is true (100%)  

There are no right or wrong answers.

<table>
<thead>
<tr>
<th>Example: Thinking about chocolate is dangerous</th>
<th>85%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I need to keep track of what I have eaten, or else I feel guilty.</td>
<td></td>
</tr>
<tr>
<td>2. Thinking about food can lead to overeating.</td>
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<tr>
<td>3. Thinking about food all the time means that I am greedy.</td>
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<tr>
<td>4. When I am tense and also have food thoughts, I am more likely to eat.</td>
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<tr>
<td>5. I deserve punishment for thinking about food.</td>
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<tr>
<td>6. When I think about eating “bad foods&quot; I must change the thought into thinking about eating something healthy.</td>
<td></td>
</tr>
<tr>
<td>7. Thinking about food blocks out other worries in my life.</td>
<td></td>
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<tr>
<td>8. I must monitor my thoughts about food so that I remain in control of eating</td>
<td></td>
</tr>
<tr>
<td>9. My thoughts about food make me abnormal compared to other people.</td>
<td></td>
</tr>
<tr>
<td>10. Constantly thinking about food could be harmful to my health.</td>
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<tr>
<td>11. I must use mental rituals (e.g. counting, mental lists, etc.) to get rid of food thoughts.</td>
<td></td>
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<tr>
<td>12. I believe that thinking about food can make me fat.</td>
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<tr>
<td>13. It is a sign of strength to be able to control my thoughts about food.</td>
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<tr>
<td>14. If I stop myself from thinking about food I can reduce the likelihood of eating.</td>
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<tr>
<td>15. Other people don’t think about food in the same way that I do.</td>
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<td>---</td>
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<tr>
<td>16.</td>
<td>I must stay aware of my thoughts about food, or else I will feel like a failure.</td>
</tr>
<tr>
<td>17.</td>
<td>I criticise myself for having these food thoughts.</td>
</tr>
<tr>
<td>18.</td>
<td>I worry that my food thoughts will make me go crazy.</td>
</tr>
<tr>
<td>19.</td>
<td>Thinking about food is less scary than thinking about other issues in my life</td>
</tr>
<tr>
<td>20.</td>
<td>Thinking about food so much prevents me from concentrating on other important things that I would like to do.</td>
</tr>
<tr>
<td>21.</td>
<td>I cannot stop thinking about food.</td>
</tr>
<tr>
<td>22.</td>
<td>When food thoughts enter my mind, I should think about something else to compensate for this.</td>
</tr>
<tr>
<td>23.</td>
<td>When I am hungry and also have food thoughts, I am more at risk of overeating.</td>
</tr>
<tr>
<td>24.</td>
<td>My mental health is suffering due to my preoccupation with food.</td>
</tr>
<tr>
<td>25.</td>
<td>Having food thoughts on my mind means that I do not have to think about other problems.</td>
</tr>
<tr>
<td>26.</td>
<td>Thoughts about food pop into my head even when I do not want them to.</td>
</tr>
<tr>
<td>27.</td>
<td>Other people would think of me as strange, because of my food thoughts</td>
</tr>
<tr>
<td>28.</td>
<td>If I did not keep track of thoughts about eating I would be very greedy.</td>
</tr>
<tr>
<td>29.</td>
<td>When I am thinking about food, it is hard to pay attention to other things.</td>
</tr>
<tr>
<td>30.</td>
<td>I am weak because I cannot stop thinking about food.</td>
</tr>
<tr>
<td>31.</td>
<td>I cannot control thoughts about food when they pop into my head.</td>
</tr>
<tr>
<td>32.</td>
<td>I do not deserve to be thinking about food.</td>
</tr>
<tr>
<td>33.</td>
<td>When my stomach feels full, any further food thoughts make me feel guilty.</td>
</tr>
<tr>
<td>34.</td>
<td>If I lose control of my food thoughts I will lose control over my eating.</td>
</tr>
<tr>
<td>35.</td>
<td>I believe that thinking about food is as bad as actually eating.</td>
</tr>
<tr>
<td>36.</td>
<td>Thinking about food so much makes it difficult for me to remember important things.</td>
</tr>
<tr>
<td>Meta-cognitive dimension</td>
<td>Question numbers</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>COGNITIVE NEUTRALISATION</td>
<td>6, 11, 22.</td>
</tr>
<tr>
<td>ILLNESS</td>
<td>10, 18, 24.</td>
</tr>
<tr>
<td>MONITORING AND CONTROL (EMOTIONAL)</td>
<td>1, 16, 28.</td>
</tr>
<tr>
<td>SELF-INFERENCE</td>
<td>3, 13, 30.</td>
</tr>
<tr>
<td>DISPLACEMENT OF WORRIES</td>
<td>7, 19, 25.</td>
</tr>
<tr>
<td>SOCIAL COMPARISON</td>
<td>9, 15, 27.</td>
</tr>
<tr>
<td>BODY INFORMATION</td>
<td>4, 23, 33.</td>
</tr>
<tr>
<td>COGNITIVE INTERFERENCE</td>
<td>20, 29, 36.</td>
</tr>
<tr>
<td>PUNISHMENT</td>
<td>5, 17, 32.</td>
</tr>
<tr>
<td>FUSION</td>
<td>2, 12, 35.</td>
</tr>
<tr>
<td>INTRUSION</td>
<td>21, 26, 31.</td>
</tr>
<tr>
<td>MONITORING AND CONTROL (BEHAVIOUR)</td>
<td>8, 14, 34.</td>
</tr>
</tbody>
</table>
Appendix 7: Demographic information sheet for study 2

Demographic information

Please provide the following information.

Age: Gender: Female (1) Male (2)

Please indicate your ethnic origin

White (1) Black (2)
Asian (3) Oriental (4)

Please indicate your marital status

Married and living with partner (1) Married but separated from partner (2)
Divorced (3) Cohabiting with partner (4)
Single (5) Widowed (6)

Please indicate your employment status

Employed (1) Self-employed (2)
Unemployed (3) Student (4)
Housewife (5)

Height: Current weight:

Are you currently dieting to lose weight: Yes (1) No (2)

If yes:

How long have you been on this current diet:

between 2-4 weeks (1) between 4-8 weeks (2)
between 2-3 months (3) between 3-6 months (4)
between 6-12 months (5) more than 1 year (6)
Which of these is true of you on this diet:

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes (1)</th>
<th>No (2)</th>
<th>If yes, when was the last time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I avoid eating for long periods of time</strong></td>
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<tr>
<td>(This means that you deprive yourself of food at least 3 times per week for periods of time in excess of 8 hours, and/or you eat no more than twice daily).</td>
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<td></td>
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<tr>
<td><strong>I avoid eating specific types of food</strong></td>
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<td></td>
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<tr>
<td>(This means that you deliberately avoid certain types of food to help you lose weight).</td>
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<tr>
<td><strong>I restrict the total amount of food I eat</strong></td>
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<td></td>
<td></td>
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<tr>
<td>(This means that no matter what type of food you eat, you only eat small amounts)</td>
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<td></td>
<td></td>
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<tr>
<td><strong>I have periods when I binge eat</strong></td>
<td></td>
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<tr>
<td>(This means that there are times when you eat more than you normally eat, and that you feel that you have lost control over your eating)</td>
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<tr>
<td><strong>There are times when I vomit after eating</strong></td>
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<tr>
<td>(This means that you make yourself sick in an attempt to lose weight by getting rid of food you have just eaten).</td>
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<tr>
<td><strong>I have used laxatives or diuretics</strong></td>
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</tbody>
</table>

If you answered yes to any of the above questions, and you are asked to say when the last time was, please circle the appropriate number according to the times below.

- between 2-4 weeks (1)
- between 2-3 months (3)
- between 6-12 months (5)
- between 4-8 weeks (2)
- between 3-6 months (4)
- more than 1 year (6)
Melanie Sursham  
Direct Dial 0116 258 8610  

6 October 1999  

Mr A J Cunningham  
Clinical Psychologist in Training  
10 Hobart Street  
Leicester LE2 0JS  

Dear Mr Cunningham  

An investigation of meta-cognitive dimensions of prescriptive and intrusive cognition in eating disorder: development of a meta-cognitive questionnaire - our ref. no. 5652  

Further to your application dated 25 August you will be pleased to know that the Leicestershire Research Ethics Committee at its meeting held on the 1 October 1999 approved your application to undertake the above-mentioned study.  

The Committee felt that the information sheet should be revised to give patients a clearer explanation of what will be involved if they decide to enter the study and to understand the time commitment involved. The information sheets need to be produced on headed paper and to include your supervisor’s name as well as your own.  

There is a mistake on the information leaflet for students as you have included reference to an interview.  

The Committee also felt that no one under 18 years of age should be included in this study.  

Your attention is drawn to the attached paper which reminds the researcher of information that needs to be observed when ethics committee approval is given.  

Yours sincerely  

[Signature]  
Dr R F Bing  
Chairman  
Leicestershire Research Ethics Committee  

(NB All communications relating to Leicestershire Ethics Committee must be sent to the Committee Secretariat at Leicestershire Health)