Exploration and comparison of cognitions and metacognitions related to eating, weight and shape described by obese people who do and do not report binge eating.

Stephanie Ashton

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University of East Anglia

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Abstract

Background: Binge Eating Disorder (BED) commonly, although not exclusively, occurs in obesity. Currently, the cognitions and cognitive processes involved in BED are not fully understood. The self-regulatory executive function model (S-REF; Wells & Matthews, 1994, 1996) is the dominant model regarding the role of metacognition in psychopathology. Metacognition has not yet been explored in BED or obesity. A cognitive model of Bulimia Nervosa (BN) (Cooper, Todd, & Wells, 2009) provides a detailed explanation of the cognitions and cognitive processes involved in the binge eating (BE) cycle within BN. Research suggests aspects of the model could be relevant to obese binge eaters.

Aim: To explore and compare the cognitions and metacognitions related to eating, weight and shape reported by obese people with and without BE.

Method: Semi-structured interviews were conducted with ten obese participants, five with and five without BE (aged 23 to 61 years; BMI values from 36.2 to 67.9). Template analysis was used to analyse the data. Six self-report questionnaires and one demographics information sheet were included to contextualise the qualitative findings.

Results: The a priori themes of 'metacognitive knowledge', 'positive and negative beliefs about eating' and 'permissive thoughts' were supported by the interview data for the obese binge eaters. Additional data-driven themes of 'negative self-beliefs' and 'reflections' emerged. For the non-binge eaters, the a priori themes of 'positive and negative beliefs about eating' were supported by the interview data. Additional data-driven themes of 'negative self-beliefs' and 'metacognitive knowledge' emerged. The quantitative data supported the qualitative results.

Conclusions: The study is preliminary in nature. The results suggest both the S-REF and cognitive model of BN (Cooper et al., 2009) are potentially useful to enhance

understanding of the cognitions and metacognitions important in both obese people with and without BE.

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1 Introduction

This is a mixed-methods study exploring and comparing the cognitions and metacognitions related to eating, weight and shape reported by five obese people with binge eating (BE) or binge eating disorder (BED) and five obese people without BE. In the absence of a dominant cognitive model of BED, thoughts and beliefs identified in a metacognitive model of emotional disorders (Wells & Matthews, 1994, 1996) and a cognitive model of bulimia nervosa (BN) (Cooper, Todd, & Wells, 2009) are used as a basis for the study. The exploration of specific beliefs, including metacognitive beliefs, in obese binge eaters may help to increase understanding of the cognitions and cognitive processes involved in BE and BED. By comparing these beliefs to those reported by obese people who do not binge eat, further information will also be provided to help clarify whether among obese individuals a subgroup can be differentiated on the presence of BE.

1.1 Overview of Chapter

Firstly, information about obesity is presented including prevalence rates, the physical and economic costs, the aetiology and the relationship between obesity and psychopathology. An overview and appraisal of BE and BED is then provided followed by a discussion as to the validity of BED as a diagnosis. The relationship between obesity and BED is then discussed and the nature of BE in obesity is also explored. Subsequently, current available treatments for obesity and BED are described and evaluated. Psychological models of obesity and BED are explored and the limitations of these models discussed.

An overview and appraisal of the literature on metacognition is provided and a description of a metacognitive model of emotional disorders is included. The

relationship between metacognition and psychopathology in general is discussed followed by a more specific discussion of the relationship between metacognition and eating disorders. A cognitive model of BN (Cooper et al., 2009) developed in part from metacognitive theory is described. The specific beliefs identified in this model as key to maintaining BE in BN are reported and explored in relation to BE in obesity. The chapter concludes with a summary of the information provided and the research questions to be investigated.

1.2 Obesity

1.2.1 Definition, prevalence and the physical and economic cost of obesity.

Obesity can be defined as "abnormal or excessive fat accumulation that may impair health" (World Health Organisation [WHO], 2011). Obesity is most commonly measured using the body mass index (BMI) which is calculated as weight in kilograms divided by height in metres squared (kg /m^{-2}). Currently, the WHO classifies individuals as overweight if they have a BMI between 25 and 29.9. Individuals are classified as obese if they have a BMI equal to or greater than 30. Obesity is further broken down into class I (BMI 30.0-34.9), class II (BMI 35.0-39.9) and class III (BMI≥40), commonly referred to as "morbid obesity".

Health Survey for England (HSE) data indicates that the prevalence of overweight and obesity in adults has trebled during recent decades. In 1980, 6% of adult men and 8% of adult women were classified as obese (BMI≥30), whereas by 2005 the proportion of the population who were obese had increased to approximately 23.1% of men and 24.8% of women, with a further 46% of men and 35% of women being overweight (Department of Health [DoH], 2006).

The latest HSE (DoH, 2010) data shows that in 2009, 22% of men and 24% of women were obese. These figures suggest that there has been no significant increase in prevalence of obesity since 2005 and therefore may indicate the trend is flattening out, although as yet it is too soon to tell whether this is the case. Other reports suggest that prevalence rates will continue to increase. For example, by 2015, the Foresight report estimates that 36% of males and 28% of females (aged between 21 and 60) will be obese. By 2025 it is estimated that 47% of men and 36% of women will be obese (Foresight Programme, 2007).

In addition to its high prevalence rates, obesity is associated with a range of chronic medical conditions making it a major international public health concern. Such conditions include type 2 diabetes, hypertension, cardiovascular disease and certain cancers (WHO, 2004). It is estimated that obesity increases the risk of all-cause mortality by 50% and in the UK alone is estimated to be responsible for 30,000 deaths per year (National Audit Office [NAO], 2001). As a result of these associated health concerns obesity also imposes a considerable economic burden.

The Health Select Committee (HSC) in 2004 reported that the cost of obesity to the NHS in England is between £3.3 and £3.7 billion per year. The HSC estimate includes £49 million for treating obesity, £1.1 billion for treating the consequences of obesity, and indirect costs of £1.1 billion for premature death and £1.45 billion for sickness absence. The cost of obesity plus overweight is estimated between £6.6 and £7.4 billion per year (HSC, 2004).

1.2.2 The aetiology of obesity.

At its simplest level, obesity is the result of energy imbalance (WHO, 2011). Obesity can develop when the amount of energy expended by the body is less than the

amount taken in as food and drink. In reality however the aetiology of obesity is much more complex. This will now be discussed.

1.2.2.1 *Genetic factors.*

According to research, genes have some influence on body fatness. One adoption study found a relationship between weight class of the adoptees and their biological parents but no relationship between weight class of the adoptees and their adoptive parents (Stunkard et al., 1986). However, as environmental factors such as famine or high physical activity levels prevent the expression of a genetic tendency towards obesity, the influence of our genes does not mean obesity is inevitable (Hardman & Stensel, 2003). Instead, this suggests obesity may result from an interaction between genes and the environment. In addition, the rapid increase in obesity rates that has occurred over recent years makes it unlikely that genetics alone are responsible as it is too short a time for there to have been significant genetic changes within the population (Centers for Disease Control and Prevention [CDC], 2011).

1.2.2.2 *Metabolic factors.*

Resting metabolic rate (RMR) can be defined as the energy required to sustain life whilst resting (Hardman & Stensel, 2003). In most individuals it accounts for 60% to 75% of the energy expended over a period of 24 hours (e.g. Owen et al., 1986). Therefore, one hypothesis is that people are susceptible to obesity because they have a low RMR. However, research generally suggests that there is not a role for RMR in the aetiology of obesity. Comparisons of RMR in obese and non-obese individuals generally show that RMR is higher in the obese individuals (Stensel et al., 2001). This finding is actually not surprising since body mass is a major determinant of RMR (e.g.

Savage et al., 2004) and obese individuals are heavier than non-obese individuals. However, the importance of metabolic factors cannot be discounted as obesity can result from very small daily energy imbalances which even the most sophisticated of measuring techniques would not be able to identify as a defect in energy expenditure (Goran, 2000).

1.2.2.3 *Behavioural and environmental factors.*

Research has shown that overeating can lead to weight gain (e.g. Bouchard et al., 1990). Specifically, a high fat diet could be responsible for obesity as converting dietary fat into body fat is a very efficient process. Fat is also very energy dense meaning high fat foods may be unintentionally over consumed as appetite is regulated by bulk rather than the energy density of food (Prentice, 1998). The ready availability and extensive marketing of highly palatable, energy-dense foods may also be contributing to an increasing tendency towards over-consumption for those people who do not consciously regulate their diet (WHO, 1998). However, the role of dietary fat as a major determinant of body fat has been disputed. Willett (1998) argues there has been a decline in percentage fat intake in recent years in the USA, whilst at the same time there has been an increase in rates of obesity.

Therefore, in addition to overeating, the role of inactivity in obesity should be considered. As levels of obesity have increased, it appears there has been a reduction in physical activity and a rise in sedentary behaviour. A study commissioned by Sport England (2000), showed that the proportion of young people spending two or more hours per week in curricular school sport decreased from 46% in 1994 to 33% in 1999. At the same time, there has been an increase in the number of hours devoted to sedentary activities. For example, the average person in England watched over 26 hours

of television a week in the mid-1990s, compared with 13 hours in the 1960s. A reduction in overall physical activity levels may also be accounted for by a reduction in occupational exercise and greater use of cars and the corresponding decline of walking as a mode of transport (WHO, 1998). There is also empirical research supporting this view. Weinsier et al. (2002) observed two groups of pre-menopausal women over a year. One group maintained their body weight whilst the other group put on weight. It was estimated that physical inactivity alone accounted for more than 75% of the weight gain observed.

Overall, the aetiology of obesity is complex. It appears there are roles for genetic, environmental, behavioural and possibly metabolic factors. One additional area of importance which will now be discussed is the role of psychological components in relation to the cause and maintenance of obesity.

1.2.3 Obesity and psychopathology.

It is possible that underlying psychopathology may lead to obesity. If someone is depressed they may develop obesity over time through dysregulated stress systems (e.g. Stunkard, Faith, & Allison, 2003; Bornstein, Schuppenies, Wong, & Licinio, 2006) or through unhealthy lifestyles possibly as a result of poor diet and reduced interest and enjoyment of physical activity (Luppino et al., 2010). It is also hypothesised that "comfort eating" has a regulatory effect on affect, and therefore an individual may have an increased appetite for energy-rich comfort foods to help control their emotional distress (e.g. Parkinson & Totterdell, 1999), leading to weight gain. Empirical research has found that children with major depression at 6-17 years had a significantly greater adult BMI than children without depression (Pine, Goldstein, Wolk, & Weissman, 2001). Whilst controlling for baseline BMI, depressed late adolescent girls were also

significantly more likely to be obese in adulthood than girls who were not depressed, although this relationship was not observed for boys (Richardson et al., 2003).

Alternatively however, psychopathology may result from obesity. For example, people who are obese may be subject to stigmatisation and discrimination (e.g. Kaminsky & Gadaleta, 2002) possibly resulting in or exacerbating a depressive illness. Health professionals specialising in obesity have been shown to report negative stereotypical views of obese people and display a bias towards making associations of obesity with "lazy", "stupid" and "worthless" on both implicit and explicit measures (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003). In addition, repeated failed attempts to lose weight are common in those who are obese and this failure may be accompanied by thoughts of guilt, hopelessness, and poor self-esteem (Wooley & Garner, 1991). Existing longitudinal research has also found obesity levels at baseline predicted elevated depression scores a year later. However, elevated depression levels also predicted obesity a year later (Roberts, Kaplan, Sherma, & Strawbridge, 2000). In a 5 year follow up from the previous study, Roberts, Deleger, Strawbridge, and Kaplan (2003) still found an increased risk of depression amongst those who were obese at baseline. Those who were depressed at baseline however, were not more likely to develop obesity. Other bidirectional associations have also been found between depression and obesity with obese people having a 55% increased risk of developing depression over time and depressed persons having a 58% increased risk of becoming obese (Dixon, Dixon, & O'Brien, 2003).

Research has also looked at levels of psychopathology in obese compared to non-obese individuals. Some clinical studies indicate high levels of psychopathology, particularly affective disorders, in obese individuals compared to non-obese controls (e.g. Goldsmith, Anger-Friedfeld, Rudolph, Boeck, & Aronne, 1992; Hopkinson &

Bland, 1982). However, other research has found no greater prevalence of psychiatric disturbance among obese individuals compared to non-obese (e.g. Silverstone, 1968; Crisp & McGuiness, 1976).

Whilst these results are inconclusive within obese populations, research has more clearly identified certain sub-populations which are at higher risk of emotional disturbance. Substantial psychopathology is reported in morbidly obese individuals requesting obesity surgery, with a lifetime prevalence of 84% reporting major mental disorders and 39.5% to 72% reporting personality disorders (e.g. Black, Goldstein, & Mason, 1992). In addition, obese women, obese individuals seeking dietary treatment, obese people who binge eat and those with more severe obesity have a greater tendency towards psychological disturbance, particularly depression, negative body image and impaired quality of life than obese individuals who do not have these characteristics (Wadden, Womble, Stunkard, & Anderson, 2002).

Consequently, much of the research on psychopathology in obesity has since concentrated on these specific sub-groups. In particular there has been much focus on the subgroup who binge eat and particularly those with BED (Palinkas, Wingard, & Barrett-Connor, 1996).

1.3 Binge Eating and Binge Eating Disorder

1.3.1 Definition of BE.

BE is a technical term used in the clinical and research literature on eating disorders and refers to a particular type of overeating. An episode of BE is defined as "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 in a similar period of time under similar circumstances". A person must also experience "a sense of lack of control over

eating during the episode (i.e. feeling that one cannot stop eating or control what or how much one is eating)" (DSM-IV; American Psychiatric Association [APA], 1994). BE is a principal symptom of both the eating disorders BED and BN. It can also occur in anorexia nervosa (AN), although is not required for a diagnosis.

1.3.2 Definition of BED.

BED is an example of an eating disorder not otherwise specified (EDNOS) diagnosis in DSM-IV. It is also included as an eating disorder category in Appendix B of DSM-IV, reflecting a provisional diagnosis worthy of future study.

For someone to meet the provisional criteria for BED, an individual must experience recurrent episodes of BE (as defined above), and in addition experience marked distress with regards to their BE episodes and exhibit several behavioural indicators of loss of control. The BE must also occur on average at least 2 days a week for 6 months and must be experienced without the inappropriate weight control compensatory behaviours that characterise BN.

BED is being considered for inclusion as its own diagnostic category in the new DSM-V, due for publication in 2013. Various options regarding this decision are currently being reviewed based upon the empirical findings available (Wonderlich, Gordon, Mitchell, Crosby, & Engel, 2009).

1.3.3 Prevalence of BED.

Population-based studies have estimated prevalence rates for BED of between 0.7 and 3.0% (Brownley, Berkman, Sedway, Lohr, & Bulik, 2007). One community-based, epidemiological sample found a prevalence rate for BED of 6.6% (Grucza, Przybeck, & Cloninger, 2007). This higher level could be accounted for by the use of

self-administered questionnaires to identify BED, as opposed to clinical interviews. The sample size was also small compared to large national epidemiological studies and a higher than average portion of the sample were obese. However, the high rates obtained are comparable to those measured in several studies of primary care populations that have used the same screening measure (Spitzer, Kroenke, & Williams, 1999; Johnson, Spitzer, & Williams, 2001). The uncertainty over what constitutes a binge may also affect estimates of prevalence (Spitzer et al., 1992).

Unlike other eating disorders, BED is more equal in gender ratio (65% female, 35% male). In comparison, in BN only about 10% of people affected are men (de Zwaan, 2001). Specific prevalence rates of BED within obese individuals are discussed in section 1.4.2.

1.3.4 Comorbidity in BED.

A number of studies have explored psychological problems associated with BED. Studies have generally found higher rates of psychopathology in people with BED compared to non-patient controls and people with obesity who do not binge eat, but slightly lower rates of psychopathology than are observed for people with BN. For example, a consistent link has been shown between BED and Axis I disorders, including depression, substance abuse or dependence, and anxiety. Major depressive disorder is consistently found to be the most common comorbid diagnosis (lifetime rates generally 50–60%) (e.g. Yanovski, Nelson, Dubbert, & Spitzer, 1993; Specker, de Zwaan, Raymond, & Mitchell, 1994; Mussel et al., 1996; Telch & Stice, 1998; Wilfley et al., 2002).

1.3.5 Validity of BED diagnosis.

In order for BED to be included as its own diagnostic category in DSM-V, its validity and clinical utility need to be clearly established. One recent review by Wonderlich et al. (2009) examined the available empirical evidence for whether BED could discriminate itself from other eating disorders and from obesity on a range of external validating variables (e.g., family history, biological parameters, quality of life) and validators that reflect high degrees of clinical utility (e.g., clinical course, response to treatment). They found strong evidence for a distinction between BED and more traditional eating disorder diagnoses such as AN and BN in terms of a number of clinically relevant variables, such as recovery rates, diagnostic stability, age of onset, gender distribution, BMI, dietary restraint, relative age of onset of dieting and BE, psychiatric comorbidity, and binge characteristics. For example, Fairburn, Cooper, Doll, Norman, and O'Connor (2000) conducted a community-based, case-control study exploring the natural course of BN and BED in young women and found BED and BN were characterised by different courses and outcomes. Groups were assessed at 15 month intervals over a 5-year period. 31% of the BN group still met diagnostic criteria after 15 months compared to 24% of the BED group. By 5 years these figures had declined to 15% of the BN group and 9% of the BED group. However, between half and two thirds of the BN group had some form of eating disorder of clinical severity at each assessment point. In comparison, 41% of the BED group had some form of eating disorder of clinical severity at 15 months which declined to 15% by 5 years (Fairburn et al., 2000).Whilst the majority of research supported this view, in contrast, Wade, Crosby, and Martin (2006) failed to find evidence that BED could be reliably differentiated from other eating disorder profiles in a sample of 1,002 community based twins.

Wonderlich et al. (2009) highlighted that few studies examined the boundary between obesity and BED to see if among obese individuals a subgroup could be reliably differentiated based on the presence of BE. Of those studies that were included, Williamson et al. (2002) reported on samples of eating disordered, obese, and normal weight individuals using factor analysis and taxometric analysis. Although these data supported a distinction between BED and other eating disorders and obese people without BED, the small sample size of obese individuals without BED reduced the strength of inference regarding the BED–obesity relationship. In another study, Mitchell et al. (2007) completed a latent profile analysis of individuals seeking treatment and receiving a diagnosis of EDNOS. This study produced results in which two classes of obese individuals were identified, one with high levels of eating disorder psychopathology and one with low levels of eating disorder psychopathology. These results may be interpreted as consistent with a differentiation of individuals with BED from other obese individuals.

Unfortunately, the majority of studies in the review tended to use existing data sets that were not originally designed to provide information for empirical studies of classification. The validity of BED would be more effectively tested with studies assessing for eating disorder symptoms in a sample carefully selected to provide a rigorous test of discriminant validity. In addition, most studies included in the review employed latent structure models to examine empirical data to identify naturally occurring groups of eating disordered people based on similarities in symptom status. Unfortunately these approaches do not help to determine if the distinctions between these groups represent qualitative or quantitative differences. Rarely did researchers employ taxometric analyses following latent structure models to assess the nature of the

boundary between the naturally occurring groups (Wonderlich, Joiner, Keel, Williamson, & Crosby, 2007).

A further review concluded that a case can be made for recognising BED as a formal eating disorder diagnosis in DSM-V (Striegel-Moore & Franko, 2008). This conclusion was reached due to the ample literature on BED, the BED diagnostic criteria outlined in DSM-IV having been used consistently and several psychometrically sound instruments having been developed for the assessment of BED as a result. The authors also concluded that BED can be discriminated from BN and obesity, and is therefore a distinct clinical entity. The authors did highlight the continued debate about the specific criteria of BED and the need for further exploration in this area. For example, some researchers believe the criteria for BE at least 2 days a week for 6 months is too restrictive and arbitrary (e.g. Hay & Fairburn, 1998). Studies have compared people who meet BED criteria with those who are sub-threshold in terms of binge frequency. Results found little difference in reporting of psychopathology and concern about weight and shape between the groups. This suggests that there are similarities between those that meet criteria and those that are sub-threshold, suggesting that the diagnostic criteria may be too stringent (Striegel-Moore, Wilson, Wilfley, Elder, & Brownell, 1998; Crow, Agras, Halmi, Mitchell, & Kraemer, 2002). In addition, the use of a diagnostic time frame of 6 months rather than the 3-month time frame used for BN and AN has been questioned. A recent report using data from a national sample of over 3,000 women noted that the 6-month requirement resulted in a 1.0% prevalence estimate, whereas a 3-month requirement would have increased the rate to 1.6% (Hudson, Hiripi, Pope, & Kessler, 2007).

1.4 Obesity and Binge Eating

1.4.1 BE in obese populations.

Although obesity is not specified as a diagnostic criteria for BED, the majority of people with BED are overweight (Spitzer et al., 1993). Studies have found prevalence rates of BE in obese people attending obesity clinics ranging from 9-30% (Faravelli et al., 2006). For example, Giusti, Heraief, Gaillard, and Burckhardt (2004) found 22% of patients referred to an obesity clinic met criteria for BED. The higher prevalence rate estimates, e.g. 30% (Spitzer et al., 1992, 1993) tend to be based on the results of self-report questionnaires, whilst those studies that have used more rigorous interview-based assessment methods have generally obtained lower figures e.g. 9% (Stunkard et al., 1996) and 19% (Brody et al., 1994). It is possible that the self-report estimates are higher than interview-based studies because of the difficulty in assessing the frequency of objective binge episodes (Stunkard & Allison, 2003).

Rates amongst bariatric surgery candidates have also been investigated and found to be varied. For example, one study found only 4% of the sample met full DSM-IV criteria for BED when assessed using a diagnostic interview. However, the figure increased to 16% using results from self-report measures (Allison et al., 2006). This figure is similar to other reported figures using self-report measures (e.g. 25%, Hsu et al., 2002; 22%, Grilo et al., 2005), although lower than that found in some studies (e.g. 55%, Latner, Wetzler, Goodman, & Glinski, 2004). The range of prevalence rates reported in the literature highlights the difficulties of assessing for BED and the discrepancies between interview and self-report methods. Particularly low rates identified from diagnostic interviews could be attributed to strict objective criteria, although another possible reason may be that people seeking bariatric surgery are now more aware of the implications of the psychological screening process. Assessors make

recommendations regarding a person's psychosocial appropriateness for bariatric surgery based on a pre-surgery assessment. Therefore, potential patients may temper their description of pathological behaviours during these assessments for fear of being excluded from surgery (Allison et al., 2006).

Interestingly, in a community survey only half of the BED subjects were obese and only about 5% of the obese subjects met criteria for BED suggesting BED is less prevalent in obese people not currently in or seeking treatment (Spitzer et al., 1992).

1.4.2 Obesity, BE, BED and psychopathology.

The relationship to psychopathology when both obesity and BE are present will now be discussed.

Studies of both community (Javaras et al., 2008; Grucza, Przybeck, & Cloninger, 2007) and clinical samples (Specker et al., 1994; Telch & Stice, 1998) have reported greater psychopathology, including depression, anxiety and substance abuse, in obese people who binge eat compared to obese people who do not. For example, 60% of obese binge eaters met criteria for at least one psychiatric disorder versus 28% of obese non-binge eaters (Marcus, Wing, & Hopkins, 1988). In fact, BED has been found to be one of the most reliable predictors of psychopathology in the obese population (Grilo, White, & Masheb, 2009), specifically Axis 1, mood and anxiety disorders (Fandiño et al., 2010; Fontenelle et al., 2003; Javaras et al., 2008). Axis II disorders, especially Clusters B and C, also occur more frequently among obese people with BED compared to obese people without BED (Marcus et al., 1996; Mitchell & Mussell, 1995; Specker et al., 1994).

This finding has not always been consistently observed in studies of severely obese patients with BED, including those seeking bariatric surgery (e.g. de Zwaan et al.,

2003; Hsu et al., 2002). However, these studies only had 20 or fewer patients with BED, limiting the power to detect differences, and used self-report measures to assess BED, psychopathology or both. In contrast, one study employed a larger sample size of people seeking bariatric surgery (n=195) and used structured clinical interviews in addition to self-report measures to determine both the presence of BE and Axis I psychopathology. Results from the interview showed significantly higher rates of current and lifetime mood and anxiety disorders in those people with BED compared to those without. BED was also associated with greater symptoms of depression, as measured by the Beck Depression Inventory Second Edition (BDI-II; Beck, Steer, & Brown, 1996), and lower self-esteem (Jones-Corneille et al., 2010).

1.4.3 The nature of binge eating in obesity.

BE is frequently presumed to be the consequence of dieting and restriction of food intake (e.g. Polivy & Herman, 1985). Theory suggests that prolonged dietary restriction interferes with food regulation and satiety, leading to compensatory binge episodes. This theory has been supported for those with BN where dieting often precedes the onset of BE. However, the relationship between dieting and BE in obese people is less clear. About half of obese individuals with BED report dieting before the onset of BE, with the remainder reporting BE either prior to or at about the same time as the first diet (Fairburn & Brownell, 2002).

There is further research suggesting that the BE observed in obese people who do not purge or engage in other compensatory behaviours appears to differ from BE in those with BN. For example, binge episodes tend to be of smaller size and caloric content. In addition, because binges are not terminated by vomiting, discrete binge episodes may be more difficult to identify. Some obese binge eaters describe “grazing,”

in which they see themselves as out of control most or all of an entire day (Fairburn & Brownell, 2002). Research has also found that obese binge eaters consume more than weight-matched non-binge-eaters when asked to "let yourself go" and when asked to eat "normally". This suggests that the presence of a large amount of palatable food may act to disinhibit food intake, regardless of instruction and is in contrast with individuals with BN who, in similar circumstances, either restrict and eat very little or binge eat (Yanovski, 1995).

There is now a growing body of evidence suggesting that the association between dieting, restriction and BE as a factor maintaining BED does not apply to a substantial number of individuals with BED (de Zwaan, 2005). Instead, it is proposed that negative emotional disturbances and coping deficits seem to increase the likelihood of BE (Grilo & Shiffman, 1994). For example, in an experimental study of obese women, Agras and Telch (1998) found that negative mood, and not caloric deprivation, significantly increased loss of control over eating.

1.5 Treatment

1.5.1 Treatments for obesity.

1.5.1.1 *Current treatments.*

National Institute for Health and Clinical Excellence (NICE) obesity guidelines (NICE, 2006) recommend treatments ranging from diet and exercise advice, often in the form of weight management programmes, through to medication and procedures such as bariatric surgery.

Weight management programmes are a first line treatment. These programmes are based on behavioural approaches and were originally developed in the 1960s (Ferster, Nurnberger & Levitt, 1962; Stuart, 1967). The programmes have been refined

over the years and now provide multi-component interventions including behaviour change strategies to increase people's physical activity levels, improve eating behaviour and the quality of the person's diet and to reduce energy intake. The overall aim is to produce a negative energy balance resulting in weight loss. Behavioural programmes following a 1200 kcal/day diet have been shown to produce weight loss of about 10% of initial body weight amongst those completing treatment (about 80%) (Wing, 1998). However, research suggests that individuals will almost always regain any weight they lose, with approximately 40% being regained over the first year following treatment and most of the rest over the following 3 years (e.g. Graham, Taylor, Hovell & Siegel, 1983; Stalonas, Perri & Kerzner, 1984; Kramer, Jeffery, Forster & Snell, 1989; Wadden, Sternberg, Letizia, Stunkard & Foster, 1989). It is possible that relapse is attributable to failure to adhere long-term to the self-regulatory strategies learnt in treatment. In behavioural terms, it appears that weight loss is insufficiently reinforcing to sustain compliance with a pattern of food intake and exercise that promotes a stable weight (Fairburn & Brownell, 2002).

NICE guidelines suggest drug treatment should be considered for patients who have not reached their target weight loss or have reached a plateau on dietary, activity and behavioural changes. Research suggests that drug treatment is effective for mild to moderate obesity (Ayyad & Andersen, 2000) and results in 5–10% weight loss amongst those who comply with treatment (National Task Force on the Prevention and Treatment of Obesity, 1996; Bray, 1998). The weight loss usually occurs within the first 6 months of starting treatment and body weight levels out after that. As with weight management programmes, the majority of individuals return to their baseline weight in the absence of continued intervention (National Heart, Lung and Blood Institute, 1998). Therefore, drug treatment needs to be continued indefinitely for it to have a lasting

effect. However, as yet there are few long-term studies of these drugs' safety or effectiveness (Cooper & Fairburn, 2001).

If non-surgical measures have been tried but have failed to achieve or maintain adequate, clinically beneficial weight loss for at least 6 months, bariatric or weight loss surgery is recommended for adults with a BMI of 40 or more and for those who have a BMI between 35 and 40 and have an additional significant health problem (e.g. type 2 diabetes) that could be improved if they lost weight. Bariatric surgery is also recommended as a first-line option for adults with a BMI of more than 50. Bariatric surgery patients typically lose 25-35% of their initial body weight 12-18 months post-surgery (Buchwald et al., 2004; Maggard et al., 2005). Weight loss is also often accompanied by improvements in mood, physical comorbidities, and quality of life (Mitchell & de Zwaan, 2005; Sarwer, Wadden & Fabricatore, 2005). However, 20-30% fail to achieve typical postoperative weight loss or regain weight within a few years (Sjöström et al., 2004; Sjöström, et al., 2007). Suboptimal results have been attributed to problematic dietary intake, disordered eating, little physical activity and preoperative psychopathology, (Bocchieri, Meana, Fisher, 2002; Herpertz et al., 2004; Sarwer et al., 2005).

1.5.1.2 *New treatments and challenges.*

The current literature shows that for obese people a 5-10% reduction in weight is accompanied by clinically important improvements in cholesterol, blood pressure, blood glucose and other health indices (Goldstein, 1992; Kanders & Blackburn, 1992; Wing & Jeffery, 1995; Tremblay et al., 1999). There is also evidence that these benefits are sustained if the lost weight is not regained (Wing & Jeffery, 1995). Therefore, 5-10%

weight loss is now the recommended goal for obesity treatment programmes (e.g. UK Royal College of Physicians, 1998).

As reported above, many people adhering to current obesity treatments can achieve a 5-10% weight loss. Therefore, the challenge for new treatments is not necessarily to increase potential weight loss but to prevent, or minimise, the problem of weight regain following treatment. One option is long-term treatment (Perri, 1998), although as previously stated the utility of long-term treatment remains to be established. It is well recognised that patient attendance declines as treatment is extended in length and long-term drug treatment is unlikely to be a realistic option due to the possibility of adverse side effects and difficulties with long-term compliance (Cooper & Fairburn, 2001).

In response to the need for an approach with the aim of long-term weight loss and the prevention of weight regain, a new cognitive behavioural treatment has been developed for obesity to target overeating and low levels of activity but also to focus on the processes hypothesised to hinder successful weight maintenance. As such, the treatment helps patients accept and value the weight loss that they have achieved; encourages the adoption of weight stability and not weight loss as a goal; and helps patients acquire and use the behavioural skills and cognitive responses required for successful weight control (Cooper & Fairburn, 2001, 2002). The group responsible for developing the treatment recently published a study exploring its effectiveness (Cooper et al., 2010). CBT for obesity was compared to behaviour therapy (BT) and a form of guided self-help to represent minimal intervention. Both CBT and BT resulted in an average weight loss of about 10% of initial weight. Weight loss was more modest with guided self-help. However, most of the BT and CBT participants regained weight following the end of treatment. At 1-year follow-up, many of those who had lost weight

at the end of treatment had regained almost half the weight that they had lost (median regain of weight lost, 43.5% in BT and 58.0% in CBT), and at 3-year follow-up they had regained almost all the weight lost (89.8% regain in BT; 88.6% regain in CBT). Therefore, CBT was no better than BT with regards to preventing post-treatment weight regain. Although it achieved some of its aims such as change in participants' acceptance of shape, CBT did not result in improved weight maintenance. A subsidiary aim of the study was to explore the relationship between BE, weight loss and weight regain. This proved difficult as less than 10% of the sample reported BE on a regular basis. However, the results demonstrated that weight loss treatment did not promote BE, either during treatment or afterwards. Overall, the authors drew two main conclusions from the study; among people with obesity it is difficult to maintain a lower weight following weight loss and sustained behaviour change in people with obesity is difficult to achieve (Cooper et al., 2010).

Overall, treatments for obesity are primarily focussed on achieving weight loss. There is limited or no focus on the problem cognitions or behaviours associated with BE for obese people with BE and BED.

1.5.2 Treatments for BED.

1.5.2.1 *Current treatments.*

The NICE guidelines for eating disorders (NICE, 2004) provide some guidance specifically for the treatment of BED. Initially people with BED should be encouraged to follow an evidence-based self-help programme. In addition or instead, an SSRI antidepressant drug may be offered. Alternatively, a specifically adapted form of CBT should be offered to adults with BED (CBT-BED). Other psychological treatments, including interpersonal psychotherapy (IPT) and modified dialectical behaviour therapy

(DBT), may be offered to adults with persistent BED. The guidelines do not provide treatment distinction between obese and non-obese people with BED.

CBT is the most frequently studied treatment for BED and it uses a modified version of CBT-BN (Fairburn, 1981). CBT-BN is a first line treatment option for BN that addresses both overeating and the processes that are hypothesised to maintain it. CBT-BN has been found to lead to a substantial decrease in the frequency of BE and related behaviours in people with BN, with up to half the patients ceasing to binge eat altogether, and the treatment effect persists in the majority of cases (Wilson & Fairburn, 2007). Modifications are necessary to CBT-BN for people with BED as BED patients exhibit lower levels of dietary restraint, more chaotic eating patterns, and higher levels of overweight than BN patients. The adaptations include focusing on moderation of food intake such that it is neither over- nor under-restrictive; modification of harsh, stereotyped views of overweight; if applicable, promotion of the acceptance of a larger than average body size; and encouragement of weight-control behaviour (e.g., increased physical activity, weekly weighing) (e.g. Levine & Marcus, 2003).

A recent literature search specifically looking at the effectiveness of CBT for BED in overweight / obese populations identified 13 studies. Overall, the studies found CBT interventions reduced BE in approximately half the cases (e.g. Agras et al., 1995; Marcus, Wing & Fairburn, 1995; Wilfley et al., 1993) and any benefits derived were accrued by session 20 (Eldredge et al., 1997). Unfortunately weight loss was minimal, although several studies suggested significantly greater weight loss in abstainers from BE (e.g. Munsch et al., 2007), suggesting CBT could be important in the overall treatment of this population. Six studies investigated CBT compared to other psychological treatments. Post-treatment, studies generally found that CBT was superior to behavioural weight loss management programmes (e.g. Grilo & Masheb, 2005;

Munsch et al., 2007). However, one study found no significant difference between CBT, IPT and a behavioural weight loss management programme in terms of remission rates of BE post-treatment and at 1 year follow up, although at 2 year follow up, CBT and IPT had significantly higher remission rates than the behavioural weight loss management programme (67%, 62% and 43% respectively) (Wilson, Wilfley, Agras, & Bryson, 2010). Other studies investigated CBT plus a pharmacological intervention. Post-treatment, one study found a 64% remission rate from BE in a CBT plus pharmacological intervention group compared to 36% with CBT on its own. Therefore, results may suggest that anti-obesity medication combined with CBT could give best results overall, although by 3 month follow up, remission rates were the same at 52% (Grilo, Masheb, & Salant, 2005). Therefore, longer term follow-ups are needed to explore this further. Many of the studies employed strong research designs. Nine of the 13 studies were RCTs, standardised assessment of BED pre-treatment was generally good and although treatment outcomes were assessed in a number of ways across studies, many studies used excellent measures in terms of reliability and validity. Outcome measures were also rarely restricted to one measure and when this did occur, all used the 'gold standard' Eating Disorder Examination interview (EDE; Fairburn & Cooper, 1993). However, some methodological issues hinder interpretation of findings. The majority of studies recruited via advertisements in newspapers, limiting the sample and generalisability of results to patients receiving treatment at different clinics. Sample sizes were generally modest and only one study reported a sample size calculation and recruited a larger sample (Wilson et al., 2010), therefore increasing statistical power.

As reported previously, IPT is also recommended for treatment of BED in the NICE guidelines. IPT was first discovered to be effective in eating disorders when used as a control treatment for CBT-BN during a RCT (Fairburn et al., 1991). IPT was not

adapted specifically for BN in this treatment trial, and beyond limited initial psychoeducation, eating problems were not addressed during the treatment. While CBT was considered most effective, IPT also resulted in the improvement of eating disorder symptoms and this has led to the development of IPT-BN as a viable treatment option which has been manualised (Fairburn, 1997b). IPT has since been specifically adapted to use with BED (Wilfley, Frank, Welch, Spurrell, & Rounsaville, 1998) and the evidence base suggests it is also as effective as CBT in this population. For example, one study comparing group CBT and group IPT for BED found BE recovery rates were equivalent post-treatment, although IPT may take longer to have an effect (Wilfley et al., 2002).

Whilst existing treatments appear promising for BED, there is scope for improvement and as such, some authors have called for refinements of treatments (e.g. Wonderlich, Peterson, Mitchell, & Crow, 2000). In addition, the recommended treatments pay little attention to obtaining weight loss, an important factor in those who are obese. A greater theoretical understanding of obese binge eaters may provide information for more effective, specific treatment options for this population.

1.6 Models

1.6.1 Psychological models of obesity.

Whilst psychodynamic (e.g. Watchel, 1976) and humanistic (e.g. Bryant-Jefferies, 2005) models of obesity have been proposed, little research has been conducted exploring these particular models. Therefore this section focuses on behavioural and cognitive behavioural models which have been more commonly applied.

1.6.1.1 *Behavioural models.*

Behavioural principles were first applied to obesity in the 1960s (Ferster et al., 1962; Stuart, 1967). Behavioural models propose that obesity results from maladaptive over-eating behaviours and the absence of exercise which are both reinforced according to the principles of learning theory (Wilson, 1993; Bray, Bouchard & James, 1998).

Therapeutic techniques derived from behavioural models include stimulus control, goal setting, and self-monitoring. The aim of treatment is to change eating and exercise behaviours by identifying personal environmental cues and the reinforcers that control these behaviours and to develop strategies to break these habits.

Behavioural models have resulted in the development of behavioural weight loss programmes. Whilst these programmes have good outcomes with regards to initial weight loss, the maintenance of weight loss is still poor (e.g. Stunkard & Penick, 1979) (see section 1.5.2.1 for further information). As a result, behavioural models have faced a number of criticisms. For example, they have been criticised for making assumptions about distinctive eating patterns in people with obesity and the failure to incorporate information about the biology of weight regulation (Wooley, Wooley, & Dyrenforth, 1979). Cooper and Fairburn (2002) hypothesised that the failure of behavioural interventions to achieve long-term positive outcomes is due to lack of distinction between the objectives of achieving and maintaining weight loss and lack of attention paid to the contribution of cognitive factors to weight regain. They also suggest that people may fail to engage in effective weight control behaviours for two reasons. Firstly, weight loss goals and their anticipated benefits may not be achieved and individuals may consequently abandon weight loss efforts. Secondly, under these circumstances individuals neglect (or do not appreciate) the need to acquire weight

maintenance skills, and therefore return to their previous eating habits and gain weight (Cooper & Fairburn, 2002).

1.6.1.2 *Cognitive behavioural models.*

In response to the poor outcomes of behavioural approaches, Cooper and Fairburn (2002) proposed a cognitive-behavioural approach to the treatment of obesity with the aim of achieving weight loss and reducing any weight regain as a long-term outcome (see section 1.5.1.2 for further treatment details).

There is some empirical support for this model. A study investigating psychological predictors of weight regain in obesity identified two prospective predictors of weight regain: one cognitive factor (dichotomous thinking) and one historical variable (maximum lifetime weight), with dichotomous thinking being the strongest predictor (Byrne, Cooper, & Fairburn, 2004). The fact a specific cognitive style is a significant predictor of relapse is argued to be support for the cognitive behavioural model of obesity as those with a dichotomous thinking style may interpret not achieving their desired weight as evidence of complete failure and therefore lack motivation to maintain this weight loss (Cooper & Fairburn, 2002). Limitations to this study were that it had a small sample size (54 participants) and used self-reported weight in the follow-up phase. Whilst self-reported weight has been found to correlate highly with actual weight in some studies (e.g. Casey et al., 1991; Davis & Gergen, 1994), research also suggests that unreliability of self-reported weight increases with magnitude of overweight (Rowland, 1990).

However, results of a recent study investigating effectiveness of an intervention based on the cognitive behavioural model of obesity are reported in section 1.5.2.2. In

brief, although CBT achieved some of its specific goals, it was no better than BT with regards to preventing post-treatment weight regain (Cooper et al., 2010).

1.6.2 Psychological models of BED.

Due to its provisional diagnostic criteria and lack of definitive agreement over its validity, there are a number of proposed psychological views to explain BED. Devlin, Goldfein and Dobrow (2003) proposed that BED can be conceptualised in four different ways; as a distinct disorder, as a variant of BN, as a behavioural subtype of obesity, and as a behaviour that reflects psychopathology among the obese. They reviewed the evidence for each and concluded that based on the literature, none of these models can be ruled out entirely. However, they did conclude that "BED differs importantly from purging bulimia nervosa" and that "BED is not a strikingly useful behavioural subtype of obesity".

Therefore, as might be expected with this uncertainty, there is no widely accepted cognitive model of BED (Cooper, 2005). This is in contrast to BN where there is a clear leading treatment (CBT-BN) based on a specific cognitive behavioural model (Fairburn, 1997a) which has been refined over the years in line with new developments in the literature. The cognitive behavioural model of BN proposes the specific behaviour of BE is largely a product of dietary restraint. Individuals try to adhere to multiple demanding, and highly specific, dietary rules and tend to react in an extreme and negative fashion to the (almost inevitable) breaking of these rules. Even minor dietary slips are viewed as evidence of lack of self-control. Individuals respond to such rule-breaking by temporarily abandoning their dietary restraint, and therefore giving in to the urge to eat that arises from the dietary restriction, resulting in a subjective or objective binge episode. BE in turn maintains negative core psychopathology by

intensifying the individual's concerns about their ability to control their eating, shape, and weight. It also encourages further dietary restraint, thereby increasing the risk of further BE.

Another existing model of BN (Cooper et al., 2009), which includes a detailed explanation of BE, may also have applicability to other BED populations. This is discussed further in section 1.7.5.

More recently it has been proposed that all eating disorders have shared, but distinctive, clinical features which tend to be maintained by similar psychopathological processes. This has led to a new transdiagnostic theory of all eating disorders (Fairburn, Cooper, & Shafran, 2003), which includes a broader range of maintaining mechanisms than the earlier BN theory. It is therefore thought that treatments that have beneficial effects on BN should also benefit individuals with other eating disorders including BED. As such, a new version of CBT-BN has been proposed, which rather than being a treatment for BN in particular, is now a treatment for eating disorder psychopathology regardless of DSM-IV diagnosis (Fairburn, Cooper, & Shafran, 2008). There are two forms of this "enhanced" treatment (CBT-E): a focused form (CBT-Ef) that targets eating disorder psychopathology exclusively, and a more complex broad form (CBT-Eb) that also addresses certain additional problems that commonly appear to maintain eating disorders or complicate treatment, namely; mood intolerance, clinical perfectionism, low self-esteem, and interpersonal difficulties (Fairburn et al., 2008).

As this is a recent development, there are few studies as yet exploring the application of CBT-E. However, one study has shown that it appears to be suitable for the majority of outpatients with an eating disorder. Following 20 weeks of therapy, more than half the sample (52.7% and 53.3% of those with BN and EDNOS respectively) had a level of eating disorder features less than one standard deviation

above the community mean. There was no difference found in the effectiveness of CBT-Ef compared to CBT-Eb. However, in patients with substantial additional psychopathology of the type targeted in CBT-Eb, this version of the treatment appeared to be more effective than the focused form, whereas in the remaining patients the opposite was the case. Finally, the results found that DSM-IV eating disorder diagnosis was not a moderator of outcome (Fairburn et al., 2008), suggesting it could be a useful theory to apply to BED populations.

1.6.3 Scope for the refinement of future models.

There has been much work over recent decades developing and improving psychological models and corresponding treatments for eating disorders in order to obtain the best possible outcomes for patients. In the past, the research has generally focused on the more traditional eating disorders such as AN and BN and it has only been more recently that BED has begun to develop its own comprehensive research base. Currently, the best supported treatment for BED, CBT-BED, has been found to be effective in approximately 50% of cases (e.g. Agras et al., 1995), which although positive highlights, there is scope for improvement. These current treatments for BED have been developed from treatments for BN although differences have been highlighted between the nature of BE in BED and BN. In addition, the specific cognitions and cognitive processes involved in the maintenance and development of BED are not fully understood which is reflected in the lack of a dominant cognitive model of the disorder. The cognitive models of eating disorders which do exist and incorporate episodes of BE lack detailed explanations of the potential complex interactions of cognitions, emotions, behaviours and physiology involved in a BE episode (e.g. Fairburn et al., 2003). It seems particularly important to understand these

cognitions in BED if, as thought, restriction does not play as dominant a role in the maintenance of BE as it does in BN. Other disorders such as GAD and OCD already have existing detailed cognitive models which have led to the development of specific treatment protocols (e.g. Wells, 2000). Therefore, the development of a model of BED incorporating the relevant cognitions and cognitive processes seems important to understand the disorder and to provide information for more effective treatment.

More generally, cognitive models of emotional disorders have been criticised for focusing primarily on the content of cognitions, at the expense of the internal cognitive mechanisms that "control, correct, appraise and regulate thinking itself" (Wells, 2000). This refers to the concept of metacognition. Metacognition describes a range of interrelated factors comprised of any knowledge or cognitive process that is involved in the interpretation, monitoring, or control of cognition (Wells, 2009) and therefore refers to how people think rather than simply the content of their thoughts. Consideration of additional constructs, such as metacognitions, has in recent years enhanced understanding of the development and maintenance of a number of psychological disorders such as GAD and OCD (e.g. Wells, 2000). As such, metacognition has become an important construct in theories of psychopathology (Cooper, Grocutt, Deepak, & Bailey, 2007), forming the basis of "metacognitive theories" (e.g. Wells, 1995). Given the presence of high levels of anxiety, including obsessive compulsive symptoms in eating disorders (e.g. Halmi et al., 2005), metacognition may also be important in these populations. As such, there is now also literature supporting the importance of metacognition within AN and BN populations (see section 1.7.4), although as yet metacognition has not been explored in BED. Taking in to account the transdiagnostic proposal, that all eating disorders have shared, but distinctive, clinical features which tend to be maintained by similar psychopathological processes (e.g.

Fairburn et al., 2003) and metacognitive theory which suggests dysfunctional metacognitions are a generic vulnerability factor underlying psychopathology, it is likely that consideration of metacognition could also enhance our understanding of BED.

1.7 Metacognition

1.7.1 Definition of metacognition.

Metacognition can be defined as "stable knowledge or beliefs about one's own cognitive system, and knowledge about factors that affect the functioning of the system; the regulation and awareness of the current state of cognition, and appraisal of the significance of thought and memories" (p. 302; Wells, 1995). Therefore, metacognition refers to how people think rather than simply the contents of their thoughts.

Despite the emergence of the study of metacognition in the 1970s (e.g. Flavell, 1979) it has only recently been examined as a fundamental basis for most or all psychological disturbances (Wells, 2009). The domain of metacognition has been criticised for a lack of coherence, for example, with some terms relating to both cognitive and metacognitive processes and some authors have called for more theoretical work to be done in order to attain a unified definition of metacognition and its components (Veenman, Van Hout-Walters, & Afflerbach, 2006).

Wells (2000) identified three types of metacognitions; metacognitive knowledge, metacognitive experiences and metacognitive control strategies. Metacognitive knowledge is the beliefs and theories that individuals hold about their own cognitions. Metacognitive experiences include the appraisals of the meanings of specific mental events and the metacognitive feelings and judgements of the status of cognition e.g. "this thought means that I am mad" (Wells, 2000). Metacognitive control

strategies are the responses individuals make in controlling their cognitive system e.g. "I try to control my thoughts" (Wells, 2000).

1.7.2 Self-regulatory executive function model.

The dominant model regarding the role of metacognition in psychopathology is the self-regulatory executive function model (S-REF; Wells and Matthews, 1994, 1996). The S-REF model is an information processing model of emotional disorders. It was developed with the aim of overcoming the conceptual limitations of the schema theory of emotional disorders (Beck, 1967) and encompassing aspects such as attention, regulation of cognition, levels of control of processing and interactions between varieties of processing which are often neglected by existing cognitive theories.

The S-REF was the first model to conceptualise the role of metacognition in the aetiology and maintenance of psychological disturbance. It refers to two basic components of metacognition; knowledge and regulation. According to the model, metacognitive knowledge consists of the beliefs an individual holds about the course and consequences of their cognitions. This knowledge may be accurate or inaccurate, explicit or implicit and can be triggered unintentionally by retrieval cues. Metacognitive regulation involves executive functions such as planning, resource allocation, monitoring and correcting of cognitive events. The system becomes dysfunctional when regulation and knowledge processes become maladaptive and this is then associated with psychological disorder. Dysfunctional processes amount to the cognitive attentional syndrome (CAS, Wells, 2000), a processing style which contributes to emotional disorder and relapse. The CAS is characterised by self-focussed attention, threat monitoring, worry / rumination, online processing of negative self-beliefs and

utilisation of coping styles that interfere with the development of more adaptive knowledge.

The application of the S-REF model has important implications for treatment. S-REF theory states that the beliefs and appraisals hypothesised by cognitive theory to be central to psychopathology are generated by the metacognitive system. Consequently, modifying cognitions directly as in CBT may be ineffective. Whilst CBT would challenge the content of thought, higher levels of metacognitive dysfunction could remain and continue to generate such thoughts (Wells, 2000).

The specific component of metacognitive knowledge will now be discussed in more detail.

1.7.2.1 *Metacognitive knowledge.*

Metacognitive knowledge refers to the "beliefs and theories that people have about their own thinking" (Wells, 2009). Beliefs can be held about particular types of thoughts or about the efficiency of one's memory or powers of concentration. For instance, an individual's metacognitive beliefs about the importance of thoughts could be that some thoughts are harmful. Holding such beliefs has implications for how an individual responds to their thoughts and how they organise their thinking.

According to the S-REF model, there are two types of metacognitive knowledge; explicit beliefs and implicit beliefs. Explicit beliefs can be verbally expressed, for example, "Worrying is harmful to me". Implicit beliefs are not directly expressed verbally and can be thought of as the rules that guide thinking, such as the factors controlling the allocation of attention, memory search, and use of heuristics in forming judgments. Implicit beliefs represent the "thinking skills" that individuals have.

In addition to these two types of metacognitive knowledge, there are two broad domains of positive and negative metacognitive beliefs (Wells, 2000).

1.7.2.1.1 *Positive and negative metacognitive beliefs.*

Positive metacognitive beliefs are concerned with the benefits or advantages of engaging in cognitive activities such as threat monitoring and rumination. Examples of positive metacognitive beliefs include “It is useful to focus attention on threat”, and “Worrying about the future means I can avoid danger”. The existence of both positive and negative beliefs mean that whilst individuals are motivated to continue using worry-like strategies they are also concerned with the dangers of doing so.

Negative metacognitive beliefs are beliefs concerning the uncontrollability, meaning, importance, and dangerousness of thoughts and cognitive experiences. Examples include “I have no control over my thoughts”, and “I could damage my mind by worrying”. Metacognitive beliefs influence the way individuals respond to negative thoughts, beliefs, symptoms, and emotions (Wells, 2000).

1.7.3 Metacognition and psychopathology.

Support for the link between metacognitions and psychopathology has been demonstrated empirically and theoretically in many psychological and behavioural problems, including anxiety disorders (Wells, 1995), depression (Papageorgiou & Wells, 2003), psychosis (Larøi & Van der Linden, 2005), hypochondriasis (Bouman & Meijer, 1999), nicotine dependence (Nikcˇevic´ & Spada, 2008, 2010), obsessive compulsive disorder (OCD) (Wells & Cartwright-Hatton, 2004), pathological worry (Wells & Papageorgiou, 1998), post-traumatic stress disorder (PTSD) (Roussis &

Wells, 2006), and predisposition to auditory hallucinations (Morrison, Wells, & Nothard, 2000).

However, some of this research needs to be interpreted with caution. In their study, Roussis and Wells (2006) used a sample of students, some of whom had been exposed to major life stressors. However, few reported events invoking intense fear or horror required for a clinical diagnosis of PTSD making generalisations to a clinical population more difficult. Currently, research exploring metacognition also has to rely on a small number of self-report instruments (Wells & Cartwright-Hatton, 2004). In the study exploring hypochondriasis, Bouman and Meijer (1999) used a tailor made inventory to explore metacognition about health anxiety which did not have reliably established psychometric properties.

However, despite these difficulties metacognition has become an important construct in many cognitive theories and it has formed the basis for several disorder specific "metacognitive" models which are based on concepts originally derived from the S-REF model, for example, generalized anxiety disorder (GAD) and OCD (Wells & Matthews, 1994; Wells, 1997, 2000).

1.7.4 Metacognition and the eating disorders.

To date, to the author's knowledge there is no research specifically exploring metacognition in relation to BED. However, there is research which provides support for the importance of metacognition in relation to other eating disorders.

Two recent studies compared metacognitions in patients with AN to dieting and non-dieting women (Cooper et al., 2007; Woolrich, Cooper, & Turner, 2008). The first study used the self-report MCQ-30 (Wells & Cartwright-Hatton, 2004) to assess for metacognition. This is a shortened version of the 65-item Metacognitions Questionnaire

(MCQ; Cartwright-Hatton & Wells, 1997), based on the definitions of metacognition as described by Wells (2000). The results found that those with AN, compared to both control groups, had higher scores on metacognition indicating higher levels of uncontrollability and danger, cognitive confidence, need for control, and cognitive self-consciousness, but not higher levels of positive beliefs. Importantly, there were no differences on these dimensions between dieters and non-dieters, suggesting that the findings are typical of patients with AN, but not also typical of those who are currently trying to lose weight or non-dieters (Cooper et al., 2007). Woolrich et al. (2008) used a semi-structured interview to assess for metacognition. The interview incorporated metacognitive profiling questions as recommended by Wells (2000) and questions from previous interviews with patients with eating disorders designed to explore cognitions around eating, weight and shape (Cooper, Todd, & Wells., 1998; Turner & Cooper, 2002). Explicit metacognitions and metacognitive control strategies were found in all three groups of women, although the AN group was more likely to engage in metacognitive activity, believe that their thoughts were abnormal and uncontrollable and were more likely to use metacognitive control strategies that increased their negative mood or thoughts compared to the other groups. Both studies had a number of limitations. They used relatively small samples (AN n=15, normal dieters n=17, non-dieters n=18) and the clinical sample only consisted of participants with AN, making generalisability of the findings to other eating disorder diagnoses difficult. However, most of the AN group had a history of the binge purge subtype and some lacked the weight criteria for a DSM-IV diagnosis of AN, suggesting that the results may be applicable to those who engage in eating disorder behaviours other than restricting.

Konstantellou and Reynolds (2010) administered the MCQ-30 in a non-clinical sample to assess metacognition in those with problematic compared to normal eating

attitudes as measured by The Eating Attitudes Test (EAT-26, Garner & Garfinkel, 1979; Garner, Olmsted, Bohr, & Garfinkel, 1982). Those with problematic eating attitudes scored significantly higher on three out of five metacognition factors and total metacognition score compared to those with normal eating attitudes, supporting the previous studies. Unfortunately information was not provided as to the specific problematic eating symptoms present in the sample, so it is unclear as to whether certain eating disorder symptoms were more associated with metacognition than others.

Most recently, McDermott and Rushford (2011) compared a group of participants with AN to a control group recruited from the community with no self-reported current or past eating disorder symptoms. Both groups completed the MCQ-30 to assess for metacognitions and the results showed that relative to the control group, the AN group had higher scores on all metacognitive subscales. Unfortunately the study did not control for any other disorders such as anxiety and depression which could affect metacognition.

Caselli and Spada (2010) explored the presence of metacognitive beliefs in desire thinking in participants with a diagnosis of either BN, alcohol abuse, pathological gambling or smoking dependence. Desire thinking is a voluntary cognitive process involving verbal and imaginal elaboration of a desired target and is thought to play a significant role in the escalation of craving (Caselli & Spada, 2010). Presence of metacognitive beliefs was assessed using the metacognitive profiling interview (Wells, 2000). Five out of the six participants with BN identified positive and negative metacognitive beliefs about desire thinking. Unfortunately, this study only had a small sample of participants with BN and focussed specifically on metacognitions related to desire thinking. It is therefore possible that other metacognitions not explored in this study are important in BN.

Despite some methodological limitations, the above research is generally rigorous, provides support for the S-REF theory and suggests that pathological eating is associated with greater engagement in metacognitive activity and more maladaptive cognitive styles (Wells, 2000). However, as yet the research base is limited and further studies are required to explore more specifically the role of metacognition in the maintenance or development of eating disorders. In particular, there is no research exploring metacognition in relation to BED. If, as the S-REF suggests, dysfunctional metacognitions are a generic vulnerability factor underlying psychopathology, such beliefs should also be present in people with BED. If metacognition is shown to have an important role, this will have clinical relevance as strategies focussed specifically on metacognitive processing, such as those outlined by Wells (2000) for GAD and OCD, may also be a helpful focus for therapeutic intervention for BED.

1.7.5 A cognitive model of BN.

Recently, an eating disorder specific model has been developed in part from the S-REF model. The cognitive model of BN (Cooper, Todd & Wells, 2009) is grounded in metacognitive theory and includes a detailed explanation of the development and maintenance of BE episodes. It differentiates between different types of beliefs about eating and meta-beliefs about eating-related cognitive processes that interact in the development and maintenance of BN and BE. This model builds on an earlier model (Cooper, Wells, & Todd, 2004) but is more clearly grounded in Wells' metacognitive theory of psychological disorder (Wells, 2000). The model also draws on schema theories of Beck (Beck & Freeman, 1990) and Young (Young, 1990) when describing the development of BN.

The model suggests negative self-beliefs constitute a vulnerability to BN, although they only lead to disorder when they occur in conjunction with metacognitions that interpret and control cognition and behaviour. In this model, the metacognitions include positive and negative beliefs about eating and eating related cognitive processes. Following a trigger situation, negative self-beliefs are activated and expressed as negative automatic thoughts (NATs). This activation typically creates considerable emotional distress. Bingeing takes place to deal with the distress following positive beliefs about eating e.g. “bingeing will take away my painful feelings”. Negative beliefs about eating based on the perceived consequences of overeating, including assumptions related to weight and shape, will also be present. Conflict between positive and negative beliefs are resolved by permissive thoughts which includes beliefs / thoughts of having no control over eating during a binge. Bingeing is followed by negative self-appraisals which once again activates a person’s NATs.

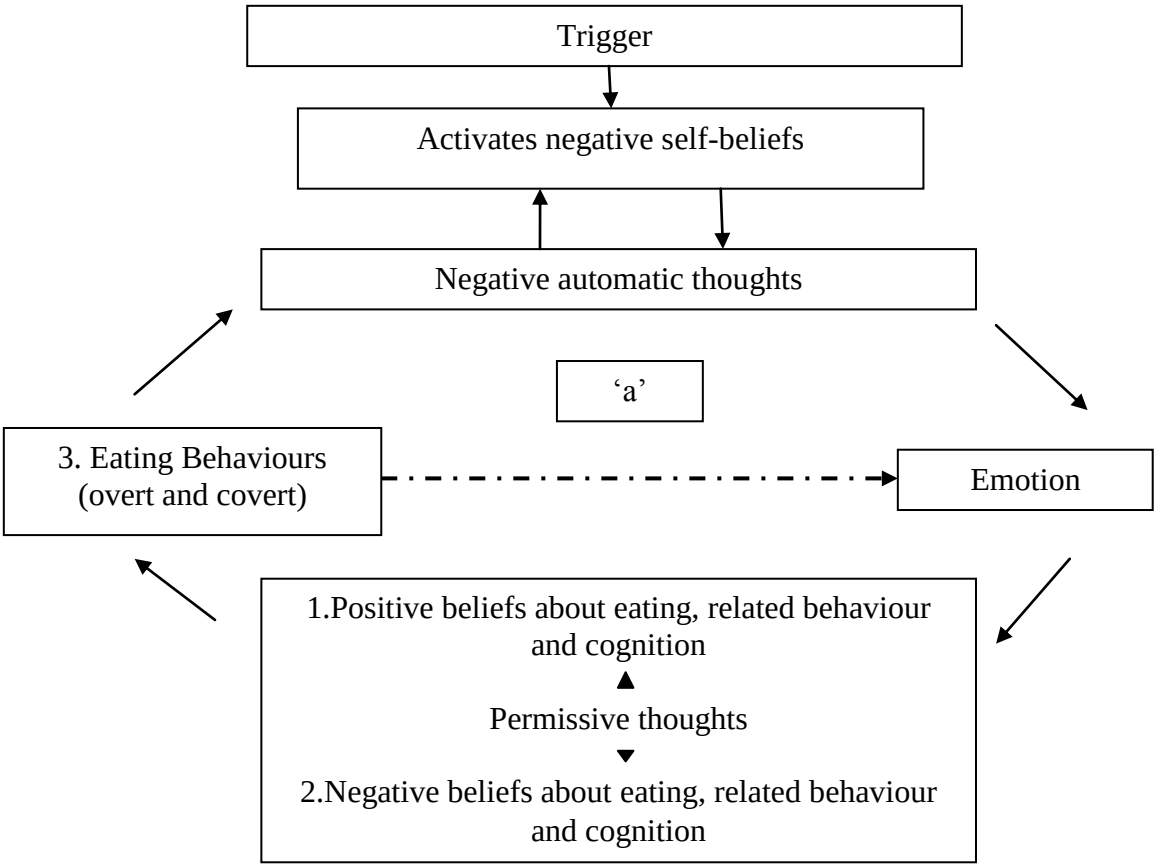

Figure 1. A cognitive model of BN (Cooper et al., 2009)

Note 'a' = Effects of distraction, direct efforts on emotion / body state, interoception

1. Positive beliefs about eating, about worrying about food, about selective attention
2. Negative beliefs about uncontrollability of eating behaviour and thoughts, consequences of eating
3. Eating behaviour includes bingeing, purging, worrying, attention to calories / body parts, hoarding food etc

The specific types of beliefs identified by the model as being important for the development and maintenance of BE will now be discussed in more detail.

1.7.5.1 *Negative self-beliefs.*

Young (1994) describes negative self-beliefs (which he terms "early maladaptive schemas") as representing the deepest level of cognition, usually established in very early childhood as a relatively adaptive response to the individual's

environment but this response becomes maladaptive over time. Eating disorders research suggests there is a particular role for schema-level cognitive representations (unrelated to food, shape or weight), reflecting unconditional negative beliefs about the self, others, or the world (e.g. Cooper, 1997; Hollon & Beck, 1994).

There are now a number of empirical studies supporting this view and indicating that negative self-beliefs play an important role in the development and maintenance of eating disorder symptoms including BE. For example, Waller, Ohanian, Meyer, and Osman (2000) found that women with BN could be differentiated in terms of three core beliefs (Defectiveness/Shame, Failure to Achieve, and Insufficient Self-Control) from a control group. In addition it was possible to distinguish the cognitive profiles of different bulimic disorders, relative to the comparison group. Normal weight BN patients saw themselves as flawed and lacking in control, but as relatively successful. In contrast, the bulimic anorexics saw themselves as even more flawed and lacking in control, but relatively unsuccessful. BED patients did not view themselves as strongly flawed or lacking in control, but saw themselves as relatively unsuccessful. At the symptomatic level, emotional inhibition was the best predictor of BE frequency, suggesting emotional inhibition may influence bingeing by making it particularly important to avoid the experience of intolerable emotions. This supports the idea that BE in BED assists the individual in managing intolerable emotions (Lacey, 1986; Root & Fallon, 1989) and serves an affect regulation function (Pitts & Waller, 1993).

A case control study compared a BED group, a BN group and a non-clinical group to investigate any differences in severity of schema level cognitions (Waller, 2003). Positively, all groups were matched for age and weight to ensure any real cognitive differences between groups could not be accounted for by objective concerns regarding weight and shape. The authors found the BED group had significantly more

pathological core beliefs than the non-clinical group and had similar levels to the BN group. Relative to the BN group, the BED group had particularly negative beliefs about their ability to experience or express emotions, their ability to function independently, and their need to sacrifice their own needs for those of others but had less pathological beliefs regarding the likelihood they would be abandoned. However, the decision to match groups for weight may limit comparisons with obese people with BED.

Nauta, Hospers, Jansen, and Kok (2000) interviewed obese women with BED and obese women with no episodes of bingeing using the "downward arrow" technique (e.g. Beck, Wright, Newman, & Liese, 1993) to elicit schemas. They found obese binge eaters reported significantly more negative self-schemas than obese non binge eaters.

Research has also explored the differences between obese and non-obese groups. Higher levels of maladaptive schemas (Social Isolation, Defectiveness/Shame and Failure to achieve) were found in an obese sample compared to a non-obese sample after controlling for BED (Anderson, Rieger, & Caterson, 2006).

The existing research supports the idea that negative self-beliefs play an important role in eating disorder populations including people with BED and specifically obese people with BED. Research also suggests that obese individuals without BED hold more negative self-beliefs compared to normal-weight individuals.

1.7.5.2 *Positive and negative beliefs about eating and weight and shape concerns.*

Eating disorders such as AN and BN are characterised by negative self-beliefs common to other psychiatric disorders such as depression (Vitousek & Hollon, 1990; Cooper et al., 1997). However, the specific psychopathology of eating disorders is thought to lie particularly in underlying assumptions concerned with weight and shape

or eating (e.g. Vitousek & Hollon, 1990; Cooper et al., 1997). These underlying assumptions are reflected in automatic thoughts about eating, weight and shape (Cooper, 1990).

Automatic thoughts or "the moment to moment unplanned thoughts ... that flow through our minds throughout the day" (Padesky & Greenberger, 1995, p.5) are included in cognitive models of other disorders (e.g. social anxiety, Clark & Wells, 1995; health anxiety, Warwick & Salkovskis, 1990). However, existing cognitive models of eating disorders are less developed in comparison to those in other disorders, particularly anxiety disorders (Wells, 1997).Whilst existing cognitive models of eating disorders do incorporate automatic thoughts (e.g. Fairburn, Cooper, & Cooper, 1986), they do not specify in detail the content of the thoughts and behaviours that maintain eating disorders.

However, the cognitive model of BN (Cooper et al., 2009) does provide this detail. The model proposes that automatic thoughts are present in the form of both positive and negative beliefs about eating. These are thought to be important in the maintenance of BN and the specific behaviour of BE and include metacognitive beliefs. The types of positive beliefs proposed are; that bingeing is a helpful behaviour, that it is necessary to focus attention on weight and shape-related information and that it is helpful to ruminate and worry about food, eating and one's body. These last two types are also metacognitive beliefs. Within the category of negative beliefs about eating, it is specifically proposed that weight and shape concerns may be present, possibly reflecting underlying assumptions related to weight and shape. The negative beliefs proposed are; that eating / food will lead to catastrophic weight gain, that bingeing is uncontrollable and that the thoughts and emotions associated with BN are dangerous.

The last two types represent metacognitive beliefs. The preoccupations and attentional patterns they represent epitomise the CAS (Wells & Matthews, 1994, 1996).

There is existing empirical research supporting the presence of both positive and negative beliefs in eating disorders. Cooper, Todd, Woolrich, Somerville, and Wells (2006) compared AN and BN groups with non-symptomatic dieters and non-dieting controls. Positive and negative beliefs about eating were found to predict eating disorder symptoms and both AN and BN patients had higher levels of these beliefs compared with dieters and non-dieters (Cooper et al., 2006).

Positive beliefs about eating have also been found to be important in BN in terms of coping with negative events and emotions (Sherwood, Crowther, Wills, & Ben-Porath, 2000). When faced with stressful negative events, women with BN reported significantly greater use of avoidance coping than sub-clinical bulimics for binge episodes but not for non-binge episodes. Avoidance coping items endorsed by the BN group included "eating helped distract me" and "eating helped me get rid of some angry feelings".

In a study by Cooper and Fairburn (1992), concurrent verbalisation and a self-report questionnaire were used to investigate self-statements in samples with AN, BN, two groups of dieters and non-dieting controls. Thoughts were collected while participants performed three behavioural tasks, looking at themselves in a full-length mirror, weighing themselves and eating a chocolate covered mint. Using both methods, both clinical groups had more negative thoughts related to eating, weight and shape than those in the three control groups. In addition, patients with AN showed a greater concern with eating while patients with BN showed a greater concern with weight and appearance. However, positive thoughts did not distinguish the groups.

A number of studies have assessed weight and shape concerns using the relevant sub-scales of the self-report Eating Disorder Examination questionnaire (EDE-Q; Fairburn & Beglin, 1994). Research suggests weight and shape concerns among persons with BED are comparable to those with BN and are significantly higher than in obese non-bingeing controls (e.g. Antony, Johnson, Carr-Nangle, & Abel, 1994; Hsu et al., 2002; Marcus, Smith, Santelli, & Kaye, 1992).

Similar studies using the EDE-Q have specifically compared obese binge eaters and obese non-binge eaters. Results have shown that compared to obese non-binge eaters, obese binge eaters scored significantly higher on the weight and shape subscales (e.g. Wilson, Nonas & Rosenblum, 1993; Eldredge & Agras, 1996).

Spitzer et al. (1993) used a single question to assess weight and shape concern among overweight individuals in a field trial of the diagnostic criteria of BED. They found overweight individuals with BED reported greater concern than overweight non-BED, but less concern than individuals with BN. Brody, Walsh, and Devlin (1994) similarly used a single-item question to compare obese binge eaters and non binge eaters and found no differences between groups (however, their sample size of 13 with BED may have been too small to detect group differences).

The above findings suggest that weight and shape concerns are important in BED and do not simply reflect the impact of obesity. However, concerns have been commonly assessed using the EDE-Q which is not an exclusive measure of weight and shape. In addition, the use of a single question to assess for weight and shape concern does not provide much insight into the specific cognitions present in the samples.

Existing research in AN and BN populations has adopted other approaches to explore cognitions related to eating, weight and shape in more detail. These studies used semi-structured interviews to ask participants about particular thoughts they had at

times when they had felt worried, anxious or bad about their eating (e.g. Cooper, Todd, & Wells, 1998; Turner & Cooper, 2002). This use of this methodology allowed for much greater detail about the specific content of cognitions to be obtained. Nauta et al. (2000) used a similar semi-structured interview with obese binge eaters and obese non-binge eaters. Participants were asked to report the thoughts that had run through their minds in recent situations in which they had struggled with their eating, weight or shape. If thoughts were identified, underlying schemas were explored using the "downward arrow" technique (e.g. Beck et al., 1993). Negative thoughts related to eating, weight and shape were present in both obese binge eaters and obese non-binge eaters. The majority of obese binge eaters also reported negative self-schemas that could be characterised as negative generalisations about the self combined with weight, shape, or eating concerns, whereas the majority of obese non-binge eaters mentioned weight, shape, and eating concerns that were not combined with negative generalisations about the self. Obese binge eaters also more strongly believed their negative self-schemas and automatic thoughts compared to obese non-binge eaters.

O'Connor and Dowrick (1987) also explored the presence of cognitions concerning eating, weight and shape in obese people without BED. Normal weight, obese, and previously obese people were asked to rate belief in and frequency of 26 dysfunctional cognitions concerning weight, food, and eating. Obese participants reported higher belief in dysfunctional food and weight-focused cognitions than normal-weight people.

Phelan (1987) administered the Bulimic Thoughts Questionnaire and found that obese participants and eating-disordered participants scored similarly on cognitions about their ability to maintain a desirable weight. However, eating disordered participants scored higher on cognitions about the unrealistic expectations of what

would happen if ‘‘forbidden food’’ was consumed as well as about being out of control with food.

The existing research supports the idea that positive and negative beliefs about eating, including weight and shape concerns, are important in eating disorder populations including individuals with BED. Some studies have specifically explored weight and shape concerns in obese people with BED and findings suggest that these people have more concerns related to eating, weight and shape than obese people without BED. Finally, research also suggests that obese individuals without BED hold more dysfunctional cognitions related to eating, weight and shape than normal-weight individuals, but have less pathologic scores on several measures of cognitions related to eating, weight and shape than eating disordered participants.

1.7.5.3 *Permissive thoughts.*

In the cognitive model of BN (Cooper et al., 2009), permissive thoughts are thought to be important for the occurrence of BE episodes as they have the effect of relinquishing personal responsibility by suggesting eating is out of the control of the individual (Cooper et al., 2004). Support for the inclusion of these thoughts in the model comes from the presence of dichotomous thinking, a type of permissive thought, typical of the negative self-statements characteristic of BN (Fairburn et al., 1986).

However, recent literature has questioned the role of permissive thoughts. Bergin and Wade (2012) suggest a predominance of positive beliefs about eating over negative beliefs may be sufficient to elicit bingeing and that permissive thoughts are not as relevant to the maintenance of BN as originally thought. This is also consistent with data showing levels of permissive thoughts were not found to be significantly higher in

AN and BN groups when compared to dieters and non-dieting controls (Cooper et al., 2006). The presence of these thoughts in obese binge eaters has not yet been explored.

1.7.5.4 *Relevance to obese binge eaters.*

Many of the different types of beliefs included in the cognitive model of BN (Cooper et al., 2009) have also been referred to and found to be important in earlier cognitive models of a range of eating disorders including AN and BN (e.g. Fairburn et al., 1986). This is in line with the recent transdiagnostic proposal, that all eating disorders have shared, but distinctive, clinical features which tend to be maintained by similar psychopathological processes (e.g. Fairburn et al., 2003). Therefore, it seems plausible to expect that some of the beliefs surrounding episodes of BE proposed in other eating disorder models, such as the cognitive model of BN (Cooper et al., 2009), may have some applicability to other cases of BE including BE in obesity. This is tentatively supported by the existing literature reported. If the types of thoughts and beliefs described in the model may be pertinent to obese binge eaters, this is worth exploring as it may help to increase understanding of this population.

1.8 Summary

Obesity is a major public health concern and poses a huge economic burden. Research suggests higher levels of psychopathology are found in obese people compared to non-obese. BED is an example of an EDNOS diagnosis in DSM-IV and is being considered for inclusion as its own diagnostic category in the new DSM-V (e.g. Striegel-Moore & Franko, 2008). It is characterised by recurrent episodes of BE during which an individual feels out of control. The BE must be experienced without the inappropriate weight control compensatory behaviours that characterise BN.

Population-based studies have estimated prevalence rates for BED of between 0.7 and 3.0% (e.g. Brownley et al., 2007). Although obesity is not specified as a diagnostic criteria for BED, the majority of people with BED are overweight. The literature suggests that BE or BED is one of the most reliable predictors of psychopathology in obesity.

Current treatments for obesity focus on weight loss and whilst they can be effective in the short-term, in the long-term individuals tend to regain any weight lost. Treatment for obesity has little impact on BE status. Current treatments for BED have been developed and adapted from recommended treatments for BN. In obese BE populations, treatment is effective in approximately 50% of cases, although weight loss is minimal and longer-term outcomes are questionable.

As yet there is no specific cognitive model of BED to guide treatment and the cognitions and cognitive processes involved in BED are not fully understood. In recent years, metacognitions have helped enhance understanding of a number of psychological problems and resulted in the development of a number of metacognitive models. As such, treatments have been adapted to target underlying dysfunctional metacognitions.

The S-REF model provides information regarding specific metacognitive beliefs common in psychological disorders. Metacognitions have been shown to play a role in AN and BN but there is no research exploring metacognition in a BED population. Research exploring this may help to develop understanding of the cognitions and cognitive processes important in BED.

The cognitive model of BN (Cooper et al., 2009) is an eating disorder specific model developed in part from the S-REF model. It is different to previous models of BN as it provides a detailed explanation of the cognitions and cognitive processes involved in the BE cycle within BN. The literature suggests that some of the types of beliefs in

the model may also be important in obese binge eaters. Semi-structured interviews have been used successfully to gain a detailed understanding of the content of beliefs in AN, BN and BED populations.

Using the thoughts and beliefs identified in the S-REF and cognitive model of BN as a guide, the presence of specific beliefs, including metacognitive beliefs, can be explored in obese binge eaters. If these thoughts and beliefs are applicable to this population, then it would enhance understanding of obese binge eaters and provide evidence to support the application of metacognitive models. This in turn might advocate the adaptation of CBT interventions to target additional constructs such as metacognitive beliefs. In addition, exploring specific cognitive and metacognitive beliefs experienced in obese people who binge eat compared to obese people who do not binge eat may also help clarify whether among obese individuals a subgroup can be differentiated on the presence of BE.

1.9 Research Questions

The following broad research questions were considered:

1. What cognitions and metacognitions related to eating, weight and shape are described by obese people who report binge eating?
2. What cognitions and metacognitions related to eating, weight and shape are described by obese people who do not report binge eating?
3. Do the cognitions and metacognitions related to eating, weight and shape differ in obese people who report binge eating compared to obese people who do not report binge eating, and if so how?

2 Method

2.1 Overview of Chapter

The study's mixed-methods design is discussed in line with the researcher's critical realist epistemological stance and the rationale for the specific methodology is explained. The final sample size and inclusion and exclusion criteria are reported. The measures, including a semi-structured interview and self-report questionnaires, are described and the rationale for the use of each measure is discussed and psychometric properties are reported. The procedure is described as are the ethical considerations taken into account during the study. Details of the plan of analysis are included as are the steps taken to ensure the quality and trustworthiness of the data. Finally, reflexivity and the researcher's position are discussed.

2.2 Design

A mixed methods study was designed to explore and compare the cognitions and metacognitions related to eating, weight and shape reported by obese people with BE and BED and those without BE. Initially, the study was designed to be a large quantitative study with a smaller qualitative component. However, due to recruitment difficulties (see Appendix A for full account) the qualitative component became the focus of the current research, although additional quantitative information was used to contextualise the findings. The study was conducted in collaboration with another researcher investigating the same population. The data collection responsibilities were shared but projects were written up separately (the collaborative nature of the study is discussed in more detail in Appendix B).

Semi-structured interviews were conducted with all participants. In order to conform with the researcher's epistemological position, the specific qualitative

methodology selected to analyse the data was thematic analysis in the form of template analysis. Participants were also asked to complete seven self-report questionnaire measures in order to characterise the sample and to explore whether scores supported the qualitative data.

Whilst this study was interested in the results for both the binge eaters and non-binge eaters, the focus was predominantly on the binge eaters and the non-binge eaters were used as a control group. This increased the chances of any real cognitive differences between the groups being attributable to the BE rather than any objective concerns regarding weight and shape. This might have been problematic if the control group had been normal weight participants with BE.

2.2.1 Rationale for qualitative research.

Qualitative research has typically been used to investigate areas that do not easily lend themselves to quantification. This may include gaining an understanding of intricate details about phenomena such as lived experiences, feelings, beliefs, thought processes, cultural and social issues (Strauss & Corbin, 1998). Qualitative methods are also useful in generating hypotheses and in discovery-oriented research, permitting a flexible approach to data collection and analysis. Within qualitative research there are many approaches that can be adopted, each emphasising different theoretical and / or methodological stances which can allow for knowledge of existing literature to be taken in to account prior to analysing data.

Currently there is little research exploring and comparing the experiences of obese people with and without BE. Specifically, there is a lack of psychological knowledge about the particular cognitions and metacognitions that may be important in these two groups and only tentative hypotheses can be made based on the existing

literature. Therefore, new exploratory studies are required in order to give rise to new ideas and theories. The current study is preliminary and exploratory in nature and adopted a qualitative approach to allow for rich data, emphasising the participants' particular beliefs and thought processes. The aim was to develop new ideas whilst using an approach which also enabled existing concepts to be acknowledged and investigated.

2.2.2 Ontological and epistemological position.

The researcher takes an epistemological stance which falls within the critical realist framework, in which it is believed there is an external reality that exists independently of individual subjective understanding. This reality is only available through interpretation and within the context of both participant and researcher. The critical realist approach also recognises that all observation is fallible, has error and that all theory is revisable. Emphasis is placed on the critical importance of respondents' own interpretations of the relevant research issues and it is accepted that diversity of perspectives adds richness to our understanding of the ways reality has been experienced. Both interpretivism, emphasising the importance of understanding people's perspectives in the context of the conditions and circumstances of their lives, and pragmatism, believing in choosing the most appropriate method to address research questions, are embraced.

Although there is no specific cognitive model of BE within obesity, in other eating disorder populations there are existing cognitive models which are supported by an evidence base. This evidence supports the existence of certain components of the models. These components are likely to form an external reality that could emerge through a range of research approaches. However, it is also recognised that these components may be experienced differently between people. Emphasis is placed on

respondent's interpretations of their experience. Since the reality itself is likely to be multifaceted, different accounts of how this reality has been experienced would add depth to our understanding of obese people who binge compared to those who do not.

2.2.3 Rationale for using template analysis.

Template analysis was chosen for this study for a number of reasons. It is a pragmatic approach that can be used from within a range of epistemologies and was appropriate for use within the critical realist framework adopted in this study. Other more well-established qualitative methodologies such as discourse analysis, grounded theory and content analysis were considered but were deemed less appropriate. For example, discourse analysis tends to be underpinned by a social constructionist epistemology and does not assume a direct relationship between what people say and what they think or believe and is therefore not in line with the critical realist stance of this research. Grounded theory can be used from a range of epistemologies but the methodology advocates analysing data with as few pre-determined ideas as possible and therefore would not have allowed for the inclusion of the pre-existing ideas or conceptualisations discussed in the introduction chapter of this thesis. Content analysis was also considered as this approach is also appropriate for a critical realist stance. However, content analysis involves counting particular themes within the data and makes the assumption that the frequency of a theme corresponds to its salience. Given the small sample size in this study it was decided making an assumption as to the salience of a theme based on the frequency could be potentially problematic. In addition, given the exploratory nature of this study it was decided that content analysis might not allow for the rich depth of data that could be gathered through template analysis.

Template analysis integrates data-driven codes with theory-driven ones and uses a systematic and transparent process of data collection and analysis (Fereday & Muir-Cochrane, 2006). The analysis follows a structured framework in which the researcher generates a template prior to analysis based on theory and evidence. This template can then be modified and extended according to the data, and therefore the participants' individual experiences (King, 2004).

This methodology offered a flexible approach to analysis, relevant to the exploratory and theoretical levels of the study. It was particularly appropriate due to the considerable existing literature on obesity and eating disorders in general, allowing for the development of a priori themes, and for modification in this under-researched area.

2.2.4 Rationale for interviews.

In the case of template analysis, there are few restrictions as to the method of data collection as it can be employed to analyse any form of textual data from many methodological and epistemological positions.

The method chosen to collect the data was semi-structured interviews. Interviews are ideal for exploring complex processes and issues, where the views of participants cannot be easily represented through questionnaires (Burman, 1999). They are considered preferable to focus groups when the topic is likely to be seen as confidential and there may be issues of power or status (Ritchie, 2003). Previous research in similar areas has also used semi-structured interviews to good effect (e.g. Woolrich et al., 2008; Turner & Cooper, 2002) and there is already an existing interview which has been designed to explore metacognitions and can be adapted for use in different populations (Wells, 2000).

2.3 Participants

A convenience sample of participants with medical obesity either with or without BE took part in the study. Participants were recruited either from the tertiary Obesity Clinic based at Addenbrooke's Hospital in Cambridge or the Cambridgeshire Community Services Weigh2Go weight loss programme. Any person attending either the Obesity Clinic or weight loss programme was invited to take part providing they met additional inclusion criteria.

2.3.1 Inclusion criteria.

Any person taking part was required to be classified as medically obese according to Government guidelines (BMI≥30). In addition, accounts of current BE or BED were required for the binge eaters and no current BE was required for the non-binge eaters (initially identified from results of the Eating Disorder Examination Questionnaire [EDE-Q; Fairburn & Beglin, 1994] and confirmed at interview using DSM-IV criteria).

All study documents were written in English, therefore a reasonable command of the English language was required for participation. The minimum age for participation was 18 years in line with the Obesity Clinic and weight management programme inclusion criteria.

2.3.2 Exclusion criteria.

Any person displaying characteristics for eating disorders other than BED (screened by clinic staff and the EDE-Q) were excluded from the study to ensure only BE was being investigated in line with the research questions.

2.3.3 Sample size.

The final sample size included 10 obese participants, five with and five without BE or BED. This number mirrored similar research (Simpson & Papageorgiou, 2003; Spada & Wells, 2006), and allowed a balance to be reached between the level of saturation and the practicalities of recruitment (Marshall, 1996). Within qualitative research, an emphasis is placed on depth and quality of data as opposed to the number of participants and therefore, this was felt to be a sufficient sample to achieve a broad representation of views and to begin exploring the topics outlined.

The researcher and collaborating researcher shared the task of data collection with both completing and transcribing five interviews.

2.4 Measures

A semi-structured interview was used to explore and compare the cognitions and metacognitions related to eating, weight and shape in obese people with and without BE. Demographic information was also collected and all participants were asked to complete six self-report measures. These were used to assess the eating behaviour and psychological paradigms investigated in this study and to contextualise the qualitative findings. The measures were chosen based on their suitability to explore the specific variables being investigated, whilst taking into account practical constraints and evidence of adequate psychometric properties. Where required, the measures were purchased and permission to use them was sought from the relevant organisation or author. Copies of the interview and all questionnaires used in the study are included in Appendix C, apart from the YSQ-S and the HADS due to copyright reasons.

2.4.1 Semi-structured interview.

The interview was based on the metacognitive profiling interview template (Wells, 2000) and was adapted to include additional questions to specifically help participants identify cognitions related to eating, weight and shape. Both researchers received training in the implementation of the interview from one of the study supervisors who had used the interview in previous research.

The metacognitive profiling interview is designed to elicit specific metacognitive factors, including declarative beliefs about the meaning of thoughts, beliefs about cognitive control strategies and the nature of goals and cognitive processes activated under conditions of distress. The template has been useful in the development of specific models of psychological disorders, including the cognitive model of GAD (Wells, 1995, 1997) and of social phobia (Clark & Wells, 1995). The interview framework has been used with people with AN (Woolrich et al., 2008), but to the author's knowledge it has not been used with a BED population. However, the template can be specifically adapted to fit the population being investigated. In this study therefore, participants were asked to think about the most recent time they had felt worried, anxious or bad about their eating. Those people who were binge eaters were specifically asked to think about this in relation to a binge episode. Prompt questions were used to set the scene (e.g. "where were you?", "what were you doing?"). Participants were then asked about what had triggered these situations and what thoughts had gone through their mind. Using these identified thoughts, participants were asked about meta-beliefs / appraisals of their thoughts and the advantages / disadvantages of thinking in this way. Participants were also specifically asked about their thoughts on their weight and shape. In line with the exploratory and qualitative

nature of the study, the researchers also demonstrated curiosity and flexibility to topics as they arose during the interview.

2.4.2 Demographic information form.

Basic demographic information was required to contextualise the findings of the study. The investigator and collaborating researcher constructed a form to capture a participant's age, gender, ethnicity, marital status, current height and weight and any current and previous weight loss treatments.

2.4.3 Quantitative self-report measures.

2.4.3.1 *Eating Disorder Examination – Questionnaire (EDE-Q; Fairburn & Beglin, 1994).*

The EDE-Q is the self-report questionnaire version of the Eating Disorder Examination interview (EDE; Fairburn & Cooper, 1993). The EDE-Q consists of 36 items targeting information about eating behaviours and attitudes. It comprises four scales: Dietary Restraint, Weight Concern, Shape Concern, and Eating Concern. Respondents are asked to record the degree to which a statement applies to them or the extent to which they have engaged in a specific behaviour using a 7- point scale with higher scores reflecting greater severity or frequency. A total EDE-Q global score is calculated as the mean of the four scales. Further scales determine the frequency of specific eating disorder and compensatory behaviours such as BE, vomiting and laxative misuse. These are assessed for their presence over the previous 28 days. Unlike the EDE interview, the EDE-Q does not rate diagnostic items for the additional duration stipulations (i.e., 6 months for BED).

2.4.3.2 *Psychometric properties of the EDE-Q.*

The EDE-Q has demonstrated acceptable internal consistency (Cronbach's alpha range .78 to .93) and test-retest reliability (*r* range from .81 to .94) for the individual subscales in a community adult sample (Luce & Crowther, 1999). In a specific sample of people with BED, test–retest reliability was excellent for objective bulimic episodes (r_s = .84), but poor to unacceptable for subjective bulimic episodes and objective overeating episodes (r_s = .51 and .39 respectively). In this sample, test–retest reliabilities were good for the EDE-Q subscales (r_s range .66 to .77) (Reas, Grilo, & Masheb, 2006).

In a validation study of the EDE-Q in a community sample, scores on the EDE-Q and the EDE were highly correlated and to a similar degree across the four subscales (*r* range .68 to.78) (Mond et al., 2004b). Studies have also demonstrated agreement between the EDE-Q and EDE in clinical samples. In a sample of people with BED, the EDE and EDE-Q subscales have also been found to be significantly, although modestly related (*r* range .63 to .69) (Wilfley et al., 1997). In a sample of bariatric surgery candidates, ratings of frequency of binges (objective bulimic episodes) have also been found to be significantly correlated on the EDE and EDE-Q (Kendall's tau-b = .46, $p <$ .0001) and also did not differ significantly following a Wilcoxon signed rank sum test (S = −125, ns) (Kalarchian, Wilson, Brolin, & Bradley, 2000).

Discriminant validity data on the EDE-Q are available for obese patients presenting for treatment. BE frequency items were used to identify binge eaters and compare them to non-binge eaters across a broad range of eating and weight-related characteristics. Even though bingers and non-bingers weighed the same, the binge-eaters reported significantly less perceived control over eating, more fear of weight

gain, more dissatisfaction with weight, and more preoccupation with food and weight (Wilson, Nonas, & Rosenblum, 1993).

2.4.3.3 *Rationale for using the EDE-Q.*

The study required a self-report measure of eating disorder psychopathology to assess initially for the presence of BE or BED and to assess for eating disorder psychopathology other than BE in line with the exclusion criteria. Whilst the EDE interview is widely regarded as the 'gold standard' for assessing eating psychopathology (Wilfley, Schwartz, Spurrell, & Fairburn, 2000) it requires extensive training to be used reliably and is expensive and time consuming to administer. In contrast, the EDE-Q is brief, inexpensive and can be sent out in the post. There is also a good association between the EDE and the EDE-Q. The EDE-Q also addresses some of the shortcomings of other self-report measures of BE; it defines the terms "binge" and "binge eating" for the individual completing the questionnaire; provides a clear-cut measure of the specific behaviour of BE rather than exploring the eating habits, attitudes, and feelings associated with BE and it specifies a consistent time frame for the occurrence of BE (Wilfley et al., 1997).

2.4.3.4 *The Metacognitions Questionnaire-30 (MCQ-30; Wells & Cartwright-Hatton, 2004).*

The MCQ-30 is a shortened version of the 65-item Metacognitions Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997). The MCQ-30 assesses individual differences in metacognitive beliefs, judgements and monitoring tendencies. The 30 items measure five distinct metacognitive factors considered important in psychological distress; cognitive confidence (e.g. "my memory can mislead me at

times"), positive beliefs about worry (e.g. "worrying helps me cope"), negative beliefs about thoughts concerning uncontrollability and danger (e.g. "when I start worrying I cannot stop"), cognitive self-consciousness (e.g. "I pay close attention to the way my mind works"), and beliefs about the need to control thoughts (e.g. "not being able to control my thoughts is a sign of weakness"). Respondents are asked to rate from 1 (do not agree) to 4 (agree very much) to what extent they agree with the statements presented.

2.4.3.5 *Psychometric properties of the MCQ-30.*

Wells and Cartwright-Hatton (2004) explored the psychometric properties of the MCQ-30. Internal consistency for the total score and five subscales was good to excellent (Cronbach's alpha range .72 to .93). The MCQ-30 factor structure was also consistent with that of the original scale. Acceptable to good test–retest reliability was demonstrated with coefficients ranging from .59 to .87 for the individual subscales and total score. There were also significant positive associations between MCQ-30 subscales and convergent validity measures looking at worry and obsessive-compulsive symptoms. To the author's knowledge the MCQ-30 has not been used in an obese, BE population.

2.4.3.6 *Rationale for using the MCQ-30.*

The 65-item MCQ is restricted in its application by its length. Therefore, the shorter MCQ-30 was selected for this sample in order to give a quantitative measure of several dimensions of metacognition thought to be relevant to psychopathology according to the S-REF theory.

2.4.3.7 *Eating Disorder Thoughts Questionnaire (EDTQ; Cooper, Todd, Woolrich, Somerville, & Wells, 2006).*

The EDTQ is a self-report measure consisting of 26 items and three factors. The typical thoughts included were identified to sample three theoretical themes: positive thoughts about eating (e.g. "If I don't eat I'll lose control"), negative thoughts about eating (e.g. "I'll get fat"), and permissive thoughts (e.g. "It doesn't matter if I keep eating"). Belief in each item is rated on a Likert scale (0–100). End points are anchored at "I do not usually believe this at all" and "I am usually completely convinced that this is true". Subscales are scored by adding the total for each subscale and dividing by the number of items.

2.4.3.8 *Psychometric properties of the EDTQ.*

Cooper et al. (2006) conducted a preliminary evaluation of the questionnaire. Cronbach's alphas for the three factors were found to be .89 (positive thoughts), .93 (negative thoughts) and .80 (permissive thoughts) and good construct and criterion related validity were also demonstrated. All three subscales were also significantly correlated with each other (positive thoughts and negative thoughts .60; positive and permissive thoughts .49; negative thoughts and permissive thoughts .44, all p values < .01, two-tailed tests). In terms of discriminant validity, an AN population reported significantly more negative and positive thoughts than both dieters and controls (p < .001, all comparisons). Dieters reported significantly more negative thoughts than controls (p < .01). In addition, a BN population scored significantly higher than both dieters and controls (p < .001, all comparisons). The dieters also scored more highly on negative thoughts than the controls (p < .001). There were no differences between

groups on permissive thoughts. To the author's knowledge the EDTQ has not been used in an obese, BE population.

2.4.3.9 *Rationale for using the EDTQ.*

The EDTQ specifically targets the positive and negative beliefs about eating incorporated in the Cooper et al. (2009) model of BN underpinning this study. It was included to compare to the qualitative data collected. There are few measures other than the EDTQ that have been developed specifically to investigate eating disorder related thoughts. Other existing measures do not distinguish between different types of thought and only one was developed using factor analysis or principal components analysis, although the three factors identified do not map onto a clear theory of eating disorders (Phelan, 1987).

2.4.3.10 *Eating Disorders Beliefs Questionnaire (EDBQ; Cooper et al., 1997).*

The EDBQ is a self-report measure consisting of 32 items and four factors. The four factors are negative self-beliefs (e.g. "I'm unlovable"), weight and shape as a means to acceptance by others (e.g. "If I lose weight I'll count more in the world"), weight and shape as a means to self-acceptance (e.g. "If my flesh is firm I'm more attractive") and control over eating (e.g. "If I eat a forbidden food I won't be able to stop"). Belief in each item is rated on a Likert scale (0–100). End points are anchored at "I do not usually believe this at all" and "I am usually completely convinced that this is true". Subscales are scored by adding the total for each subscale and dividing by number of items.

2.4.3.11 *Psychometric properties of the EDBQ.*

Cooper et al. (1997) conducted a study citing preliminary development of the measure. Internal consistency for each factor was shown to be high (Cronbach's alphas = negative self-beliefs .93, acceptance by others .94, self-acceptance .88 and control over eating .86). All four subscales were also significantly correlated with each other (all $p < .01$). In terms of convergent validity, all subscales of the measure were significantly correlated with other measures of eating disorder psychopathology (EAT, BSQ, DEBQR, all $p < .01$). In terms of discriminant validity, scores on all four subscales were significantly different for an AN group compared with a control group (all $p < .01$). To the author's knowledge the EDBQ has not been used in an obese, BE population.

2.4.3.12 *Rationale for using the EDBQ.*

A quantitative measure looking at assumptions related to eating, weight and shape theoretically thought to be important in the maintenance of disturbed eating behaviours (Cooper et al., 2009) was included to compare to the qualitative data collected. Few measures other than the EDBQ have been developed specifically to investigate these assumptions. The few other measures available do not provide clear assessment of assumptions uniquely characteristic of eating disorders and there is little psychometric information available.

2.4.3.13 *Young Schema Questionnaire (Short Form) (YSQ-S; Young, 1998).*

The YSQ-S is a self-report short form measure of the Young Schema Questionnaire (YSQ; Schmidt, Joiner, Young, & Telch, 1995). The YSQ-S is designed to measure a range of early maladaptive schemas. The questionnaire consists of 75

items and 15 subscales reflecting schema themes. The 15 scales were those previously validated in the YSQ. The scales are grouped into schema domains each of which consists of 5 items from the original scale. Each item is rated on a 6-point scale, ranging from "completely untrue for me" to "describes me perfectly". The overall score for a subscale is calculated from the mean of the items in that scale. In all cases, a higher score reflects a more maladaptive, unhealthy core belief.

2.4.3.14 *Psychometric properties of the YSQ-S.*

Studies comparing the YSQ and the YSQ-S have shown that the two questionnaires have equivalent psychometric properties. Good internal consistency has been demonstrated for both in BN and comparison populations (Cronbach's alphas of .99 for the YSQ and .96 for the YSQ-S in the BN group and .97 for the YSQ and .92 for the YSQ-S in the comparison group). In addition, for each subscale, the alpha level was greater than .80 for each group on both questionnaires (Waller et al., 2001). In terms of distinguishing between groups, the YSQ-S identified that the BN population saw themselves as flawed and unable to control their impulses and had an overall correct allocation rate of 87% of the BN population to the clinical group. The measure has also been used to distinguish a BED group, a BN group and a non-clinical group. The results found that the BED group had significantly more pathological core beliefs than the non-clinical group and had similar levels to the BN group (Waller, 2003). The YSQ-S has also been used to show differences between overweight and non-overweight adolescent girls, with more negative self-beliefs being reported by the overweight group (Turner, Rose, & Cooper, 2005).

2.4.3.15 *Rationale for using the YSQ-S.*

A measure of negative self-beliefs was included as these beliefs are thought to be important in both the cognitive model of BN (Cooper et al., 2009) and the S-REF model (Wells, 2000). The YSQ-S was used as opposed to the YSQ as the YSQ is lengthy (consisting of 205 items) and consequently there are likely to be issues of compliance and accuracy in its completion (Waller, Meyer, & Ohanian, 2001). The YSQ-S however consists of 75 items making it quicker and simpler to complete, maximising response rates.

2.4.3.16 *Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983).*

The HADS is a 14-item self-report screening questionnaire divided into anxiety and depression subscales (HADS-A and HADS-D) with seven items assessing each subscale. The scoring provides information on the potential presence and severity of anxiety and / or depression over the course of the previous week. Higher scores represent higher levels of psychopathology.

2.4.3.17 *Psychometric properties of the HADS.*

A literature review investigating the psychometric properties of the HADS found adequate internal consistency in all 15 studies (Cronbach's alpha range for HADS-A .68 to .93 (mean .83), and for HADS-D .67 to .90 (mean .82) (Bjelland, Dal, Tangen Haug, & Neckelmann, 2002). When compared to other commonly used questionnaires for anxiety and depression such as the BDI, STAI, CAS, and SCL-90 Anxiety and Depression subscales, the correlation with HADS-D and HADS-A respectively were between .60 and .80, demonstrating medium to strong correlations,

suggesting that the concurrent validity of HADS is good (Bjelland et al., 2002). The HADS has also demonstrated a test-retest reliability coefficient of .84 (Marinus, Leentjens, Visser, Stiggelbout, & van Hilten, 2002).

2.4.3.18 *Rationale for using the HADS.*

As previous research has indicated increased psychopathology in people with more severe obesity and people with BED, the HADS was included to allow for consideration of the impact of anxiety and depression levels on the other results. The HADS was specifically selected for this purpose as it is a brief, reliable and valid measure widely used in both clinical and research work and has been used previously in obese BE populations (e.g. Golay et al., 2005). It is also practical for using with medical groups, as compared with other patient-reported outcome measures for assessing anxiety and depression, the HADS has less emphasis on the somatic features associated with these disorders (Snaith & Zigmond, 1994).

2.5 Procedure

The study recruited from the Obesity Clinic at Addenbrooke's Hospital and the Weigh2Go weight loss programme run by the Nutrition and Dietetic Service from Cambridgeshire Community Services. The procedure for each site was slightly different and is detailed below.

2.5.1 Addenbrooke's Obesity Clinic.

Clinic staff were asked to provide all new referrals with a flyer giving brief details about the study. Posters were also used to advertise the study in the clinic waiting areas. If someone was interested in participating staff members provided them

with a research pack. Research packs included a participant information sheet (PIS) (Appendix D) providing details of this and the collaborating researcher's study, possible risks involved in taking part and participants' right to withdraw. It also included the researchers' contact details if the participants wished to discuss the study further. A consent form for the questionnaires (Appendix E) and an invitation form to take part in the semi-structured interviews was also included (Appendix F), asking the participant to provide their contact details and to give consent for the researchers to contact them in order to arrange a time to complete the interview. Finally, a demographics questionnaire and the self-report measures were included along with instructions on how to complete these measures. Participants were asked to either post back their completed forms and questionnaires in the stamped-addressed envelope provided or to return them to the clinic and leave them in a specially provided collection box.

2.5.2 Cambridgeshire Community Services weight loss programme.

Any obese person (determined by BMI≥30) referred to this service is sent an invitation to treat letter requiring the person to make contact if they would like an appointment. If the person makes contact and books an appointment, they are sent follow up information. At this stage, staff members sent the PIS for the research study out with the appointment information. At the bottom of the PIS was a section for those interested in taking part to complete, asking for consent for their contact details to be given to the researchers (Appendix D). Staff members passed on details of any participant bringing back a completed slip to the researchers via nhs.net accounts. The researchers then telephoned potential participants to confirm they were interested in taking part and if so research packs were posted out. These packs were the same as those issued to participants recruited from Addenbrooke's Obesity Clinic.

2.5.3 Interview procedure.

When a research pack was returned from either site, one of the researchers telephoned the participant to arrange a convenient time, date and location for the interview to be conducted (generally the participant's home or GP surgery). At the appointment written consent was obtained to take part in the interview. The interviews lasted between 33 minutes and 1 hour 30 minutes and all were audio-recorded using a digital voice recorder. The interviews were conducted in an informal manner and the researcher demonstrated curiosity and flexibility to topics as they arose. The digital recordings were transcribed verbatim as soon as possible after each interview and any identifying material was removed.

2.5.4 Determining BE status.

The researchers made a preliminary decision about whether a participant was a binge eater or not based on their answers from their returned EDE-Q. This was clarified by reviewing DSM-IV criteria with participants over the telephone when booking the interview. Both researchers received training in the implementation of the diagnostic criteria from one of the study supervisors who is experienced in using the criteria clinically. Finally this was also repeated in person prior to starting the interview. There were no discrepancies in terms of BE status between reports over the telephone and prior to interview. However, there were some discrepancies between these reports and EDE-Q scores. In these cases verbal reports were used to determine BE status.

2.6 Ethical Considerations

2.6.1 Ethical approval.

Final ethical approval was granted from Essex NHS Research Ethics Committee on 29th November 2011 (Appendix G). Research and Development approval was granted by Addenbrooke's Research and Development department on 11th January 2012 and by Cambridgeshire Community Services on 6th December 2011 (Appendix H) and letters of access were obtained for both trusts (Appendix I).

2.6.2 Informed consent and coercion.

Potential coercion was minimised by allowing potential participants to opt in to the study and to consider the information sheet in their own time at home.

Participation was voluntary, as clearly detailed in the PIS. The PIS also included the researchers' email contact details to provide potential participants with the opportunity to discuss the research further. It was also made clear in the PIS that participants could decide to discontinue without giving a reason and without any consequences for their current or future health provision. Participants were asked to give written consent to be initially contacted by the researchers by telephone regarding the interview. At the interview, participants had further opportunities to ask questions and additional written consent was obtained prior to the interview starting.

2.6.3 Confidentiality, anonymity and data protection.

All data collected were processed by the main or collaborating researcher, anonymised and stored under an allocated study number rather than by participant name. Raw data from the interview transcripts and questionnaires were kept separately from participant details. Participants were informed that quotes from their interview

may be used in the write up of the study, but personally identifying information would be removed.

The interview recordings, transcripts and questionnaires were kept in locked filing cabinets (in accordance with the Data Protection Act, 1998). The digital voice recordings will be destroyed at the end of the research. Hard copies of participant data and all electronic data, only identifiable by a participant number, will be kept for five years after submission in locked filing cabinets at the University of East Anglia (UEA) in accordance with NHS ethics committee guidelines. Only the author, the collaborating researcher and their supervisors have access to the raw data.

2.6.4 Potential for distress.

The study did not involve exposing participants to unpleasant or harmful situations and it was not anticipated that taking part in the interview or completing the self-report measures would cause distress to participants. Any potential for interviewees to feel distress during the interview was also minimised as participants were encouraged to take the position of expert and did not have their opinions contested. However, if any participant had become distressed, the interview would have been stopped and the researcher, experienced in working with emotional distress, would have provided support. Participants would have been asked for their GP contact details who would have been informed. If researchers had been concerned about risk issues during the interview, the local liaison psychiatry department would have been informed. All participants were asked if any concerns had arisen during the interview to allow debriefing. Participants were also provided with the researchers' contact details if they wished to discuss any issues arising from the study. Participants were informed of these procedures on the PIS and prior to starting the interview. Ultimately, no interviews

needed to be stopped, no risk issues were identified and no participants raised any issues arising from the study.

2.6.5 Feedback

If they wished, participants had the opportunity to provide their contact details in order to be sent a brief outline of the results of the study in the post. Debriefing sheets were also left at Addenbrooke's Obesity Clinic.

2.7 Plan of Analysis

2.7.1 Qualitative data.

In line with template analysis as described by King (2004), a priori themes for both binge eaters and non-binge eaters were defined according to previous literature. The digital recordings of the interviews were then transcribed verbatim by the interviewer and the text was read thoroughly as part of the process of familiarisation with the data. Parts of the transcripts relevant to the research questions were identified and initial coding of the data was carried out. If these sections were encompassed by one of the a priori themes, then the appropriate code was attached to the identified section. If there was no relevant theme, then an existing theme was modified or a new one devised. If the a priori, theoretical themes were not found to be supported by the data, then they would be discarded. After coding a subset of two transcripts for both binge eaters and non-binge eaters, two initial templates were produced. The templates were then applied to the remaining data set. When a relevant piece of text did not fit comfortably in an existing theme, the templates were modified. Identified themes were grouped in to a smaller number of higher-order codes which described broader themes in the data.

The analysis was expected to produce frameworks of theory-driven themes based on the Cooper et al. (2009) model of BN, the S-REF model and also on emergent themes. The final frameworks could be compared and contrasted to the research reviewed, informing how similarities and differences might be understood theoretically and how these might inform theory development.

2.7.2 Quantitative data.

Demographic information and the quantitative questionnaire scores were used to characterise the sample and to explore whether the scores supported the qualitative data.

2.8 Quality Checks and Trustworthiness

Qualitative research has been criticised for its lack of rigour when compared to quantitative studies. These criticisms have prompted the publication of clearer guidelines for conducting qualitative research. These guidelines aim to provide researchers with criteria to assist with performing quality checks to improve overall research quality. Therefore, where possible principles set forward by Elliot, Fischer, and Rennie, (1999) and Yardley (2000) were adhered to in the current study in order to ensure the quality and trustworthiness of the findings.

2.8.1 Validation.

During the interviews, the researchers paraphrased and checked understanding as a process of informal member checking to heighten validity. All participants were offered the opportunity to read their completed transcript and comment on the accuracy but all declined. More formal member validation was considered by asking participants

to reflect on the initial findings, but unfortunately this was not possible due to the time and practical constraints of the research.

2.8.2 Grounding in examples.

Grounding in examples is the provision of examples of the data to illustrate both the analytic procedures used in the study and the understanding developed in the light of them. Therefore, verbatim quotations have been included to evidence and support the decisions made and themes reached.

2.8.3 Providing credibility checks.

Template analysis is noted for its explicit analytical process and its accessibility for viewing and assessment by people other than the primary analyst (Pope, Ziebland, & Mays, 2000). Therefore, independent scrutiny was also used at various stages. During development of the initial template the collaborating researchers carried out preliminary coding for each other on a sample of transcripts. The codings were then compared, contrasted and discussed, with the aim of agreeing an initial template. The author attended the Qualitative Research Forum at the UEA to assist with further revisions of the template. Members of the forum coded sample sections of a transcript using a later version of the template noting themes they found difficult to employ, aspects of the texts not covered by the template and any other issues. Finally, the collaborating researchers reviewed each others' final templates against three transcripts. Any discrepancies or difficulties were discussed and any final changes made accordingly.

2.8.4 Transparency.

The reliability of coding was paramount in this research. As such, all aspects of the research process are disclosed and in order to evidence the analytic process and the interpretation involved, an example extract from a coded transcript has been included (see Appendix J) along with an account of the developing template. An audit trail of this process was kept along with a reflective account of the process and the decisions made.

2.8.5 Reflexivity.

Reflexivity refers to the ways in which the researcher's presence and assumptions contribute to the research (Henwood & Pidgeon, 1992). This is important in qualitative research because data can be analysed in various ways and it is accepted that researcher subjectivity impacts upon the researched participants and the research findings. Reflexivity begins by identification of preconceptions brought to the project by the researcher, representing previous personal and professional experiences, ontological beliefs, motivation and qualifications for the project, and theoretical foundations related to education and interests.

2.8.5.1 *Researcher's position.*

The author has worked in an eating disorders service as a trainee clinical psychologist, and has knowledge of the theory and existing literature about obesity and BE. It is recognised that the findings from this research will inevitably be shaped by the theoretical perspectives which have informed the analysis, the data generation and the questions that have been asked. It is also acknowledged that the author's clinical experience has been largely influenced by cognitive and behavioural models. The author has had success in using such models and consequently has preconceptions about the

types of cognitions that may be relevant in this population. These were acknowledged in setting a priori themes, but in line with template analysis methodology, the research remained open to the emergence of other ideas and to the possibility that the preconceptions would not fit with the populations being investigated.

The author values the utility of both quantitative and qualitative research and believes research interests should be driven by pragmatic aims. Whilst the adoption of a critical realist stance and template analysis methodology was appropriate for the current study and research questions, it is also acknowledged this approach fitted well with the previous, predominately quantitative experience of the author.

The author is normal weight and has never been overweight. The author also has a keen interest in the relationship between physical and mental health and physical activity and has strong personal beliefs around the importance of keeping fit. The author is also aware of the strong societal and media pressure encouraging people to lose weight and the often negative stigma associated with being overweight. Consequently the researcher recognised the potential for this to be a sensitive topic for participants to talk about honestly and acknowledged the importance of remaining open, curious and non-judging during the interview process.

Through keeping close to the data itself, having regular research supervision, keeping reflexive memos and being regularly involved in a forum of other qualitative researchers, the author aimed to maintain an awareness of their own perspective and position in relation to the participants and remain reflexive regarding the impact of this on the study.

3 Results

3.1 Overview of Chapter

Participant demographic characteristics are presented along with results of the self-report questionnaires in order to contextualise the sample. The qualitative results are presented from the initial a priori themes, through to two final templates, one for obese binge eaters and one for obese non-binge eaters. The use of quotes in the presentation of the results is explained and then the themes and sub-themes identified in the final templates are discussed in turn. Excerpts from the researcher's reflective account are provided throughout.

3.2 Demographic Characteristics

The final sample included 10 obese participants, five with BE or BED and five without. Demographic characteristics for binge eaters and non-binge eaters can be found in Tables 1 and 2 respectively. Mean age of binge eaters was 40.2 years (Range 23-52) and mean age of non-binge eaters was 52.4 years (Range 42-61). Mean BMI of the binge eaters was 49.0 (Range 42.5-58.5), and for the non-binge eaters, mean BMI was 53.06 (Range 36.2-67.9). All the binge eaters were female and four out of the five non-binge eaters were male. Participant 2 was recruited through the weight loss programme. All other participants were recruited from the Obesity Clinic. In terms of previous obesity treatment, all the binge eaters reported having either been on a diet or attended a commercial weight loss programme in the past. Other previous treatments included drug treatment, CBT and hypnotherapy. For the non-binge eaters, two reported having tried commercial weight loss programmes. Drug treatment, hypnotherapy and input from a dietician were also reported. Two of the non-binge eaters did not report any previous treatment.

Table 1

Obese binge eater demographic characteristics

Participant Number	Gender	Age	Height (m)	Weight (kg)	*BMI	Ethnicity	Marital Status	Occupational Status	Previous Obesity Treatment
1	Female	29	1.67	135.0	48.4	White	Married	Full-time work	Drug treatment, diets
2	Female	23	1.65	135.1	49.6	White	Single	Unemployed	Commercial programmes, diets
3	Female	52	1.75	130.1	42.5	White	Divorced	Part-time work	Commercial programmes
4	Female	45	1.58	115.0	46.1	White	Separated	Unemployed	*CBT, diets, hypnotherapy
5	Female	52	1.58	146.1	58.5	White	Married	Sick leave	Commercial programmes

*BMI, Body Mass Index
*CBT, Cognitive Behavioural Therapy

Table 2

Obese non-binge eater demographic characteristics

Participant Number	Gender	Age	Height (m)	Weight (kg)	*BMI	Ethnicity	Marital Status	Occupational Status	Previous Obesity Treatment
6	Male	61	1.78	155.0	48.9	White	Married	Full-time work	Commercial programmes
7	Male	61	1.83	121.3	36.2	White	Married	Unemployed	None reported
8	Male	46	1.86	235.0	67.9	White	Single	Full-time work	Commercial programmes, input from dietician
9	Female	42	1.52	146.1	63.2	White	Married	Full-time work	Drug treatment, hypnotherapy
10	Male	52	1.80	159.0	49.1	White	Married	Unemployed	None reported

*BMI, Body Mass Index

3.3 Quantitative Data

Taking into account the small sample size, it was not possible to perform any statistical analyses on the questionnaire results. Therefore, binge eater and non-binge eater scores could not be compared statistically. Instead, the questionnaire results help to contextualise the qualitative data, which is the main focus of the study. The quantitative data are presented below and in addition, to give further context, results from previous research studies involving the measures used are also discussed.

3.3.1 EDE-Q.

Obese binge eater mean subscale scores for the individual participants for the EDE-Q are reported in Table 3. Table 4 shows specific scores for obese binge eaters on the BE subscale. Obese non-binge eater mean subscale scores are shown in Table 5 and Table 6 shows their specific scores on the BE subscale.

Table 3

*Obese binge eater *EDE-Q mean subscale and total scores*

Participant Number	EDE-Q Restraint	EDE-Q Eating Concern	EDE-Q Shape Concern	EDE-Q Weight Concern	EDE-Q Global
1	3.80	3.20	4.75	5.40	4.29
2	3.80	4.20	5.25	3.60	4.21
3	2.40	1.80	2.10	2.20	2.13
4	4.80	5.40	5.25	6.00	5.36
5	1.00	4.80	3.75	4.40	3.49

*EDE-Q, Eating Disorder Examination – Questionnaire

Table 4

*Obese binge eater *EDE-Q binge eating subscale scores*

Participant Number	No. times eaten a large amount	No. times lost control over eating	No. days overeaten and felt out of control	Vomiting	Laxative use	Compulsive exercise
1	30	30	20	0	0	2
2	0	3	3	0	0	3
3	2	2	2	0	0	0
4	28	0	28	0	0	0
5	0	0	3	0	0	0

*EDE-Q, Eating Disorder Examination – Questionnaire

Table 5

*Obese non-binge eater *EDE-Q mean subscale and total scores*

Participant Number	EDE-Q Restraint	EDE-Q Eating Concern	EDE-Q Shape Concern	EDE-Q Weight Concern	EDE-Q Global
6	0.40	0.40	2.62	2.40	1.45
7	0.00	0.40	1.37	1.00	0.69
8	1.60	2.40	4.12	3.60	2.93
9	0.00	0.40	3.75	3.40	1.88
10	0.00	0.60	1.20	1.75	0.88

*EDE-Q, Eating Disorder Examination – Questionnaire

Table 6

*Obese non-binge eater *EDE-Q binge eating subscale scores*

Participant Number	No. times eaten a large amount	No. times lost control over eating	No. days overeaten and felt out of control	Vomiting	Laxative use	Compulsive exercise
6	28	6	1	0	0	24
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	4	2	1	0	0	0
10	0	0	0	0	0	0

*EDE-Q, Eating Disorder Examination – Questionnaire

Fairburn and Beglin (1994) administered the EDE-Q to a community sample of 243 women aged between 18 and 35. The mean subscale scores were as follows; Restraint, 1.25 (SD 1.32); Eating concern, 0.62 (SD 0.86); Shape concern, 2.15 (1.60); Weight concern, 1.59 (SD 1.37); Global, 1.55 (SD 1.21).

The results from the current study show that nearly all the binge eaters' subscale and global scores were higher than those found in the community sample above. In contrast, the non-binge eater scores were lower and appeared more comparable to the community sample scores. The Restraint and Eating Concern subscales were particularly low for the non-binge eaters.

There was a lack of consistency with some of the obese binge eaters answers on the BE subscale. For example, participant 5 answered that in the past 28 days there had been no times when they had eaten what others would regard as an unusually large amount of food or felt out of control of their eating. However, they also answered that on three out of the previous 28 days they had had such episodes of overeating and a

sense of loss of control. To compensate for inconsistencies, BE status was clarified with all participants at interview. Participants 1 and 4 met criteria for BED according to DSM-IV. Participants 2, 3 and 5 reported BE episodes when they would eat large amounts of food and feel out of control of their eating but due to the lack of frequency would not strictly meet DSM-IV criteria for BED. On the EDE-Q, none of the binge eaters reported self induced vomiting or taking laxatives and this was confirmed at interview. Two participants reported they had exercised in a compulsive way as a means of controlling their weight, shape or amount of fat. This was clarified during the interviews and the exercise consisted of going for a walk or doing some gardening and in fact did not fit with established definitions of 'compulsive exercise' in the literature (e.g. Davis et al., 1997).

In terms of the obese non-binge eaters, there were also some inconsistencies in the answers to the BE subscale. Whilst three of the participants did not report BE, participants 6 and 9 did. BE status was similarly clarified at interview. On discussion, participants 6 and 9 reported that they considered themselves to eat unusually large amounts of food but this was in general and not associated with particular episodes or a sense of feeling out of control over their eating. As such, and following further discussions at research supervision sessions it was decided these participants could not be classified as binge eaters.

3.3.2 MCQ-30.

Table 7 displays obese binge eater subscale scores and total score on the MCQ-30. Obese non-binge eater subscale scores and total score are shown in Table 8.

Table 7

*Obese binge eater *MCQ-30 subscale and total scores*

Participant Number	MCQ-30 Positive beliefs	MCQ-30 Uncontrollability and danger	MCQ-30 Cognitive confidence	MCQ-30 Need to control thoughts	MCQ-30 Cognitive self-consciousness	MCQ-30 Total
1	24	24	14	23	17	102
2	14	20	24	15	11	84
3	6	6	19	6	10	47
4	6	15	21	9	12	63
5	10	24	14	19	14	91

*MCQ-30, Metacognitions Questionnaire-30

Table 8

*Obese non-binge eater *MCQ-30 subscale and total scores*

Participant Number	MCQ-30 Positive beliefs	MCQ-30 Uncontrollability and danger	MCQ-30 Cognitive confidence	MCQ-30 Need to control thoughts	MCQ-30 Cognitive self-consciousness	MCQ-30 Total
6	6	6	24	6	8	50
7	10	14	10	10	11	55
8	11	9	12	8	12	52
9	6	15	7	10	24	62
10	7	7	9	6	6	38

*MCQ-30, Metacognitions Questionnaire-30

Wells and Cartwright-Hatton (2004) conducted preliminary analysis of the MCQ-30. It was administered to 182 participants (119 females, 60 males) aged between 18 and 69 years. Mean subscale and total scores were as follows; Positive beliefs, 9.60 (SD 4.06); Uncontrollability and danger, 9.30 (SD 4.00); Cognitive confidence, 9.51

(SD 4.06); Need to control thoughts, 8.34 (SD 2.62); Cognitive self-consciousness, 11.65 (SD 4.68); Total Score, 48.41 (SD 13.31).

Results from the current study suggest that overall, the binge eaters' scores were higher than the non-binge eaters. The non-binge eater scores also tended to be more in line with the previous research.

3.3.3 EDBQ.

Table 9 displays obese binge eater mean subscale scores and total score. Obese non-binge eater mean subscale scores and total score are shown in Table 10.

Table 9

*Obese binge eater *EDBQ mean subscale scores*

Participant Number	EDBQ Negative self-beliefs	EDBQ Acceptance by others	EDBQ Self acceptance	EDBQ Control over eating
1	83.0	60.0	51.7	41.7
2	90.0	100.0	100.0	66.7
3	35.0	0.0	26.7	15.0
4	27.0	10.0	45.0	16.7
5	85.0	95.0	100.0	66.7

*EDBQ, Eating Disorders Beliefs Questionnaire

Table 10

*Obese non-binge eater *EDBQ mean subscale scores*

Participant Number	EDBQ Negative self-beliefs	EDBQ Acceptance by others	EDBQ Self acceptance	EDBQ Control over eating
6	1.0	0.0	16.7	5.0
7	Data missing	Data missing	Data missing	Data missing
8	23.0	6.0	28.3	6.7
9	68.0	38.0	36.7	5.0
10	5.0	2.0	13.3	18.3

*EDBQ, Eating Disorders Beliefs Questionnaire

Cooper et al. (1997) conducted a study citing preliminary development of the EDBQ. The concurrent validity of the measure was explored and scores were compared between 12 females with BN, 12 females with AN and 12 non-dieting controls. Mean subscale scores for each group are shown in Table 11.

Table 11

**EDBQ mean subscale scores by group (Cooper et al., 1997)*

Group	EDBQ Negative self-beliefs	EDBQ Acceptance by others	EDBQ Self acceptance	EDBQ Control over eating
AN	71.0 (SD 23.7)	49.3 (SD 31.2)	82.2 (SD 18.2)	74.0 (SD 19.1)
BN	60.4 (SD 18.3)	61.2 (SD 23.2)	86.5 (SD 15.0)	81.5 (SD 17.7)
Non-dieting controls	20.4 (SD 25.7)	7.1 (SD 10.1)	40.9 (SD 25.7)	10.0 (SD 13.9)

*EDBQ, Eating Disorders Beliefs Questionnaire

The results from the current study show that in general the binge eaters' scores were higher than the non-binge eaters scores and more in line with the scores for the BN and AN scores from the Cooper et al. (1997) study.

3.3.4 EDTQ.

Obese binge eater mean subscale scores and total score on the EDTQ are reported in Table 12. Table 13 shows obese non-binge eater mean subscale scores and total score.

Table 12

*Obese binge eater *EDTQ mean subscale scores*

Participant Number	EDTQ Negative Thoughts	EDTQ Positive Thoughts	EDTQ Permissive Thoughts
1	78.0	52.0	28.3
2	85.0	90.0	75.0
3	18.0	15.0	16.7
4	58.0	27.0	78.3
5	85.0	62.0	70.0

*EDTQ, Eating Disorder Thoughts Questionnaire

Table 13

*Obese non-binge eater *EDTQ mean subscale scores*

Participant Number	EDTQ Negative Thoughts	EDTQ Positive Thoughts	EDTQ Permissive Thoughts
6	6.0	1.0	11.7
7	Data missing	Data missing	Data missing
8	61.0	1.0	53.3
9	33.0	18.0	33.3
10	7.0	0.0	16.7

*EDTQ, Eating Disorder Thoughts Questionnaire

Cooper et al. (2006) assessed the discriminant validity of the EDTQ by comparing a group of BN participants (n=12) to a group of dieters (n=17) and a group of non-dieting controls (n=20). Mean subscale scores were as follows; Negative thoughts, BN 23.2 (SD 7.2), Dieters 11.0 (SD 17.4), Controls, 4.4 (SD 4.2); Positive thoughts, BN 10.8 (SD 2.0), Dieters 3.0 (SD 5.3), Controls 2.1 (5.2); Permissive thoughts, BN 21.3 (SD 27.7), Dieters 20.9 (SD 14.8), Controls 27.5 (SD 18.6).

Results from the current study were varied but in general obese binge eaters scored higher in all subscales and particularly in the positive thoughts subscale.

3.3.5 HADS.

Table 14 shows obese binge eater subscale scores and total score on the HADS. Obese non-binge eater subscale scores and total score are shown in Table 15.

Table 14

*Obese binge eater *HADS subscale and total scores*

Participant Number	HADS Anxiety	HADS Depression	HADS Total
1	15	11	26
2	15	15	30
3	9	4	13
4	7	3	10
5	13	12	25

*HADS, Hospital Anxiety and Depression Scale

Table 15

*Obese non-binge eater *HADS subscale and total scores*

Participant Number	HADS Anxiety	HADS Depression	HADS Total
6	0	2	2
7	14	10	24
8	10	9	19
9	7	9	16
10	Data missing	Data missing	Data missing

*HADS, Hospital Anxiety and Depression Scale

Interpretation of the HADS is based primarily on the use of cut-off scores. Cut-off scores recommended by the authors for the anxiety and depression scales alike suggest raw scores of 8-10 identify mild cases, 11–15 moderate cases and 16 or above, severe cases (Snaith & Zigmond, 1994). A large scale study administered the HADS to a large non-clinical sample of 1792, broadly representative of the general adult UK population in terms of the distributions of age, gender and occupational status. For the anxiety scale, the mean score was 6.14 (SD = 3.76, median = 6); for depression, 3.68

(SD = 3.07, median = 3); and for the total scale, 9.82 (SD = 5.98, median = 9) (Crawford, Henry, Crombie, & Taylor, 2001).

Results from the current study show that the binge eaters generally had slightly higher scores, with three scoring the in the moderate range for both anxiety and depression. The non-binge eaters had generally low scores on both the depression and anxiety subscales, although one participant scored slightly higher (in the moderate range) for anxiety. Unfortunately one participant did not complete the questionnaire. However overall, scores generally appeared higher than those found by Crawford et al. (2001).

3.3.6 YSQ-S.

Tables 16 to 19 show obese binge eater subscale scores and total score on the YSQ. Obese non-binge eater subscale scores and total score are shown in Tables 20 to 23.

Table 16

*Obese binge eater *YSQ-S mean subscale scores*

Participant Number	Emotional Deprivation	Abandonment	Mistrust	Social Isolation / Alienation
1	1.2	4.8	2.0	4.8
2	2.0	5.4	4.8	5.4
3	1.2	1.8	2.2	4.4
4	3.0	6.0	5.0	4.0
5	3.0	3.8	3.8	4.2

*YSQ-S, Young Schema Questionnaire (Short Form)

Table 17

*Obese binge eater *YSQ-S mean subscale scores*

Participant Number	Defectiveness / Unlovability	Failure to Achieve	Practical Incompetence / Dependence	Vulnerability to Harm or Illness	Enmeshment
1	3.6	1.0	1.6	3.0	2.2
2	4.8	5.4	4.4	4.4	3.4
3	2.6	1.6	2.2	1.2	1.2
4	5.0	5.6	2.6	4.0	1.0
5	3.6	3.2	3.0	4.4	4.8

*YSQ-S, Young Schema Questionnaire (Short Form)

Table 18

*Obese binge eater *YSQ-S mean subscale scores*

Participant Number	Subjugation	Self-Sacrifice	Emotional Inhibition	Unrelenting Standards	Entitlement / Superiority
1	1.6	3.0	1.2	6.0	5.8
2	5.4	6.0	2.4	5.0	2.0
3	2.2	3.6	2.8	3.8	2.6
4	5.4	6.0	4.0	3.4	2.0
5	3.8	6.0	5.8	5.6	2.2

*YSQ-S, Young Schema Questionnaire (Short Form)

Table 19

*Obese binge eater *YSQ-S mean subscale and total scores*

Participant Number	Insufficient Self-Control / Self-Discipline	Admiration / Recognition-Seeking	Pessimism / Worry	Self-Punitiveness	YSQ-S Total
1	3.2	4.8	3.4	6.0	296
2	5.0	4.0	6.0	6.0	409
3	1.8	2.0	2.0	2.0	206
4	4.4	4.0	5.0	4.4	374
5	3.6	4.8	4.4	5.2	376

*YSQ-S, Young Schema Questionnaire (Short Form)

Table 20

*Obese non-binge eater *YSQ-S mean subscale scores*

Participant Number	Emotional Deprivation	Abandonment	Mistrust	Social Isolation / Alienation
6	1.2	1.0	3.2	2.0
7	1.0	1.0	1.4	1.2
8	3.2	1.2	2.0	2.8
9	1.2	3.2	2.0	6.0
10	1.0	2.0	1.0	1.0

*YSQ-S, Young Schema Questionnaire (Short Form)

Table 21

*Obese non-binge eater *YSQ-S mean subscale scores*

Participant Number	Defectiveness / Unlovability	Failure to Achieve	Practical Incompetence / Dependence	Vulnerability to Harm or Illness	Enmeshment
6	1.0	1.0	1.0	2.2	1.0
7	1.0	1.2	2.8	2.8	1.0
8	1.8	2.2	1.8	2.0	1.4
9	3.0	2.2	1.0	1.0	1.0
10	1.0	1.0	1.0	1.0	1.0

*YSQ-S, Young Schema Questionnaire (Short Form)

Table 22

*Obese non-binge eater *YSQ-S mean subscale scores*

Participant Number	Subjugation	Self-Sacrifice	Emotional Inhibition	Unrelaenting Standards	Entitlement / Superiority
6	1.0	2.4	2.0	2.6	2.8
7	1.6	2.6	2.2	1.6	1.6
8	1.6	2.0	2.4	1.4	1.4
9	3.0	5.2	3.0	5.2	1.8
10	1.2	2.0	2.0	1.0	1.0

*YSQ-S, Young Schema Questionnaire (Short Form)

Table 23

*Obese non-binge eater *YSQ-S mean subscale and total scores*

Participant Number	Insufficient Self-Control / Self-Discipline	Admiration / Recognition-Seeking	Pessimism / Worry	Self-Punitiveness	YSQ-S Total
6	4.6	1.4	1.8	1.8	170
7	2.2	1.0	2.6	1.6	152
8	2.4	1.8	1.6	1.2	180
9	1.4	2.8	1.6	5.2	249
10	1.4	1.2	1.8	1.0	115

*YSQ-S, Young Schema Questionnaire (Short Form)

One study explored the psychometric properties of the previous version of the YSQ-S to the one used in this study. Bulimic (n=60) and comparison women (n= 60) were compared. Bulimic women had higher scores than the comparison women on the total score and on 14 of the 15 individual sub-scales. The only YSQ-S scale on which the groups did not differ was the Entitlement scale (Waller, Meyer, & Ohanian, 2001). Results from this study show that overall, total scores for binge eaters were considerably higher than for non-binge eaters.

3.4 Qualitative Data

All BE participants were able to recall a recent binge episode when they had felt worried, anxious or bad about their eating for the interview to be based around. All non-binge eaters were able to think of an occasion when they had felt worried, anxious or bad about their eating, although they all commented their feelings had not been particularly strong in the situation.

3.4.1 A priori themes.

In reviewing the research in chapter 1, a number of concepts were identified as likely to arise during the course of the interviews. These formed tentative a priori themes for obese binge eaters and obese non-binge eaters that aided initial coding (Figures 2 and 3 respectively).

For the obese binge eaters, four main themes and four sub-themes were initially identified based on specific types of beliefs identified to be important in the development and maintenance of BE (Cooper et al., 2009). To a lesser extent, cognitions related to eating, weight and shape have also been identified in obese people without BE (e.g. Nauta et al., 2000). It was therefore expected that positive and negative beliefs about eating including weight and shape concerns would be present in both binge eaters and non-binge eaters. However, as there is no research exploring specific permissive thoughts or metacognition in obesity and any association is therefore unknown, these were not included as a priori themes for obese non-binge eaters.

Initially in accordance with the exploratory nature of the study, the themes were kept deliberately broad with the aim of modification or removal in line with the process of template analysis.

Identified a priori themes for obese binge eaters:

- Metacognitive knowledge
  - Positive metacognitive beliefs
  - Negative metacognitive beliefs
- Positive beliefs related to eating
  - Bingeing is a helpful behavior
- Negative beliefs related to eating
  - Weight and shape concerns
- Permissive thoughts

Figure 2. A priori themes for obese binge eaters.

Identified a priori themes for obese non-binge eaters:

- Positive beliefs related to eating
- Negative beliefs related to eating
  - Weight and shape concerns

Figure 3. A priori themes for obese non-binge eaters.

3.4.2 Developing the templates.

In line with the critical realist stance of this research and the aim of answering specific theoretically driven questions, the initial templates were developed at an early stage of the analysis as advised by King (2004).

Therefore, each initial template was started following preliminary coding of one transcript. When coding the transcripts, only material relevant to the research questions was considered. Relevant sections of the text were identified and codes were attached to

those sections. The a priori themes were consulted, assigned and modified where appropriate and data-driven themes that emerged directly and indirectly from the interviews were added.

Using the emerging codes, a further transcript for both binge eaters and non-binge eaters was coded. Modifications to codes and themes were made throughout in an effort to best capture the range of themes emerging. As advised by King (2004), at this stage, having reached a point when preliminary coding was no longer generating new themes distinctly different from those identified previously, two initial templates were reached, one for obese binge eaters and one for obese non-binge eaters (see Appendix J for initial templates and examples of coding).

See Appendix J for reflective diary entry 1

The remaining transcripts were then compared against these initial templates. As changes were made, the initial transcripts were returned to and the coding modified accordingly. This iterative process ensured that the final templates comfortably reflected the data set as a whole.

See Appendix J for reflective diary entry 2

The final templates are summarised in Figures 4 and 5. They represent key themes that arose throughout the interviews and were relevant to the research questions. Within each main theme, subthemes were identified that outlined the breadth of the issues discussed.

Final Template for Obese Binge Eaters

1. **Negative self-beliefs**
   - 1.1 Worthlessness
   - 1.2 Alone
   - 1.3 Failure

2. **Metacognitive knowledge**
   - 2.1 Positive metacognitive beliefs
     - 2.1.1 Anxious thoughts / worry is helpful
       - 2.1.1.1 Worrying about bingeing can stop it from happening
       - 2.1.1.2 Having anxious thoughts / worrying helps you prepare
       - 2.1.1.3 It is helpful / important to think / worry about yourself
     - 2.1.2 Positive thoughts can delay a binge
   - 2.2 Negative metacognitive beliefs
     - 2.2.1 Anxious thoughts / worry is unhelpful
       - 2.2.1.1 Thinking about bingeing can make it more likely to happen
       - 2.2.1.2 Worrying about what others think of me is bad for me
       - 2.2.1.3 Thoughts are overwhelming

3. **Positive beliefs related to eating**
   - 3.1 Bingeing is a helpful behavior
     - 3.1.1 Management of distressing thoughts / emotions
       - 3.1.1.1 Distraction from negative thoughts / emotion
       - 3.1.1.2 Safety / familiarity / comfort
       - 3.1.1.3 Pleasurable
       - 3.1.1.4 Relaxing
       - 3.1.1.5 Completing a task / achievement
   - 3.2 Emotional attachment to food
   - 3.3 Food is non-judging
   - 3.4 Food is easily accessible

Final Template for Obese Binge Eaters

4. Negative beliefs related to eating
- 4.1 Bingeing is an unhelpful behavior
  - 4.1.1 Guilt
  - 4.1.2 Sense of failure
  - 4.1.3 Task to complete
  - 4.1.4 Trying to lose weight was a waste of effort
  - 4.1.5 Financial impact
- 4.2 Bingeing is uncontrollable
- 4.3 Weight and shape concerns
  - 4.3.1 Thoughts about self
  - 4.3.2 Comparison to others
  - 4.3.3 Physical concerns about weight
    - 4.3.4.1 Personal impact
    - 4.3.4.2 Impact on family
- 4.4 Judgements of others
- 4.5 Secretive
- 4.6 Thoughts about dieting

5. Permissive thoughts

6. Reflections
- 6.1 Questioning
- 6.2 Hopes
- 6.3 Reasoning

Figure 4. Final Template for Obese Binge Eaters

Final Template for Obese Non-Binge Eaters

1. **Negative self-beliefs**
   - 1.1 Self-loathing
     - 1.1.1 Worthless
     - 1.1.2 Not good enough

2. **Metacognitive knowledge**
   - 2.1 Positive metacognitive beliefs
     - 2.1.1 Monitoring thoughts can stop bingeing from happening

3. **Positive beliefs related to eating**
   - 3.1 Eating / food is pleasurable
     - 3.1.1 Mechanical process
     - 3.1.2 Sensory experience
     - 3.1.3 A passion
     - 3.1.4 To be shared with others
     - 3.1.5 Cooking is pleasurable
       - 3.1.5.1 Creative outlet
       - 3.1.5.2 Relaxing
   - 3.2 Eating in response to a negative feeling
   - 3.3 Positive thoughts related to being overweight
     - 3.3.1 Part of identity
     - 3.3.2 Protective

4. **Negative beliefs related to eating**
   - 4.1 Weight and shape concerns
     - 4.1.1 Judgements of others
     - 4.1.2 Physical concerns about weight
       - 4.1.2.1 Impact on self
       - 4.1.2.2 Impact on family members
       - 4.1.2.3 Benefits of losing weight
   - 4.2 Thoughts about dieting
   - 4.3 Habit
   - 4.4 Financial cost
   - 4.5 Eating the wrong things
   - 4.6 Sense of disappointment
   - 4.7 Resignation

Figure 5. Final Template for Obese Non-Binge Eaters

See Appendix J for reflective diary entry 3

3.4.3 Quotations.

Direct quotations from the interviews are used to illustrate the main findings. The quotes are used to clarify particular points, and to give a flavour of the original accounts.

The following codes were used when presenting the quotes:

. . . = Words omitted from the quote if either unrelated to the main point of the quote or to reduce the length of the quote. Words were not omitted if that altered the meaning of the quote in any way.

(P2:178) = (Participant number: Line number of start of quote)

[Participant name]= Name removed from text to retain anonymity

c*** (expletive) = Expletive removed from quote

3.4.4 Research question 1: What cognitions and metacognitions related to eating, weight and shape are described by obese people who report binge eating?

3.4.4.1 Obese binge-eaters: themes and sub-themes.

Six main themes and 18 sub-themes were identified. Several of the sub-themes were also divided into additional lower-order themes. The themes included the a priori or pre-existing themes which were introduced through the use of the interview guide, and data-driven themes that emerged directly from the interviews. The data supported the retention of all four a priori themes and four sub themes. All the a priori main themes apart from 'permissive thoughts' produced supplementary data-driven sub-

themes. The other two main themes and corresponding sub-themes were data-driven and emerged from the interviews.

3.4.4.2 Negative self-beliefs.

Four out of the five obese binge eaters reported negative beliefs about themselves. Negative self-beliefs are important components of both the S-REF model and the cognitive model of BN (Cooper et al., 2009). The S-REF model emphasises the role of negative self-beliefs in psychopathology and sees them as products of running particular processing routines (Wells, 2000). In the cognitive model of BN, negative self-beliefs are thought to be important in the development of BN and consequently BE as they constitute a vulnerability that can lead to the disorder when they occur in conjunction with metacognitions. Despite their inclusion in both these models, in this study negative self-beliefs were not listed as one of the a priori themes. This was because the metacognitive profiling interview was not designed to explore such beliefs and therefore they were not expected to be identified. However, some participants clearly identified these beliefs being present both prior to and after a BE episode.

Negative self-beliefs around being worthless were most common with three of the participants explicitly making reference to this. In all these interviews, it was apparent that these beliefs had been activated prior to a BE episode. When exploring what had precipitated one participant's BE episode, they explained they had been thinking about what had "gone wrong" (P2: 426) in their life, such as not having a job and not being able to finish college. This had then led them to think, "I'm worthless and I'm never going to amount to anything" (P2: 447). Another participant's beliefs around being worthless and being alone were also activated prior to a BE episode, "I was alone in the house, and I hate being alone, when I am alone, I feel very un-human, I

feel very unsafe and insecure" (P1: 120), "...the feeling of worthlessness came to mind because I was alone, and I was like there's no one here with me, so no one cares about me and so I am worthless" (P1: 129). Following the BE episode, it appeared their beliefs about being worthless were reactivated, "...I have to deal with the situation that I have eaten it and over 2000 calories in one meal. That feels like, oh you're c*** (expletive), you're worthless, the same feelings I had before" (P1: 317).

Another participant who would often eat "wrong foods" in secret was asked what would be so bad about others knowing what they were doing. They responded, "Cos I'm a failure then, but I'm a failure anyway cos I'm not losing the weight, but it's just I suppose I've got to admit I'm the failure in front of people" (P5: 158).

This suggests their fears of feeling a failure or being perceived a failure were helping to maintain the secretive nature of their eating. They also expressed their concerns about what the impact of them being a failure might be, "...my fear is... if he [Obesity doctor] knows I'm such a failure he perhaps won't do it, he perhaps won't let me have surgery and that's my only hope isn't it" (P5: 643).

In addition, although the metacognitive profiling interview does not specifically ask about early life experiences, participants were asked how they form their judgements about BE and if they have evidence for their thoughts. This tended to lead participants to talk about particularly difficult times in their lives, including experiences of bullying whilst growing up, difficult relationships with parents and episodes of abuse. Three out of the four participants who reported negative self-beliefs linked these early experiences with their negative beliefs about themselves and their current BE behaviour. When asked where she thought her beliefs came from, one participant said, "Very much from my upbringing, that, I was raised in such a way that nothing I did was ever right, ever good enough" (P5: 502), "...inside me I knew I was obviously

s***(expletive), cos if you're own parents don't love you who can... and yeah basically my upbringing left me believing I wasn't worth peanuts" (P5: 512).

3.4.4.3 Metacognitive knowledge.

Metacognitive knowledge and the sub-themes of positive and negative metacognitive beliefs were initially included in the a priori template. The S-REF model suggests that disorder can occur when negative self-beliefs occur in conjunction with metacognitions that interpret and control cognitions and behaviour. The cognitive model of BN proposes this is also how BN and BE behaviours can occur and specifically suggests that the metacognitions include positive and negative beliefs about eating and eating-related cognitive processes.

In line with the a priori template, both positive and negative metacognitions were present. All five obese binge eaters reported at least one explicit positive and one negative metacognition.

3.4.4.3.1 *Positive metacognitive beliefs.*

All participants expressed at least one positive metacognitive belief. The dominant sub-theme was 'anxious thoughts / worry is helpful'. A number of lower-order themes were identified within this sub-theme representing both metacognitive beliefs related to eating and more general metacognitive beliefs. Specifically the idea that worrying about bingeing can stop it from happening was reported, "...sometimes if I worry too much about you know what I'm doing then I stop" (P2: 343). More generally, the idea that having anxious thoughts or worrying about something helps you prepare both practically and emotionally was also discussed, "...it makes sure you prepare, it makes sure you research what's happening, it's kind of, also I think prepares you

emotionally for something difficult, up to a point" (P3: 205). Although not directly about eating, this belief was related to a BE episode as it was a first line strategy used to manage anxiety before resorting to BE. Two participants also expressed the idea that it is helpful or important to think or worry about yourself, "I think it's, it's, it's an advantage to worry because I'm actually worrying about myself" (P2: 334).

In contrast to anxious thoughts being viewed as helpful, one participant viewed their positive thoughts as helpful as they encouraged them not to have a binge, "Yeah, that voice has a lot of positives...and I also I thank my good voice, I will say thank you for a good day because if it wasn't for her sometimes then I would binge more" (P4: 370).

3.4.4.3.2 *Negative metacognitive beliefs.*

All participants expressed at least one negative metacognitive belief. The dominant sub-theme was that 'anxious thoughts / worry is unhelpful'. As with the positive metacognitive beliefs, a number of lower order themes were identified within this sub-theme, one of which was specifically related to eating. The notion that "overcoming" or challenging ones thoughts or distracting oneself from thoughts might reduce the likelihood of a binge was a common reference, suggesting participants considered thinking about bingeing a risk factor in making a binge more likely to happen. When discussing how they try and stop themselves from having a binge, one participant said, "I try to keep myself occupied, my thoughts and everything you know, try to do things like crossword puzzles" (P5: 148). Another participant describing her "devil voice" said:

> If I am on my own I shout at it, no way, you are not going to win today, this is my day and you are not going to put me down...I am going to be ok, and I am gonna do this. (P4: 425).

More generally, one participant expressed the view that worrying about what others think of her is unhelpful, "but it's a disadvantage cos why should I worry about, why should I worry about what people think of me, you know, I should only be worrying about what I think of me" (P2: 335). The idea that thoughts can be overwhelming or uncontrollable was also present. One participant talking about anxious thoughts explained, "...there's a point at which it swings over in to being unhelpful because the logic's gone away and you're no longer thinking clearly" (P3: 207). At this point they identified they might be at higher risk of BE in order to manage the anxiety.

3.4.4.4 Positive beliefs related to eating.

'Positive beliefs related to eating' was included as an a priori theme and within that theme, 'bingeing is a helpful behaviour' was included as an a priori sub-theme in accordance with the cognitive model of BN. The model suggests that such thoughts are important in the maintenance of BE. The interviews found that all participants expressed multiple positive beliefs about eating and beliefs that to some extent bingeing is a helpful behaviour. Most of the positive thoughts identified were related to a particular episode of BE as this is what the interview aimed to ask about, although other, more general positive thoughts related to eating and food were also reported. Those thoughts specifically related to BE predominantly occurred prior to and during BE episodes. Some positive thoughts were reported following a BE episode, however, these thoughts tended to be momentary and were shortly replaced by more negative thoughts. In total, four sub-themes were identified.

3.4.4.4.1 *Bingeing is a helpful behaviour.*

The dominant sub-theme expressed by all participants was that, to at least some extent, BE is a helpful behaviour. Overall there was a sense that it made people "feel better", although participants had a range of views as to the ways in which BE was helpful for them. All participants made some reference to the fact bingeing helps them to manage distressing or upsetting thoughts or emotions and there was a sense of "this will stop me feeling what I don't want to feel" (P3: 103). Beliefs about this benefit of BE is specifically described in the maintenance of BE within the cognitive model of BN (Cooper et al., 2009).

BE was explicitly described as a behaviour or strategy to distract from these distressing thoughts or emotions. One participant explained, "... it's stuffing down the emotion, you're putting a lid on the emotion by chucking all this food in the way, which is, kind of insane really" (P3: 107).

BE was also described by three participants as a behaviour which provides safety, familiarity or comfort:

> I think it is a feeling of safety and security for me. It is like something is going to change, what can I do to make myself feel safe again, or something that feels comfortable or familiar...so then I kind of do that, and for a few seconds, I have the opportunity to feel comfortable, safe and familiar. (P1: 31)

Another participant described a binge eating episode when she felt down following an argument with her husband, "I didn't need none of them last night, I'd eaten my meal I didn't need them, like I said I think a lot of mine is comfort" (P5: 593).

BE itself was spoken about as pleasurable by two participants, although this pleasurable feeling was not something that lasted. One participant explained:

> One of my favourite things is when I am really low I binge eat rubbish, stuff that is high in calories...even when I take one of those baileys chocolates in my mouth it just feels like, wow this is a bomb of pleasure, just for a few seconds, and then it goes away. (P1: 43).

One participant described an initial feeling of being relaxed following a BE episode, although again this feeling was only temporary, "...normally I eat it and then relax, it's done...I feel relaxed as I have nothing else to do about it, but then I have to deal with the situation that I have eaten it" (P1: 317).

BE was also described by one participant as completing a task or as an achievement which they ultimately linked back to their negative beliefs about themselves, "It's interesting, I have to eat this and I have to finish it...it's like something I have to do" (P1: 337), "I think when I have these thoughts now and go to binge eat, it is very much related to the task. I have to prove my worthiness by finishing the task" (P1: 460).

3.4.4.4.2 *Emotional attachment to food.*

Other more general beliefs about eating and food not necessarily relating to specific BE episodes also emerged during the interviews. One participant spoke about finding it more difficult to stop eating those foods to which they had an "emotional attachment". They explained that some foods which they ate in childhood they find particularly difficult to stop eating, which seemed to be partly linked to their need for "safety":

> ... if it is food that I used to eat as a child...plus, because I like it so much I get obsessed about it...it has to be something...that provides me with safety, safety is definitely there, as it is the food that reminds me. (P1: 723)

3.4.4.4.3 Food is non-judging.

Other positive beliefs about eating that emerged were associated with food being specifically chosen as a comfort due to the fact it cannot judge you. One participant reported, "I didn't have many friends growing up and I don't have many friends now, and you know food has always been there, food don't look at you and judge you, food don't be horrible to you" (P2: 295).

3.4.4.4.4 Food is easily accessible.

The idea of food being convenient and easily accessible was discussed by two participants. When asked why she picked food as a comfort, one participant explained, "I just think it's, it's the most easiest thing to get hold of" (P2: 305).

3.4.4.5 Negative beliefs related to eating.

'Negative beliefs related to eating' was included as an a priori theme and within that 'weight and shape concerns' was included as an priori sub-theme in accordance with the cognitive model of BN. The model suggests that such thoughts are important in the maintenance of BE. For example, if BE is interpreted negatively, for example, by being seen as a loss of control or as a sign of failure, this may reinforce the negative self-beliefs which made an individual vulnerable to BE in the first instance (Cooper et al., 2009).

In line with the a priori template, all participants expressed multiple negative beliefs about eating. Participants also spoke specifically about weight and shape concerns, so this sub-theme was retained. A further five data-driven sub-themes also emerged. Within the a priori sub-theme of 'weight and shape concerns', three data-driven lower-order themes emerged with 'physical concerns about weight' being

particularly prevalent. As with the positive thoughts, most of the negative thoughts identified were related to a particular episode of BE as this was the focus of the interview. However, other, more general negative thoughts related to eating and food were also reported. In contrast to the positive thoughts, the negative thoughts did not tend to occur prior to a BE episode. Instead, they tended to be reported occurring either during or predominantly after a BE episode.

3.4.4.5.1 *Bingeing is an unhelpful behaviour.*

The dominant sub-theme that emerged from the data was that 'bingeing is an unhelpful behaviour' and all participants identified beliefs of this type. All participants had the sense that BE was something they "should not" be doing and most expressed ultimately "feeling worse" following a BE episode.

Participants tended to speak of their thoughts around the emotional impact of the BE episode on them more than the specific thoughts associated with these feelings. For example, four of the participants described explicitly feeling "guilt" following a BE episode. One participant's thoughts following a BE episode were:

> ...oh s*** (expletive) what have I done again, you know, what, what, why the hell did I do that? It hasn't you know, in the end it hasn't made the thing I'm worrying about go away but it's yeah, it's a kind of guilt feeling really. (P3: 112)

A sense of failure following a BE episode was also mentioned by two participants, "In addition, I just say, oh god, I failed again" (P1: 476).

When talking about the disadvantages of BE, one participant spoke about the idea of BE as something that needed to be done, "I think for me, a big disadvantage of it is the fact that it feels like another work task, it's weird" (P1: 192).

Following a BE episode, one participant who had been trying to lose weight described thoughts about "all the effort" she had put into trying to lose weight having "just gone" (P2:78).

Another negative factor associated with BE mentioned by two participants was the financial pressure it can add. Following a BE episode, one participant said, "I was so angry because I can't afford to keep replacing stuff" (P4: 861).

3.4.4.5.2 *Bingeing is uncontrollable.*

Two participants spoke about bingeing being uncontrollable and their dislike of feeling out of control. The uncontrollability aspect was described as the worst thing about BE by one participant, "I think it's the actual bingeing itself, the, the loss of control" (P2: 263). Another participant described feeling "a real discomfort" (P3: 115) at the idea of the loss of control following a BE episode. They explained, "I think of bingeing as something that happens to people rather than something they choose to do, which is why I don't like to think of myself as bingeing, cos I don't like things that happen to me" (P3: 337).

3.4.4.5.3 *Weight and shape concerns.*

'Weight and shape concerns' was one of the a priori sub-themes, included due to the presence of such concerns in the cognitive model of BN. The model suggests that 'weight and shape concerns' are centred around fears of catastrophic weight gain as a result of eating and the potential consequences associated with this. Example thoughts might be, "If I eat something bad I'll get fat" and "Body fat is ugly". It became apparent over the course of the interviews that the weight and shape concerns expressed by participants in this study were of two varieties. Similar concerns to those described in

the cognitive model of BN were present but in addition there was a dominant lower-order theme related to 'physical concerns about weight' and the impact on physical health.

During the interviews, four out of the five participants expressed current concerns about weight and shape not related to physical health. In line with the cognitive model of BN these concerns were present during BE episodes, although more general concerns were also present outside of BE episodes. All of the four participants expressed direct weight and shape concerns about themselves. However, other weight and shape concerns also emerged around comparisons to others.

The interviews found that BE episodes activated participants' fears about being or becoming fat. One participant's thoughts during a BE episode were, "you shouldn't be eating, you're not supposed to eat, you are a fat cow, you are ugly" (P4: 504). Another participant referred to themselves as "a fat waste of space" (P2: 117) after their binge.

See Appendix J for reflective diary entry 4

Two of the participants spoke about their weight and shape concerns outside of a BE episode in relation to how they compare themselves to other people. One participant said "I see girls sort of girls like you and slim figure and I'm thinking if only I could be like that" (P2: 155). Another participant spoke about how they have got to the point now where they do not like going out for fear of people looking at them. When asked what they would worry about they replied:

> They'd look at me and think god she's getting bigger, look at her...and I'm embarrassed for my husband...and I think well surely he don't want to take me

> the size I am, the way I look...I feel embarrassed for him to take someone like me with him where as all the others have got the little trim wives. (P5: 414)

See Appendix J for reflective diary entry 5

The one participant who did not directly express current weight and shape concerns not related to physical health had experienced similar concerns in the past but explained that over the years they had come to change their opinion of themselves:

> Just kind of said ok society you're not going to approve but you know when I was trying to fit you didn't approve of me either so b***** (expletive) you...hey I don't actually fit in this mould, I'm going to stop trying to because it hurts me to try and fit in the mould, so it was very much a case of time to be me. (P3: 492)

They also went on to say:

> I'm slowly getting my weight downwards but I actually like who I am and what I look like most of the time. I have periods when I don't, mainly when I go shopping for clothes and can't find stuff that fits...and it's not so much I look ugly as damn it, there are only ugly clothes in my size...on the whole I'm happy with my body. (P3: 169)

One data-driven lower-order theme that emerged from the interviews were physical concerns related to weight and health. These concerns were expressed by four out of the five participants and seemed equally if not more prevalent than the weight and shape concerns not related to physical health. Physical concerns about weight were expressed in terms of personal impact and also the impact on a person's family. These

concerns were reported prior to a BE episode. They were also reported as more general thoughts that could occur at any time.

Prior to a BE episode, one participant described having thoughts such as, "...if I'm not here by the time I'm 30 there's gonna be a lot of things that I won't be able to do" (P2: 345) in an attempt to dissuade her from bingeing. They went on to relate this to the impact on their family:

> Just keep thinking that there's lots of people in my family that I won't be able to help and I won't be able to see cos now I've got a new nephew and I just keep thinking that you know I won't be able to see him grow up. (P2: 356)

When asked about the disadvantages of BE, one participant explained, "it is a problem if my weight goes up, I've got pain issues in all of my weight bearing joints so I don't want my weight to go up any" (P3: 420).

In addition, one participant commented, "I'm just getting worse and worse and worse, I'm getting more illnesses and things going wrong" (P5: 239). In terms of the impact of their weight on their family she explained what she was currently trying to do for her husband:

I'm trying to get myself very organised and him comfortable in case anything goes wrong with me, cos I'm just getting bigger and bigger and bigger, I'm just going to end up having a massive bloody heart attack and if I die he wouldn't know nothing, he wouldn't know, so I'm sorting all the paperwork out, the filing system, everything for him. (P5: 239)

3.4.4.5.4 *Judgements of others.*

'Judgements of others' was a data-driven sub-theme which emerged throughout the course of the interviews. These thoughts were not necessarily related to a specific

episode of BE but emerged as more general thoughts. However, for these participants, they seemed to have a role in the maintenance of their BE through either reinforcing the secretive nature of BE through fear of eating in public or via reinforcement of negative beliefs about themselves as a result of perceived or actual negative judgement from others. Three of the participants spoke about their thoughts about being judged and two spoke in detail about their experiences of eating in public.

One participant was particularly worried about being negatively judged and consequently reported often eating in "secret":

> I tend to think they're looking at me to see what I'm eating...they always think that people do sit and binge and they eat loads because you're a big person, perhaps sometimes you don't eat loads, some big people don't eat loads, I wouldn't eat loads in front of people...I just feel like they're watching me you know. (P5: 415)

The same participant also commented during the interview, "...it must be very difficult someone like you that perhaps is very good with your eating and you're sitting there thinking what an idiot" (P5: 170).

Another participant spoke about their experiences of eating out. At a recent dinner she had eaten a much larger quantity than a friend but commented, "but, she knows what I'm like and she is a very good friend so it wasn't a problem" (P4: 563). However they spoke about their worries of eating with somebody new as they would not know how they would "react" (P4:565). They described a past Christmas meal with work:

> I ordered some cheese for desert...it was huge, no joke it was enough for five people...so I offered it round, nobody took any so I thought fine, sat there...and nibbled at it. Then my boss turned round and said [Participant name] you didn't

offer me any of your cheese and biscuits, now you have eaten the whole b***** (expletive) lot, you pig...I felt like that small, and that is why I don't like eating with new people. (P4: 566)

Several participants had also been subject to verbal abuse from strangers in public directly related to their weight and shape which reinforced their negative beliefs about themselves.

When asked where their judgements about BE come from, the influence of society, the media and parents was mentioned, "...you absorb it as you're growing up, binge eating...societally there is a very negative attitude towards binge eating and you pick that up" (P3: 434).

See Appendix J for reflective diary entry 6

3.4.4.5.5 *Secretive.*

Another data-driven theme that emerged was about eating in secret and the impact of this. Whilst these thoughts again were not specifically related to particular binge episodes, they seemed important in the maintenance of the secretive nature of BE and therefore might act as a potential barrier for overcoming BE. One participant described that their eating was "all about nobody knowing" but acknowledged that despite their best efforts, "people knew, they're not daft" (P4: 131). Whilst currently living on their own they explained, "...I still find myself in my kitchen, there are occasions when I'm hiding and I'm like there is no one to cheat on, you are cheating on yourself, what are you doing?" (P4: 136).

Another participant described themselves as a "secretive eater of wrong things" (P5: 137). They rationalised, "If no one don't see me eat it, I haven't ate it" but reflected

on this, "...stupid isn't it cos I know I've ate it" (P5: 129). In addition they also spoke about this in relation to the idea of cheating themselves, "when I've been to a slimming club, when they say write it down, if I don't write it down they don't know I ain't had it, so it's cheating myself" (P5: 153).

3.4.4.5.6 *Thoughts about dieting.*

'Thoughts about dieting' was included as another data-driven sub-theme. All participants spoke to some extent about their experiences of dieting in an attempt to lose weight, whether that be through following a commercial programme, their own diet programme or through a NHS weight loss programme. Some of these thoughts were mentioned being present prior to an episode of BE although most were more general. However, thoughts about dieting seemed important in the maintenance of BE for these participants mainly as a result of them having difficulty adhering to a diet in the long term. This tended to result in them eventually breaking the diet and consequently feeling bad about themselves, reinforcing their negative self-beliefs. Although none of the participants had had any long-term success with losing weight by following a diet, the views about dieting varied.

One view was that diets are unhelpful. Prior to a BE episode when trying to justify to herself why having a binge would be ok, one participant thought, "what's the point in me doing this diet any more, what's the point in me doing any diet when I know that once I take a little bit of weight off it's all going to come back on anyway" (P2: 62). Another participant described a particularly negative experience of dieting:

> The Cambridge diet was a way of separating myself completely from food, but after 2 weeks of just drinking that your mouth needs to chew something so you start chewing the drink, and it hurts your teeth...I remember waking up crying,

having dreamt I'd eaten a cake, food was a complete sin for me that time, it was very damaging mentally I think. (P1: 184)

Despite having little success with diets, one participant said she loved the Slimming World diet as you could eat anything in moderation. However, she described difficulty in being able to keep to the diet long term and said she would now no longer go to a slimming club because she was "a failure of it" (P5: 160). She blamed herself for the diet not working, "the woman...gets in touch with me and she says oh come on back...she always says if you're doing it correctly your weight should drop off you someone your size, so she knows I'm not doing it correctly doesn't she" (P5: 161).

The view that some foods are "bad" or "wrong" was also echoed by most participants. However, one participant took a different stance and saw dieting and viewing foods as bad or wrong as unhelpful:

> I suppose the fact that my mother was constantly on the diet gain weight, diet gain weight, diet gain weight cycle that you know the, if I hadn't already been developing my own maladaptive relationship with food...watching that, growing up with that, you know certain kinds of foods are bad foods, well actually no they're not, but it takes a long while to get rid of that, the whole this is bad, that is bad, gotta diet, gotta diet, mustn't eat, mustn't eat. (P3: 435)

3.4.4.6 ***Permissive thoughts.***

'Permissive thoughts' was included as an a priori theme in accordance with the cognitive model of BN. The model suggests that such thoughts resolve the conflict between positive and negative beliefs about eating and allow individuals to relinquish responsibility for a binge (Cooper et al., 2004).

Two participants expressed permissive thoughts prior to and during a binge and it was therefore retained as a theme. One participant described taking some prescribed medication and then thinking to herself, "I have got to eat as I have just taken tablets" (P4: 51) and then proceeding to binge.

3.4.4.7 Reflections.

'Reflections' was identified as another sub-theme arising from the data and was not included in the a priori template. Three out of the five participants mentioned a number of thoughts prior to, during and after a BE episode which were neither positive nor negative. These thoughts tended to either take the form of questions about why or what participants were doing or were expressed as hopes or a form of reasoning with themselves.

Three participants described asking themselves questions either before, during or after their BE episode. The questions tended to concern what the person was doing and why, "I think why am I doing that? And umm what goes through my mind is that, why can't I stop this?" (P1: 14). Following their BE episode, one participant said, "I just sort of, I stop and think you know what am I doing to myself?" (P2: 386). Questions also centred on the quantity of food during a BE episode, "...how much have I got to eat to make myself feel better" (P2: 379).

Another participant said prior to a BE episode she has thoughts hoping she will not binge, "I hope I don't...I hope I can control myself and not do it" (P2: 209).

One participant told of having two voices, one male and one female. She described the male voice as a "little devil" which encourages her to binge eat whilst the female voice tries to discourage her. Prior to a BE episode she explained, "... he is

always saying go on, go on, you know you will do it anyway, so why the hell bother being good anyway?" (P4: 299). She then went on to say:

> Yeah, and I won't listen to the nice little voice which says don't worry, don't panic, you can do it, you can cope, I will listen to him saying go and sit down, go and get something to eat, it is so easy. (P4: 483)

Following a BE episode, the same participant said, "I try to say, well ok you have done it, stop it there, don't let it carry on...pull this back, look what you have done, you don't need any more to eat today, leave it" (P4: 758).

3.4.5 Research question 2: What cognitions and metacognitions related to eating, weight and shape are described by obese people who do not report binge eating?

3.4.5.1 Obese non binge-eaters: themes and sub-themes.

Four main themes and 12 sub-themes were identified. Some sub-themes were also divided into lower-order themes. The themes included the a priori themes which were introduced through the use of the interview guide, and data-driven themes that emerged directly from the interviews. The a priori themes and sub-themes were retained as the data supported the inclusion of these. The two a priori themes both produced data-driven sub-themes in addition to the a priori sub-theme. The a priori sub-theme also produced its own data-driven lower-order themes. The other two main themes and corresponding sub-themes were data-driven themes, emerging from the interview and matched the main themes of the obese binge eaters.

3.4.5.2 Negative self-beliefs.

Negative self-beliefs emerged as a data-driven main theme from the interviews. As stated previously, the metacognitive profiling interview was not designed to explore such beliefs and therefore they were not necessarily expected to be identified during the course of the interviews. None of the male obese non-binge eaters (four out of the five participants) reported any negative self-beliefs. However, the female obese non-binge eater did make reference to negative self-beliefs and related these to her obesity.

The participant made reference to negative self-beliefs around being worthless and not good enough, "...the thought pattern generally is that I am a waste of space really, that I will never be good enough" (P9: 408). She had insight into where these beliefs may have originated from and linked these back to negative childhood experiences including her treatment by family members for being "fat", "And from the age of 3 I can always, my maternal grandmother always used to say to me that I was fat and ugly and didn't deserve to live" (P9: 90). She went on to explain how these beliefs had recently been activated when she was refused treatment for a health problem as a result of her size, "...it was almost like the doctor confirmed that I am a 2nd class citizen, that I don't deserve treatment, that I am not worthy" (P9: 652), "And I'm not worth it, even the NHS doesn't think I am worth it" (P9: 668).

3.4.5.3 Metacognitive knowledge.

As there is no existing literature specifically investigating metacognition in obese people, metacognitive knowledge was not included as a theme in the a priori template. However, during the course of the interviews, participant 9 expressed a positive metacognitive belief specifically related to eating and therefore this theme has

been included in the final template. As with the previous theme of negative self-beliefs, none of the remaining four male participants reported any explicit metacognitions.

3.4.5.3.1 *Positive metacognitive beliefs.*

The idea that being aware of or monitoring thoughts can make an individual less likely to binge was reported, suggesting if thoughts are not monitored individuals may be more likely to binge eat. When asked if she finds she monitors her thoughts when she is aware of them, the participant replied, "Probably...and that is probably why I don't binge" (P9: 570).

3.4.5.4 Positive beliefs related to eating.

'Positive beliefs related to eating' was included as an a priori theme as previous literature has identified these types of beliefs in obese people (e.g. Hunt & Rosen, 1981). The interviews found that all participants expressed at least one positive belief related to eating. A number of the positive thoughts identified were related to a particular episode of eating although many more general positive thoughts related to eating and food were also reported. In total, three sub-themes were identified.

3.4.5.4.1 *Eating / food is pleasurable.*

The dominant sub-theme was 'eating / food is pleasurable'. All participants expressed to some extent the idea that food is something that they "enjoy" and eating is on the whole a pleasurable experience. The explanations behind why participants thought eating was a pleasurable experience were varied. One participant explained, "Well, it produces endorphins so it's got to be pleasurable, I mean it, it's a mechanical process" (P6: 217).

Two participants also specifically referred to the enjoyment they gain from the sensory experience of eating, "it's the sensation, it's definitely a sensory thing in my view" (P6: 9).

Food was also described as a "passion" by one participant (P9: 26) and as something that should be shared with others, "It is not always the eating of it weirdly, it is the cooking for other people, it is very much an expression of nurturing and love to me and certainly food is something to be shared" (P9: 28).

Two participants referred to the fact that they enjoy cooking. One participant spoke of a number of his favourite dishes which he likes to cook. Another spoke about cooking being her creative outlet and something she finds relaxing, "...I can't draw, I can't really sing or play music so that is my creative outlet...cooking is my relaxation" (P9: 523).

3.4.5.4.2 *Eating in response to a negative feeling.*

Three participants acknowledged that at times they eat in response to a negative feeling such as anger or low mood. However, their descriptions of these episodes were very different to the obese binge-eaters descriptions of their BE episodes. One participant described eating one or two extra packets of crisps at work at lunchtime to relieve boredom:

> ...I suppose work is a bit like that because it is boredom and the depression of being there and that, so eating is a comfort, it does help to manage an emotion but I ain't eating something thinking, yeah its lovely, I'm ready to go back to work, it is more like, yeah I am eating something, it beats being in there melting honey or whatever I am doing that day. (P8: 367)

3.4.5.4.3 *Positive thoughts related to being overweight.*

One participant spoke about positive beliefs she has about the benefits of being overweight. She saw being overweight as being part of her identity, "I do think a lot of my thinking is, part of the definition of me is fat" (P9: 269), "So in a way it think it has made me who I am" (P9: 277).

She also spoke about the protective nature of being overweight and it providing a perceived legitimate reason for someone not to like her:

> By being big if people don't like you it is because you are big, if people like you they like you because of who you are not because of what you look like...And you know I suppose it is the thought that I would hate it if someone didn't like me for who I am so the weight is sort of a bit of a protective barrier. (P9: 224)

3.4.5.5 Negative beliefs related to eating.

'Negative beliefs related to eating' was included as an a priori theme and within that theme, 'weight and shape concerns' was included as an a priori sub-theme in accordance with previous literature (e.g. Nauta et al., 2000). In line with the a priori template, all participants expressed at least one negative belief about eating. As with the obese binge eaters, within the a priori sub-theme of 'weight and shape concerns', data-driven lower-order themes emerged with 'physical concerns about weight' being particularly prevalent. Most of the negative thoughts identified were not related to a particular episode of eating but were more general negative thoughts related to eating, food and weight and shape. In total, seven sub-themes were identified.

3.4.5.5.1 *Weight and shape concerns.*

As with the binge eaters, over the course of the interviews it became apparent that the weight and shape concerns expressed by participants included a dominant lower-order theme related to 'physical concerns about weight' and the impact on physical health.

Weight and shape concerns not related to physical health were mentioned by two participants. However, the participants did not seem overly distressed by these concerns and they were generally not as prominent as physical concerns about weight. When asked what they thought about their weight and shape one participant replied, "I am quite conscious of it, it's not easy, stupid things like buying clothes and that" (P8: 412). One participant also made reference to their weight and shape concerns stemming from being judged by other people, "I think it is what's projected onto you actually rather than I how I feel about myself, it is the connotations that other people put on you, you know if you're fat you are so lazy, you're also stupid" (P9: 160).

Physical concerns about weight were commonly reported and were the most prevalent type of negative belief about eating. The majority of concerns were associated with the impact of being overweight on the individual themselves. When asked if they had any worries about their weight and shape one participant said, "No I don't worry about it, it is only when I have pains in my hips and back and when I walk too far, my pain in my back, I would say is horrendous" (P7: 136). The impact of health concerns on family members was also discussed:

> um I've knackered my knees...and we've got two little pups...so that [Wife's name] and I walk them regularly...I should think in the last week maybe 10 days [Wife's name] has done it every time and I feel an absolute s*** (expletive). I do I feel terrible about it, but I know full well if I walk half a mile down the road

I shall have to sit on the pavement and wait for [Wife's name] to get the car to pick me up and bring me back again and this is, it's all weight related. (P6: 176)

The physical benefits of losing weight were also spoken about by one participant, "...losing the weight would give me the energy to do all of the things I want to do that I can't do at the moment" (P9: 438).

3.4.5.5.2 *Thoughts about dieting.*

Two participants spoke about their experiences of dieting. As with the binge eaters, neither had found being on a diet a successful strategy for losing weight in the long term. These participants tended to talk negatively about the outcomes of dieting but there was also a tendency to take responsibility for the diets not working:

I've been on every diet there is...and most of them I seem to lose around a stone and a half but after a while I lose concentration and um and I just slip back in to my old habits...and consequently instead of a pound of week dropping off, a pound a week comes back on, and after x number of weeks you're back where you started. (P6: 118)

3.4.5.5.3 *Habit.*

Two participants spoke about their eating in terms of it being a "bad habit". One participant in particular discussed the "hearty meals" his mother used to prepare for the family when he was younger as they used to do a lot of manual work. However, he reported still eating similar quantities now whilst acknowledging his lifestyle is much more sedentary.

3.4.5.5.4 Financial cost.

One participant commented on the financial cost of trying to lose weight:

> all the things they say are good for you cost a hell of a lot more money, which to me, in my case money-wise, that is out of the window, you can't do it. They say do exercise, you got to go to the gym, half the time you have to pay for a year's subscription so that is out the window. (P7: 91)

3.4.5.5.5 Eating the wrong things.

Most participants made some reference to the idea that their obesity is partly as a result of them either eating the "wrong thing" or generally eating a greater quantity than they need, "And I do know that probably my portion sizes are too big and we're eating the wrong things" (P9: 740).

3.4.5.5.6 Sense of disappointment.

One participant expressed a sense of disappointment in themselves when they eat more than they intend or need to:

> I think I know I shouldn't have bought it, really I would be disappointed with myself for buying it, as I know I shouldn't buy them, well shouldn't isn't the right word, but...I feel a bit of disappointment 'cos I want to lose weight and I know that if I have them then I won't, so there is disappointment in there somewhere. (P8: 299)

3.4.5.5.7 Resignation.

Despite the negative beliefs associated with eating, weight and shape and the acknowledgement by some that their eating habits may be contributing to them being

overweight, there seemed to be a sense of resignation from most participants that they would not or could not change their behaviours. One participant explained when they eat more than they intend or need they often think, "I shouldn't eat this because it will pile the pounds on, but I will still eat it anyway" (P8: 97). When discussing trying to lose weight, another participant explained, "I mean, I'm aware of the machinery involved, I might even be aware of some of the psychology involved, I just don't seem to be able to do anything about it" (P6: 127).

3.4.6 Research question 3: Do the cognitions and metacognitions related to eating, weight and shape differ in obese people who report binge eating compared to obese people who do not report binge eating, and if so how?

Overall, more cognitions and metacognitions related to eating, weight and shape were reported by the obese binge eaters compared to the obese non-binge eaters. This was reflected in the detail and depth of the final templates.

All of the main themes present in the non-binge eaters were also present in the binge eaters with two additional main themes being present for the binge eaters.

Negative self-beliefs were observed in both the binge eaters and non-binge eaters. However, they were much more commonly reported in the binge eaters and only reported by the one female non-binge eater. The negative beliefs reported by both the binge eaters and non-binge eater generally reflected similar themes around worthlessness.

Metacognitive knowledge was also present in both binge eaters and non-binge eaters. However, as with the negative self-beliefs, explicit metacognitions were considerably more prevalent in the binge eaters. Only one positive metacognitive belief

was reported by the one female non-binge eater. None of the other binge eaters reported any metacognitive beliefs.

Positive beliefs related to eating were widely reported by both binge eaters and non-binge eaters. However, when comparing the two templates, the sub-themes which emerged were very different. As expected, in the binge eaters' template, many of the positive beliefs were specifically related to the behaviour of BE and the use of this as a strategy to help manage distressing thoughts and emotions. In contrast, many of the beliefs reported by the non-binge eaters were related to the pleasure associated with eating (as opposed to BE) and food. Some non-binge eaters did make reference to eating in response to a negative emotion, such as to relieve boredom or to lift low mood. However, there was no sense that these emotions were overwhelming or distressing in the same way reported by the binge eaters and the episodes of eating reported by the non-binge eaters were not out of control.

Negative beliefs related to eating were also widely reported by both the binge eaters and non-binge eaters. Comparing the two templates, again there were differences in the sub-themes, although there also appeared to be some similarities. As expected, many of the negative beliefs reported by the binge eaters were specifically related to episodes of BE. In contrast there were no general negative concerns related to the actual process of eating reported by the non-binge eaters. Thoughts around secret eating and eating being uncontrollable were also only reported by the binge eaters. Weight and shape including physical concerns about weight were reported by binge eaters and non-binge eaters alike. However, weight and shape concerns not related to physical health were much more commonly reported by the binge eaters. Similar thoughts about dieting tended to be reported by both binge eaters and non-binge eaters.

In addition, only binge eaters reported permissive thoughts. No other main themes emerged from the interviews with the non-binge eaters, whereas the additional theme of ‘reflections’ emerged in those that reported binge eating.

4 Discussion

4.1 Overview of Chapter

An overview of the results in relation to the study research questions and previous relevant research is presented. This is followed by a discussion of the theoretical and clinical implications of the results. Strengths and limitations of the study are considered and directions for future research and overall conclusions are reported.

4.2 Overview of Results

A mixed methods, predominantly qualitative study aimed to provide in-depth and valid data from semi-structured interviews, contextualised by results from self report questionnaires, in order to explore and compare the cognitions and metacognitions related to eating, weight and shape reported by obese people with and without BE.

Ten obese participants took part, five with BE or BED and five without. Of those who were binge eaters, two met criteria for BED according to DSM-IV (P1; P4). The remaining three reported BE episodes when they would eat large amounts of food and feel out of control of their eating but due to the lack of frequency (i.e. they were not bingeing at least twice a week) did not meet DSM-IV criteria for BED (P2; P3; P5). However, previous research has found similarities between those that meet criteria for BED and those that are sub-threshold and the stringency of the diagnostic criteria has been questioned (e.g. Striegel-Moore et al.,1998). Therefore, following discussions in research supervision, these participants were included as binge eaters.

As the sample size in this study was small, unfortunately it was not possible to perform any statistical analyses on the quantitative data collected. However, on the face of it, the questionnaire scores indicated there were differences between the binge eaters

and non-binge eaters. On the EDE-Q, subscale and global scores were generally higher for the binge eaters than the non-binge eaters suggesting the presence of a higher level of eating disorder psychopathology in those participants. Amongst the binge eaters, generally scores were similar for those who met BED criteria compared to those sub-threshold. The scores for one participant who did not meet full criteria (P3) were slightly lower (although still above community norms), although this participant reported large improvements in her BE symptoms over recent years. Binge eater scores were also generally higher on the MCQ-30, EDBQ, EDTQ and YSQ-S indicating the presence of more metacognitive factors, underlying assumptions related to eating, weight and shape, positive, negative and permissive thoughts and core beliefs in these participants compared to the non-binge eaters.

Template analysis was used as the specific qualitative methodological approach. The final analysis produced two templates, one for obese people with BE and one for obese people without BE. The templates combined both theory-driven a priori themes based on the cognitive model of BN (Cooper et al., 2009) and the S-REF model (Wells, 2000) which were confirmed by the content of the interviews and additional emergent data-driven themes which reflected the additional views or experiences raised by participants during the interviews.

The interviews with all BE participants focussed on a recent binge episode. The interviews with the non-binge eaters focussed on a recent time when they had felt worried, anxious or bad about their eating. Whilst all non-binge eaters were able to think of an occasion, they all commented their feelings had not been particularly strong in the situation. Due to the semi-structured nature of the interviews, more general thoughts about eating, weight and shape also emerged from both binge eaters and non-binge eaters.

Overall the analysis found that cognitions and metacognitions related to eating, weight and shape were reported by obese binge eaters and non-binge eaters alike. However, differences were observed in the content of these and some cognitions and metacognitions were more commonly found in the binge eaters, as reflected in the detail and depth of the two final templates.

4.2.1 Negative self-beliefs.

Negative self-beliefs were observed in both the binge eaters and non-binge eaters and therefore this theme was included in both final templates. 'Negative self-beliefs' was not included as an a priori theme as the metacognitive profiling interview was not designed to elicit such beliefs and so it was not predicted they would emerge. However, negative self-beliefs are included as important components in both the cognitive model of BN and the S-REF model and therefore the emergence of such beliefs during the interview is in line with existing theory.

The literature suggests that negative self-beliefs play an important role in eating disorder populations including people with BED. For example, a BED group had similar levels of pathological core beliefs to a BN group and both these groups had significantly more pathological core beliefs than a non-clinical group (Waller, 2003). Significantly more negative self-schemas have also been found in obese women with BED compared to obese women with no episodes of bingeing (Nauta et al., 2000). Higher levels of maladaptive schemas have also been found in an obese sample compared to a non-obese sample (Anderson et al., 2006).

The interview data from the current study found negative self-beliefs existed in both obese binge eaters and non-binge eaters but were more prevalent in the binge eaters, which would seem to support the existing literature. In fact, only the one female

non-binge eater reported negative self-beliefs. The beliefs reported by both the binge eaters and the non-binge eater generally reflected similar themes around worthlessness. These results were comparable to the questionnaire data which showed that in general, total scores on the YSQ-S were higher for binge eaters compared to non-binge eaters, indicating the presence of more maladaptive, unhealthy core beliefs. The highest score for the non-binge eaters was that of the female participant.

As stated previously, the metacognitive profiling interview was not designed to elicit negative self-beliefs and therefore there is some ambiguity about these results. It is possible that the other non binge-eaters may hold negative beliefs about themselves but these were not revealed during the course of the interview. Alternatively, they may not hold such beliefs, supporting the idea of higher prevalence rates of negative self-beliefs in binge eaters. The results could also highlight a difference between those non-binge eaters who did not report negative self-beliefs and the one participant who did. This is discussed in more detail in section 4.2.6.

4.2.2 Metacognitive knowledge.

Metacognitive knowledge was also present in both the binge eaters and non-binge eaters. Metacognitive knowledge and the sub-themes of positive and negative metacognitive beliefs were initially included in the a priori template for the obese binge eaters in line with the S-REF model and the cognitive model of BN. The S-REF model suggests that disorder can occur when negative self-beliefs occur in conjunction with metacognitions that interpret and control cognitions and behaviour. The cognitive model of BN proposes this is also how BN and BE behaviours can occur and specifically suggests that the metacognitions include positive and negative beliefs about eating and eating-related cognitive processes. As there is no research exploring metacognition in

obesity, metacognitive knowledge was not included as an a priori theme for obese non-binge eaters.

Although there is no existing literature specifically exploring metacognition in either BED or obesity, there is existing research showing higher metacognition scores in AN compared to a community control group (McDermott & Rushford, 2011) and dieting and non-dieting women (e.g. Cooper et al., 2007; Woolrich et al., 2008). Interestingly in these studies most of the AN group had a history of the binge purge subtype and some lacked the weight criteria for a DSM-IV diagnosis of AN, suggesting the results may be applicable to those who engage in eating disorder behaviours other than restricting and who are not severely underweight. Presence of metacognitive beliefs related specifically to desire thinking has also been identified in participants with BN with five out of six participants identifying both positive and negative metacognitive beliefs (Caselli & Spada, 2010).

In the current study, the interview data showed that metacognitive knowledge was common in the obese binge eaters. This was supported by the questionnaire data which showed that in general, scores from the MCQ-30 were higher for the binge eaters than the non-binge eaters. Therefore, this suggests that compared to the non-binge eaters, the obese binge eaters had higher levels of metacognitive factors which the S-REF model considers important in psychological distress. This would seem to provide further support for the existing literature and the association between eating disorders and greater engagement in metacognitive activity. In the absence of existing literature exploring metacognition in obesity, the fact metacognitive knowledge, although to a lesser extent, was reported qualitatively and quantitatively by obese people who do not binge eat suggests this may be worthy of further exploration.

However, as with negative self-beliefs, out of the non-binge eaters, explicit metacognitions were only reported by one participant. This was the same participant who reported negative self-beliefs. Unlike negative self-beliefs however, the metacognitive profiling interview is specifically designed to elicit metacognitive knowledge. Therefore this would suggest that positive and negative metacognitive beliefs were not present in the other non binge eaters, rather than simply not reported. This may support the idea that metacognitive knowledge scores are higher in obese binge eaters than obese non-binge eaters. However, it may also reinforce the idea that this participant had a different profile to the other non binge-eaters.

4.2.3 Positive and negative beliefs related to eating.

Positive and negative beliefs related to eating were included as a priori themes for both binge eaters and non binge-eaters. The interview data from all participants supported the inclusion of these themes and they were therefore retained.

For the binge eaters, 'bingeing is a helpful behaviour' was included as an a priori sub-theme as a type of positive belief about eating. This was in accordance with the cognitive model of BN which suggests that such thoughts promote BE. This was also supported by the interview data.

'Weight and shape concerns' was included as an a priori sub-theme as a type of negative belief about eating for both the binge eaters and non binge-eaters. For the binge eaters, this was because the cognitive model of BN suggests that such thoughts are important in the maintenance of BE as they help to reinforce the negative self-beliefs that make an individual vulnerable to BE in the first place. Although to a lesser extent, research also suggests that weight and shape concerns are present in obese people without BE (Nauta et al., 2000). This sub-theme was also supported by the

interview data for both binge eaters and non binge-eaters and was therefore retained. Within this sub-theme, a dominant lower-order theme emerged for both the binge eaters and non-binge eaters of 'physical concerns about weight'.

Other data-driven sub-themes for both positive and negative beliefs emerged for both binge eaters and non binge eaters. For the binge eaters, many of the positive beliefs were specifically related to the behaviour of BE and the use of this as a strategy to help manage distressing thoughts and emotions. In contrast, many of the beliefs reported by the non-binge eaters were related to the pleasure associated with eating (as opposed to BE) and food (e.g. the sensory experience).

Many of the negative beliefs reported by the binge eaters were specifically related to episodes of BE. In contrast there were no general negative concerns related to the actual process of eating reported by the non-binge eaters. Thoughts around secret eating and eating being uncontrollable were also only reported by the binge eaters. Weight and shape concerns including physical concerns about weight were reported by binge eaters and non-binge eaters alike. However, weight and shape concerns not related to physical health were much more commonly reported by the binge eaters. Similar thoughts about dieting tended to be reported by both binge eaters and non-binge eaters. The presence of additional sub-themes of negative thoughts is also in line with the cognitive model of BN which suggests that if BE is interpreted negatively, for example, by being seen as a loss of control or as a sign of failure, this may reinforce the negative self-beliefs which made an individual vulnerable to BE in the first instance (Cooper et al., 2009).

Support for the qualitative data came from the questionnaire scores which were generally higher for binge eaters compared to the non-binge eaters on the EDTQ and EDBQ. The EDTQ measures positive and negative beliefs about eating as suggested in

the cognitive model of BN. A higher score on the measure indicates more of these thoughts are present. The EDBQ measures assumptions related to eating, weight and shape, the presence of which may be reflected at the level of NATs. A higher score indicates more concerns are present.

In line with the model, previous research suggests that both positive and negative beliefs are present in eating disorders such as AN and BN (e.g. Cooper & Fairburn, 1992; Cooper et al., 2006). In these studies, both positive and negative beliefs about eating were found to predict eating disorder symptoms in both AN and BN groups suggesting these beliefs are important in people with a range of eating disorder behaviours including BE. Other research found when faced with stressful negative events, women with BN reported significantly greater use of avoidance coping items such as "eating helped distract me" and "eating helped me get rid of some angry feelings" than sub-clinical bulimics for binge episodes but not for non-binge episodes (Sherwood et al., 2000). The findings of the current study support these previous results and extend existing findings by suggesting that a range of positive and negative beliefs about eating can be present specifically in obese people who binge eat and are also particularly pertinent during BE episodes.

The findings from this study that positive and negative beliefs about eating, weight and shape can also occur in obese people who do not binge eat is also in line with existing research. Nauta et al. (2000) interviewed obese binge eaters and obese non-binge eaters and as in the current study, results found that the majority of obese binge eaters mentioned negative self-schemas combined with weight, shape, or eating concerns, whereas the majority of obese non-binge eaters mentioned weight, shape, and eating concerns that were not combined with negative generalisations about the self. In addition, O'Connor and Dowrick (1987) asked normal weight, obese, and previously

obese people to rate belief in and frequency of 26 dysfunctional cognitions concerning weight, food, and eating. Obese participants reported higher belief in dysfunctional food and weight-focused cognitions than normal-weight people.

4.2.4 Permissive thoughts.

'Permissive thoughts' was included as an a priori theme for the binge eaters. These thoughts are included in the cognitive model of BN and are thought to be important for the occurrence of BE episodes as they have the effect of relinquishing personal responsibility by suggesting eating is out of the control of the individual (Cooper et al., 2004). Support for the inclusion of these thoughts in the model comes from the presence of dichotomous thinking, a type of permissive thought, typical of the negative self-statements characteristic of BN (Fairburn et al., 1986).

In support of the model, in this study, results from the EDTQ permissive thoughts subscale showed generally higher scores for the binge eaters compared to non-binge eaters. The inclusion of 'permissive thoughts' as a theme was also supported by the interview data. However, permissive thoughts were not commonly reported in this sample. This might reflect recent literature which found the role of permissive thoughts questionable in the cognitive model of BN (Bergin & Wade, 2012). These authors suggest a predominance of positive beliefs about eating over negative beliefs may be sufficient to elicit bingeing and permissive thoughts are not as relevant to the maintenance of BN as originally thought.

4.2.5 Reflections.

No other main themes emerged from the interviews with the non-binge eaters, whereas the additional theme of 'Reflections' emerged from the binge eaters. These

thoughts tended to either take the form of questions about why or what participants were doing or were expressed as hopes or a form of reasoning with themselves and were common before, during and after BE episodes. There is no existing literature exploring such thoughts.

4.2.6 Impact of anxiety and depression.

As previous research has indicated increased psychopathology in people with more severe obesity and people with BED, this study included the HADS to allow for consideration of the impact of anxiety and depression levels on the other results. Total scores ranged for both the binge eaters (from 10-30) and non-binge eaters (from 2-24) although the majority of scores were indicative of mild to moderate symptoms of depression and anxiety. The fact that some scores were higher than those found in a large non-clinical sample (e.g. Crawford et al, 2001) is in line with existing research suggesting higher levels of psychopathology, particularly depression, are found in obese people (e.g. Goldsmith et al., 1992) and obese people with BED (e.g. Grilo et al., 2009).

In the current study, the scores were mixed for both the binge eaters and non-binge eaters, although overall, the binge eaters had slightly higher scores. However, with the small sample size it is hard to assess any real difference and therefore hard to comment on whether depression and anxiety levels impacted on the other questionnaire scores and the qualitative data. Had the sample size have been larger it would have been interesting to control for anxiety and depression levels and observe any differences.

4.2.7 Additional comments.

Due to the small sample size and qualitative nature of this study the results cannot be generalised to other obese binge eaters and non-binge eaters. However, the

similarities between the five binge eaters were striking in terms of the presence and content of their cognitions and metacognitions related to eating, weight and shape. This would suggest this is an area worthy of future study and the development of a specific model of BE in obesity may be beneficial. For the non-binge eaters, the four male participants' interview data was also strikingly similar in terms of the content of cognitions and omission of metacognitions. However, the profile of one participant (P9) was different with regards to the presence of negative self-beliefs and metacognitive knowledge. It is certainly possible that other obese non-binge eaters may also have similar profiles to this participant but due to the small sample size of the current study this was not observed. However, it is also possible that the majority of non-binge eaters have profiles more similar to the other non-BE participants in this study and there were other reasons accounting for the differences observed. It is therefore worth considering what those reasons could be.

One obvious difference between the non-BE participants was gender as it was the only female participant who reported negative self-beliefs and metacognitions. In terms of occupation, this participant's job involves a degree of self-reflection which may be critical to the differences. Age, BMI and depression score of the participant may have provided insight in to the differences. However, her age was similar to that of the other participants and although her BMI was one of the higher values, it was not unusual as another non-binge eater had a higher BMI. In addition, her anxiety and depression scores were similar to other scores on the HADS, although during the interview she did report self-harming behaviours. Her scores on the EDE-Q subscales other than BE were similar to the other non-binge eaters. On the BE subscale this participant did report BE. However, BE status was clarified at interview and whilst it was apparent this participant would often eat a large amount of food, this was how she

referred to her eating habits more generally and the perceived large amounts were at mealtimes. On the occasions when she felt she had eaten a large amount there were no associated feelings of loss of control. Therefore, following discussion in research supervision the participant was classified as a non-binge eater. In addition, she was not the only participant who was classified as a non-binge eater following interview who had reported positively on the EDE-Q BE subscale. Consequently, instead of highlighting a specific difficulty with classifying BE in this participant, another suggestion would be that the EDE-Q is not always accurate in identifying BE, or more specifically, can over estimate prevalence of BE.

In terms of scores on the MCQ-30 the participant had a slightly higher score than the other non-binge eaters but the non-binge eaters did score on the questionnaire. This questionnaire explores a number of metacognitive factors in addition to the metacognitive knowledge which was identified from the interview data. Therefore, it is possible that the difference in the interview data between the non-binge eaters was reflective of the type of metacognitive activity employed by the participants rather than an absence of metacognitive activity.

Further exploration might have been useful to consider why this participant had not developed BE despite having some of the vulnerabilities. Alternatively, it would be interesting to know if given these vulnerabilities and her self-harming whether she would meet diagnostic criteria for any other mental health problems.

4.3 Theoretical Implications

The cognitions and cognitive processes involved in BED are currently not fully understood and as such the disorder has no widely accepted cognitive model. Therefore, one purpose of this study was to explore in more detail the cognitive and metacognitive

processes involved in obese people with BED to help guide future research with the hope of developing a theoretical model.

In addition, BED, commonly, although not exclusively, occurs in obesity. Therefore, exploring specific cognitive and metacognitive beliefs experienced in obese people who binge eat compared to obese people who do not binge eat may also provide further clarity regarding the validity of discriminating between these two groups.

Two relevant models were used to underpin the current study. The cognitive model of BN (Cooper et al., 2009) provides a detailed explanation of the cognitions and cognitive processes involved in the BE cycle within BN, although the BE cycle described may also have applicability to other cases of BE. The S-REF model provides information regarding specific metacognitive beliefs which are generic vulnerability factors underlying psychopathology, and as such, should also be present in people with BED.

The Cooper et al. (2009) model was used to underpin the study as opposed to other relevant cognitive behavioural models of BN (e.g. Fairburn, 1997) due to its detailed explanation of potential cognitions involved in BE. The model proposed by Fairburn (1997) places a greater emphasis on BE being the consequence of dieting and restriction of food intake. This theory has been widely supported for those with BN where dieting almost invariably precedes the onset of BE. However, research suggests the relationship between dieting and BE in obese people is less clear. About half of obese individuals with BED report dieting before the onset of BE, with the remainder reporting BE either prior to or at about the same time as the first diet (Fairburn & Brownell, 2002). In this sample, all the obese binge eaters had a history of dieting. Unfortunately the study did not extend to exploring whether the onset of dieting preceded the onset of bingeing or vice versa. However, at the time of the interviews,

only one of the binge eaters reported actively dieting. For this participant therefore, dieting and restraint theory may be more applicable. Although the interviews did not ask specifically about dietary intake, the other participants did not report dieting and instead reported specific emotional triggers for their BE episodes. In addition, none of these participants reported fasting when asked the brief DSM-IV screening questions to check their BE was not associated with compensatory behaviours. It may therefore be the case that their history of dieting made them vulnerable to BE in the first instance but currently management of distressing emotions is a stronger maintaining factor for their BE more in line with the Cooper et al. (2009) model.

A number of the transcripts gave clear descriptions of a BE episode, allowing for tentative provisional formulations to be compiled. For an example formulation please see Appendix L. The descriptions were similar to the process of BE described in the cognitive model of BN. In summary, in accordance with the model, data from the binge eaters' transcripts suggest negative early life experiences, which may or may not be related to food or appearance, can lead to the development of negative self-beliefs. According to the cognitive model of BN when negative self-beliefs occur in-conjunction with metacognitive beliefs this leads to a vulnerability to the disorder. For this sample, results from the transcripts also suggest it is possible that when negative self-beliefs occur in-conjunction with metacognitive beliefs this could lead to a vulnerability of BE in obesity as both these types of beliefs were prevalent in BE participants. Prior to a BE episode participants described trigger situations which seemed to activate their negative self-beliefs. In order to manage the resulting distressing emotions, participants would BE. This would be fuelled by positive thoughts about BE being a helpful behaviour for a variety of individual reasons. At this stage some negative thoughts about the consequences of BE, particularly in relation to weight

and shape were present but the positive thoughts combined with possible permissive thoughts tended to outweigh the negative thoughts, resulting in a binge. During and after a binge an initial feeling of relief may be present which serves to positively reinforce the behaviour of BE. However, this relief is brief and negative thoughts about the potential consequences of the binge become more prevalent. As a result the individual is likely to feel guilty, worse about themselves and this serves to reinforce their negative self-beliefs which may in turn encourage further BE.

The results of the study suggest that both the S-REF and cognitive model of BN could be useful in helping to understand the development and maintenance of BE in obesity. In particular, the interview data supported the presence of metacognition in this sample of obese binge eaters. This suggests it could be worth exploring this relationship in more detail with the future goal of developing a new metacognitive model. In particular, metacognitive knowledge including positive and negative metacognitive beliefs about eating and eating related cognitive processes as described in the BE cycle in the cognitive model of BN seem important.

In addition to the aspects of the models supported by the data, the participants in the current study identified additional cognitions that did not necessarily occur during a specific BE episode but were important in the maintenance of BE in general and may therefore be important to consider in future theoretical developments. For example, physical concerns about weight, making negative comparisons to others and perceiving negative judgements by others would serve to reinforce negative self-beliefs which make an individual vulnerable to BE. The secretive nature of BE also contributes to feelings of guilt due to a lack of honesty with oneself and others and also reinforces negative self-beliefs. Thoughts about dieting also seem to maintain the problem. Positive thoughts that dieting will work or result in weight loss increase the likelihood

of dieting occurring, although the literature shows that dieting itself promotes BE (e.g. Fairburn, 1997) and therefore this helps to maintain the problem. Following the failure of a diet the response was for the individual to blame themselves, which only reinforced their negative self-beliefs. Finally, beliefs around bingeing being uncontrollable can lead to failed or counter-productive attempts to control eating, therefore increasing the likelihood of further binges (Cooper et al., 2009). Any other additional positive beliefs about eating also serve to maintain the problem as such thoughts promote BE.

In summary, future models of BE in obesity should consider different forms of cognitive and metacognitive content. As well as placing importance on eating-related cognitions at the level of NATs, it is also necessary to consider other levels of cognitive content, in particular negative self-beliefs and consider cognitive content outside of specific BE episodes. The role of dieting should also be explored in more detail.

4.4 Clinical Implications

If future research were to support the current study, the findings suggest clear implications for clinical practice. In line with the recommendations for theoretical models, treatment for BED in obese people should aim to target different forms of cognitive and metacognitive content. Specifically treatment strategies focussed on metacognitive processing, such as those outlined by Wells (2000) for GAD and OCD, may also be a helpful focus for therapeutic intervention for BE in obese people.

As well targeting eating-related NATs, treatment should also consider other levels of cognitive content, in particular negative self-beliefs and consider cognitive content outside of specific BE episodes. In addition, the presence of NATs may reflect the presence of assumptions related to eating, weight and shape (e.g. Cooper et al., 1997). Unfortunately this was not explored during the interviews in the current study

although results from the EDBQ suggest such assumptions were present in this binge eating sample and highlights a potential further aspect of clinical work that may need addressing.

As stated previously, obesity is associated with greater levels of psychopathology than non-obesity and obesity plus BED is associated with even greater levels of psychopathology, including depression. The results from the HADS in this study showed scores indicative of mild to moderate symptoms of depression and anxiety in both obese binge eaters and non-binge eaters reinforcing the need for additional psychopathology to be considered during treatment.

The results from this study may also provide some information regarding the differences between BED according to DSM-IV criteria and sub-clinical BE. Out of the BE participants, two met DSM-IV criteria. With a larger sample it would have been interesting to explore statistically whether questionnaire scores differed significantly between those who met full criteria and those who were sub-clinical. Due to the small sample size this was not possible in the current study. However, the quantitative scores for those participants who did meet criteria for BED did not appear noticeably different to those who reported sub-clinical symptoms. This may provide support for the view that current DSM-IV BED criteria is restrictive and arbitrary (Hay & Fairburn, 1998) and revision of the criteria should be considered for DSM-V. This also has current clinical implications. It is unlikely individuals with sub-clinical BED would currently be accepted for treatment in Eating Disorder Services, despite the fact their profiles may be very similar to those that do meet full criteria. In this case, these people will not receive treatment targeting their BE cognitions but instead be prescribed treatment for obesity targeting weight loss which is unlikely to be successful in the long term.

Despite the small, exploratory nature of the current study, there appeared to be clear differences between obese binge eaters and obese non-binge eaters supporting the notion that that it is important to distinguish binge eaters and adapt treatment accordingly. However, there were also similarities between the final templates, such as the physical health concerns, highlighting the importance for future research to explore specific cognitions in obese populations in general and consider incorporating these factors in to interventions.

In this study, the non-binge eaters sample identified positive thoughts about being overweight as it can be seen as a protective factor and as part of identity. Such positive thoughts are worth further exploration and if found to be important should be considered during treatment as they are likely to make it harder to adhere to current obesity treatment recommendations such as making changes to diet and exercise.

In this sample, the EDE-Q was not always accurate in identifying BE. More specifically there was a tendency for participants to report BE, which when clarified at interview did not classify as BE, which lead to over-estimates of the prevalence of BE. Although the EDE and EDE-Q subscales have been found to be significantly, although modestly, related in a sample of people with BED (Wilfley et al., 1997), the EDE interview is considered by many investigators to be the 'gold standard' for assessing eating disorder features (e.g. Wilson et al., 1993; Garner, 2002). Unfortunately though it is not always practically possible to conduct a clinical interview and in such situations self-report measures are important. However, the difficulties encountered in this study with accurately identifying BE in obese individuals highlights the importance of using such measures as screening devices which should be verified by diagnostic interview.

4.5 Critical Evaluation of Study

4.5.1 Study strengths.

The predominantly qualitative nature of this study allowed for a detailed exploration of the specific feelings, beliefs and thought processes reported by obese people who do and do not binge eat. Although there are existing questionnaire measures exploring some of the beliefs relevant to this study, it is unlikely that such detailed and rich data would have been collected using a purely quantitative methodology. The study was also exploratory in nature and as such the qualitative approach was appropriate to generate new hypotheses in this under-researched topic area.

The decision to employ the specific qualitative methodological approach of template analysis was appropriate for use within the critical realist framework. The analysis followed a relatively structured framework and included generating a priori themes prior to analysis based on theory and evidence. This was particularly appropriate due to the considerable existing research on obesity and eating disorders in general. However, the method also allowed for modification and extension of the templates as the data from the interviews were collected and therefore the participant's individual experiences were revealed. Consequently the methodology offered a suitably flexible approach to analysis.

Although there are benefits to identifying a priori themes, there are also associated risks. By focusing on data that fit the a priori themes, there is a chance material may by overlooked that does not relate to them. It can also be difficult to recognise when an a priori theme is not proving to be the most effective way of characterising the data. Therefore, it was crucial during the analysis to remember the a priori themes were tentative and were equally subject to redefinition or removal as any other theme. In addition, in particular for the non-binge eaters the identified a priori

themes were kept to a minimum. This was in line with existing recommendations suggesting restricting the number of a priori themes as far as possible to reduce the risk of a clearly defined initial template limiting the analysis (King, 2004).

In line with specific guidelines for qualitative research (Elliot et al., 1999; Yardley, 2000) a number of quality checks were employed in the study to improve the quality of the research. In terms of validation of the research findings, during the interviews, the researchers paraphrased and checked understanding as a process of informal member checking to heighten validity. All participants were offered the opportunity to read their completed transcript and comment on the accuracy but all declined. Verbatim quotations were also included to evidence and support the decisions made and the themes reached.

In order to provide credibility checks, during development of the initial template the collaborating researchers carried out preliminary coding for each other on a sample of transcripts. The codings were then compared, contrasted and discussed, with the aim of agreeing an initial template. Further revisions of the template were assisted by members of a qualitative research forum at the UEA. Finally, the collaborating researchers reviewed each others' final templates against three transcripts. Any discrepancies or difficulties were discussed and any final changes made accordingly.

In order to demonstrate the reliability of coding the research process was kept as transparent as possible. As such, positively, all aspects of the research process are disclosed and in order to evidence the analytic process and the interpretation involved, an example extract from a coded transcript has been included (Appendix J) along with an account of the developing template. An audit trail of this process was kept along with a reflective account of the process and the decisions made. Importantly, the study acknowledged that researcher subjectivity impacts upon the researched and the research

findings. Therefore, reflexivity was taken in to account by identification of preconceptions brought to the project by the researcher. The fact that two researchers conducted the interviews also reduced the chances of sole interviewer bias.

Qualitative research also places an emphasis on depth and quality of data as opposed to quantity. Therefore, although the sample size was small, this was felt to be a sufficient sample to achieve a broad representation of views and to begin exploring the topics outlined. In addition, although the small sample size did not allow for any statistical analyses to be performed, the inclusion of the self-report questionnaire measures provided further context to the qualitative results. Positively the measures used all had good psychometric properties.

The clarification of BE status at interview was an additional strength to the study due to the previously mentioned criticism of self-report questionnaires.

Finally as both binge eaters and non-binge eaters were obese, the risk of any real cognitive differences between groups being obscured by objective concerns regarding weight and shape was reduced (Wilfley et al., 2000). This might have been a problem if the comparison group had been normal weight participants with BE.

4.5.2 Study limitations.

Given the time constraints of the current project the final sample size was small. Whilst large sample sizes are not required for qualitative research, ideally recruitment would have continued to confirm saturation of the data was achieved. Therefore the small sample size and the local nature of this research limit the wider relevance of the findings. Unfortunately whilst this means a number of tentative hypotheses can be proposed from the results, no firm conclusions can be drawn. However, similarities were noted between the findings of this study and previous research. This combined

knowledge lends weight to the consideration of the findings and the importance of considering additional cognitions; thus increasing transferability.

The recruitment process from the community weight loss programme was not straightforward and ultimately only one person was recruited from that site. It would have been beneficial to streamline the process to increase recruitment potential. However, the initial process was required by staff from the programme and was a condition of the research going ahead.

Unfortunately the two groups were not balanced equally in terms of gender. All the binge eaters were female and all but one of the non-binge eaters male. This imbalance means the results of the study could be attributable to gender as opposed to presence or not of BE. Unfortunately due to the small size of the groups it was not possible to statistically explore the impact of gender on the results. Existing research however has found no difference between males and females in terms of presence of metacognition as measured by the MCQ-30 (e.g. Wells MCQ-30 2004) and one study found males scored significantly higher than females on the MCQ-30 on beliefs about the need to control thoughts and cognitive self-consciousness (Spada 2008). Whilst the gender imbalance is a flaw in the study, this existing research supports the idea that the results may be attributable to BE and not gender.

Making the analysis transparent and performing checks during data analysis were expected to reduce interviewer bias. This, however, could not remove the potential for the findings to be influenced by the author's prior expectations impacted on by personal position and the reviewed literature. Having reflected on and been explicit about these, the reader can assess the researchers' findings in the light of the assumptions which have shaped them (Marshall, 1985). More formal member validation was considered in the form of asking participants to reflect on the initial findings, which

would have improved the trustworthiness of the interpretations made. Unfortunately this was not possible due to the time and practical constraints of this research project.

Using self-report questionnaires as opposed to interview-based methods to ascertain presence of BE does not permit clarification of definitions or individual responses (e.g. Fairburn & Cooper, 1993). This difficulty was highlighted by the false positive results found in this study. Presence of BE was confirmed by completing a BED screen based on DSM-IV criteria at interview. It was decided in research supervision this brief additional screen would be adequate to clarify the EDE-Q results. However, ideally a more thorough diagnostic screening interview would have been used such as the EDE interview or the Structured Clinical Interview for DSM-IV Axis I disorders (SCID I, First, Spitzer, Gibbon, & Williams, 1997). Whilst the gold standard in diagnosing eating disorders, unfortunately the EDE is time-consuming and requires training in order to administer it which was beyond the scope of this study. The SCID would also have been more time-consuming but would have been a more accurate screening measure.

Another limitation was that although the same interview schedule was used with both groups, the initial starting question was different. The BE group were asked about a specific episode of BE, whilst the non-BE group were asked about an episode of eating. It is possible that this difference could account for some of the group differences in the results. As the main aim of the study was to explore the cognitions and metacognitions associated with BE in obesity it was important to ask the BE group specifically about BE. Despite the difference in questions, due to the semi-structured nature of the interview, more general cognitions related to eating, weight and shape emerged from both groups which could be compared. One way of resolving this

problem would have been to repeat the interview with the binge eaters but to ask about an episode of eating as opposed to BE as with the non-BE group.

The interview itself was also constraining as it asks very specific questions about cognitions, metacognitions and metacognitive control strategies. Due to its constraints it may have suggested themes to participants and therefore it is possible there may have been some social desirability bias in the responses given to the questions if participants felt answers reflecting these areas would be viewed favourably by the researchers. However, the structure of the interview was helpful to elicit specific cognitions, and in particular metacognitions, and had the interview been less structured these may not have emerged.

It is possible there was some self-selection bias in the sample. Themes associated with stigma and shame or guilt emerged in the templates, highlighting a potential barrier for some people when deciding whether to take part as certain people may not have felt able to discuss such emotive themes.

As reported previously, comparing obese people with and without BE reduces the risk of any real cognitive differences between groups being obscured by objective concerns regarding weight and shape. However, had resources been greater it would have been interesting to include a non-obese BE group to try and ascertain what differences might be attributable to obesity and what to BE. Further comparisons with a BN group would also be interesting to ascertain additional similarities or differences.

4.6 Future Research

Whilst this study has generated new hypothesis and supported hypotheses generated from existing literature, these can only be viewed as tentative. However, they have highlighted a number of potentially useful areas for future research.

Further qualitative studies exploring other samples including BN participants and non-obese binge eaters would be useful to investigate in more detail the factors which influence cognition in these different groups.

This study only explored metacognitive knowledge in detail which is only one aspect of metacognition. Therefore, additional research could explore whether other aspects of metacognition, such as use of metacognitive control strategies, were also prevalent in obese people with and without BE.

Larger scale quantitative studies would also be useful and would allow for statistical comparisons of groups. Larger samples would also allow for other factors to be controlled for and explored in more detail such as gender and levels of depression or anxiety.

4.7 Summary and Overall Conclusions

Ten obese participants, five with and five without BE took part in this mixed methods study involving a semi-structured interview and self-report questionnaires exploring cognitions and metacognitions related to eating, weight and shape. Template analysis was the specific qualitative methodology chosen.

Using the cognitive model of BN and the S-REF model as a basis, the a priori themes of metacognitive knowledge, positive and negative beliefs about eating and permissive thoughts were identified for the binge eaters. Guided by previous research (Nauta et al., 2000), the a priori themes of positive and negative beliefs about eating were identified for the non-binge eaters. All the a priori themes or sub-themes were supported by the interview data and therefore retained. The additional themes of negative self-beliefs and reflections emerged from the interview data for the binge eaters and the themes of negative self-beliefs and metacognitive knowledge emerged for

the non-binge eaters. A priori sub-themes were also retained and additional data-driven sub-themes also emerged. Two final templates, one for obese binge eaters and one for obese non-binge eaters were produced. The qualitative results were supported by the quantitative data.

Overall, the results suggest that metacognitions are worthy of consideration in obese binge eaters. Both the models underpinning the study are potentially useful to help understand the interaction of the important cognitions and metacognitions related to eating, weight and shape in obese people with BE and may also offer some guidance for obese people without BE. This also suggests that there may be similarities between the BE episodes experienced by obese people to those experienced by people with BN as described by the cognitive model of BN (Cooper et al., 2009). The data-driven emergent theme and sub-themes for the binge eaters also potentially adds to the existing literature by highlighting other important cognitions, such as physical concerns about weight, that may be particularly worthy of consideration in this population. The templates also highlight similarities and differences between obese binge eaters and non-binge eaters which, is important for treatment distinction for these two groups.

This exploratory study has generated tentative new hypothesis and supported hypotheses generated from previous research. Future research could look to reproduce similar qualitative studies using additional BN and normal weight BE groups. Larger scale quantitative studies could also be conducted allowing for statistical comparison between groups, whilst controlling for anxiety and depression.

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Appendix A

Explanation of Study Changes and Recruitment Difficulties

Study Changes and Recruitment Difficulties

When the study was initially designed the aim was to conduct a large scale quantitative study to statistically compare differences between two groups, obese binge eaters and obese non-binge eaters. The aim was to recruit 126 participants with 63 in each group. In addition, the plan was to conduct a handful of qualitative interviews to write up as case reports in an appendix to provide a different view to the quantitative data.

On discussion with the services who agreed to assist with the study, the consensus was that although high, the figure of 126 participants would be obtainable. This was particularly if, in addition to new referrals, research packs were sent out to the existing caseload of the Obesity Clinic. As such all the participant information sheets and consent forms were designed for this particular study.

Unfortunately, following ethical and research governance approval the Obesity Clinic decided it would not be possible for us to contact their existing caseload. In addition, the clinic went through a difficult period with staffing levels and were considering closing the clinic to new referrals at one point. Therefore, understandably, conducting research was not high on the clinic's priority list and recruitment was slow.

Recruitment was also slow from Cambridgeshire Community Services. On reflection, this was most likely as a result of the complex recruitment process. However, the service was resistant to changing the process.

To compensate for the recruitment difficulties the collaborating researchers decided to approach three commercial weight loss programmes. After lengthy

discussions with each programme and submitting all the documentation for the study, all three programmes decided they would not be able to assist with recruitment. The reasons given by one programme was that "the team feel that the questionnaires could be detrimental to our members' mental wellbeing" and "Furthermore, whilst we fully understand the benefits of your work, unfortunately we cannot risk potential negative publicity if people misinterpreted why (commercial weight loss programme) members were involved in a binge eating study". Reasons provided by the other programmes for not being able to assist with the study were similar.

At this point (May 2012) only 3 participants had been recruited and had returned their questionnaire packs. All wanted to take part in the interview. Following discussions with supervisors at UEA it was decided that pursuing the large scale quantitative study at this stage was no longer feasible. Instead, it was decided that due to the interest in taking part in the interview, the small qualitative component would become the main focus of the study. It was also decided that at this point changing the information sheets and consent forms would be time consuming and not necessary as they still provided information on both the quantitative and qualitative aspects of the study. The researchers then worked in close partnership with the obesity clinic and attended a number of assessment clinics to discuss the research directly with potential participants and to highlight that although we were still interested in the questionnaire results, the interview was now the main focus of the study. A further 7 participants were recruited this way with all wanting to take part in the interview.

Appendix B

Explanation of the Collaborative Nature of the Project

The Collaborative Nature of the Project

This project was undertaken in part with another trainee psychologist from the University of East Anglia (UEA) Doctoral Programme in Clinical Psychology. The author and the collaborating trainee were both interested in conducting research with obese participants with and without binge eating.

Therefore the author and the collaborating researcher selected different but complementary research questions to investigate. The collaborative nature of the project involved both researchers submitting one ethics application for both projects as the same sample was being recruited. Researchers also worked together to produce one version of the information sheets and consent forms to be used for both projects. Data collection responsibilities were shared with each researcher conducting and transcribing five interviews.

Data analysis and project write ups were independently completed according to the individual questions each researcher was investigating.

Appendix C

Study Measures

Participant Identification Number:

University of East Anglia

DEMOGRAPHIC INFORMATION FORM

In order for us to understand a bit more about the people taking part in our research we would like to collect some general information about you. If you have any concerns about sharing these details please discuss this with the researchers.

Please complete the following details:

Date	_ _/_ _/_ _ _ _
Gender (please circle)	Male
	Female
Date of birth	_ _/_ _/_ _ _ _
Ethnicity (please circle)	White
	Mixed Ethnic Group
	Black
	Black British
	Asian
	Asian British
	Any Other Group
Marital status (please circle)	Single
	Married
	Civil partnered
	Cohabiting
	Divorced
	Separated
	Widowed

Are you currently working? (please circle)

Yes – full time

Yes – part time

No

If yes, what is your occupation? _____

Please complete your:

Most recent weight when measured at the clinic _____ kg or _____ stones/lbs

Date when most recently weighed at the clinic __/__/____

Current height _____ m or _____ ft/inches

Highest adult weight (since 18 years of age) _____ kg or _____ stones/lbs

Lowest adult weight (since 18 years of age) _____ kg or _____ stones/lbs

Please describe brief details of your current treatment for obesity: _____

_____

_____

Please describe brief details of any past treatment you received for obesity: _____

_____

_____

Thank you for your help.

Metacognitive Profiling Interview Schedule

Wells & Matthews, (1994)

Meta-beliefs/appraisals

Question: When you felt anxious / depressed/ were binge eating...did you have any thoughts about your mental state? What were these thoughts?

Probes: Did you have any negative thoughts about your own thinking? What thoughts did you have?

Did you notice that you were worried or ruminating about something? What was your rumination like?

Question: Do you think there are advantages to worrying/negative thinking?

Probe: What are the advantages?

Question: Do you think there are disadvantages to worrying/negative thinking?

Probe: What are the disadvantages?

Question: Can worrying/ruminating/thinking in certain ways be harmful or dangerous?

Probe: In what ways could it be harmful or dangerous?

Coping strategies

Question: When you felt anxious / depressed / were binge eating what did you do to cope with the situation?

Probes: Did you do anything to deal with the threat or danger?

What did you do?

Did you do anything to control your thoughts?

What did you do?

Did you do anything to deal with your feelings?

What did you do?

Question: What was your goal in using you coping strategies? What did you hope to achieve?

Probes: How did up know that you had accomplished your goals?

How would you know when coping is effective?

What was the effect of your coping strategies on your feelings and thoughts?

Cognitive processes, attention

Question: What were you paying most attention to in the situation?

Probes: What was most salient?

Were you focusing on your thoughts, on your feelings, or the situation?

Were you self-conscious? What were you most conscious of?

Are there any advantages to focusing your attention in that way? What are they?

Are there any disadvantages to focusing your attention in that way? What are they?

Cognitive processes, **memory**

Question: Were any memories activated? What were they?

Probes: Did you use your memory to try and work out what was happening, and/or How to deal with the situation?

How did you use your memory?

Cognitive processes, **judgements**

Question: How did you form your judgements in the situation?

Probes: What sort of evidence did you look for?

Where was your evidence coming form to support your thoughts?

Were your judgements influenced by your physical feelings?

Which feelings?

Were you influenced by mental feelings?

Were you influenced by your emotional feelings?

Question: If your feelings had been different, would you have judged the situation differently?

Question: How confident were you in your won mental abilities?

Mode

Question: Did you accept your thoughts and judgements as facts, based on reality?

Question: Could you see your thoughts as distortions of what was really happening in the situation?

Question: Can you keep your distance from these negative thoughts and feelings when they occur?

EATING QUESTIONNAIRE

Instructions: The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all the questions. Thank you.

Questions 1 to 12: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days) only.

	On how many of the past 28 days	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
1	Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
2	Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?	0	1	2	3	4	5	6
3	Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
4	Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
5	Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?	0	1	2	3	4	5	6
6	Have you had a definite desire to have a totally flat stomach?	0	1	2	3	4	5	6
7	Has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
8	Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
9	Have you had a definite fear of losing control over eating?	0	1	2	3	4	5	6
10	Have you had a definite fear that you might gain weight?	0	1	2	3	4	5	6
11	Have you felt fat?	0	1	2	3	4	5	6
12	Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

Questions 13-18: Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).

Over the past four weeks (28 days) .....

13 Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?	.....
14 ..... On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?	.....
15 Over the past 28 days, on how many **DAYS** have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?	.....
16 Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?	.....
17 Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?	.....
18 Over the past 28 days, how many times have you exercised in a "driven" or "compulsive" way as a means of controlling your weight, shape or amount of fat, or to burn off calories?	.....

Questions 19 to 21: Please circle the appropriate number. Please note that for these questions the term "binge eating" means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

19 Over the past 28 days, on how many days have you eaten in secret (ie, furtively)? ..... Do not count episodes of binge eating	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
	0	1	2	3	4	5	6
20 On what proportion of the times that you have eaten have you felt guilty (felt that you've done wrong) because of its effect on your shape or weight? ..... Do not count episodes of binge eating	None of the times	A few of the times	Less than half	Half of the times	More than half	Most of the time	Every time
	0	1	2	3	4	5	6
21 Over the past 28 days, how concerned have you been about other people seeing you eat? ..... Do not count episodes of binge eating	Not at all		Slightly		Moderately		Markedly
	0	1	2	3	4	5	6

Questions 22 to 28: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

Over the past 28 days	Not at all		Slightly		Moderate -ly		Markedly
22 Has your weight influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
23 Has your shape influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
24 How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?	0	1	2	3	4	5	6
25 How dissatisfied have you been with your weight?	0	1	2	3	4	5	6
26 How dissatisfied have you been with your shape?	0	1	2	3	4	5	6
27 How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?	0	1	2	3	4	5	6
28 How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?	0	1	2	3	4	5	6

What is your weight at present? (Please give your best estimate.) .....

What is your height? (Please give your best estimate.) .....

If female: Over the past three-to-four months have you missed any menstrual periods? .....

If so, how many? .....

Have you been taking the "pill"? .....

THANK YOU

META-COGNITIONS QUESTIONNAIRE 30 (MCQ-30)

Adrian Wells & Samantha Cartwright-Hatton (1999)

This questionnaire is concerned with beliefs people have about their thinking. Listed below are a number of beliefs that people have expressed. Please read each item and say how much you generally agree with it by circling the appropriate number.

Please respond to all the items, there are no right or wrong answers.

		Do not agree	Agree slightly	Agree moderately	Agree very much
1.	**Worrying helps me to avoid problems in the future**	**1**	**2**	**3**	**4**
2.	**My worrying is dangerous for me**	**1**	**2**	**3**	**4**
3.	**I think a lot about my thoughts**	**1**	**2**	**3**	**4**
4.	**I could make myself sick with worrying**	**1**	**2**	**3**	**4**
5.	**I am aware of the way my mind works when I am thinking through a problem**	**1**	**2**	**3**	**4**
6.	**If I did not control a worrying thought, and then it happened, it would be my fault**	**1**	**2**	**3**	**4**
7.	**I need to worry in order to remain organised**	**1**	**2**	**3**	**4**
8.	**I have little confidence in my memory for words and names**	**1**	**2**	**3**	**4**
9.	**My worrying thoughts persist, no matter how I try to stop them**	**1**	**2**	**3**	**4**
10	**Worrying helps me to get things sorted out in my mind**	**1**	**2**	**3**	**4**
11.	**I cannot ignore my worrying thoughts**	**1**	**2**	**3**	**4**
12.	**I monitor my thoughts**	**1**	**2**	**3**	**4**
13.	**I should be in control of my thoughts all of the time**	**1**	**2**	**3**	**4**

14.	**My memory can mislead me at times**	**1**	**2**	**3**	**4**
15.	**My worrying could make me go mad**	**1**	**2**	**3**	**4**
16.	**I am constantly aware of my thinking**	**1**	**2**	**3**	**4**
17.	**I have a poor memory**	**1**	**2**	**3**	**4**
18.	**I pay close attention to the way my mind works**	**1**	**2**	**3**	**4**
19.	**Worrying helps me cope**	**1**	**2**	**3**	**4**
20.	**Not being able to control my thoughts is a sign of weakness**	**1**	**2**	**3**	**4**
21.	**When I start worrying, I cannot stop**	**1**	**2**	**3**	**4**
22.	**I will be punished for not controlling certain thoughts**	**1**	**2**	**3**	**4**
23.	**Worrying help me to solve problems**	**1**	**2**	**3**	**4**
24.	**I have little confidence in my memory for places**	**1**	**2**	**3**	**4**
25.	**It is bad to think certain thoughts**	**1**	**2**	**3**	**4**
26.	**I do not trust my memory**	**1**	**2**	**3**	**4**
27.	**If I could not control my thoughts, I would not be able to function**	**1**	**2**	**3**	**4**
28.	**I need to worry, in order to work well**	**1**	**2**	**3**	**4**
29.	**I have little confidence in my memory for actions**	**1**	**2**	**3**	**4**
30.	**I constantly examine my thoughts**	**1**	**2**	**3**	**4**

THOUGHTS QUESTIONNAIRE

Cooper, Todd, Woolrich, Somerville, & Wells (2006)

Instructions: Listed below are some thoughts which people sometimes have when eating. Please read each thought carefully and decide how much you believe each thought to be true. Choose the rating which best describes how you usually feel rather than how you feel right now. Write the number in the space before the thought.

Rating scale:

0	10	20	30	40	50	60	70	80	90	100
I do not usually believe this at all										I am usually completely convinced that this is true

1. ..... I'll get fat
2. ..... If I don't eat I'll lose control
3. ..... My clothes won't fit anymore
4. ..... It doesn't matter if I keep eating
5. ..... If I eat it will stop the pain
6. ..... It's not me doing this
7. ..... I'm going to go on getting heavier and heavier
8. ..... I deserve something nice
9. ..... If I eat it will take away the 'all alone' feeling
10. ..... I'll just have a little bit more
11. ..... The urge to binge is stronger than my willpower
12. ..... I've nothing apart from eating/bingeing in my life
13. ..... I'll gain weight
14. ..... I've no self-control

15. ..... If I eat it will comfort me, it's a way of being nice to myself
16. ..... I'll hate myself after eating so much
17. ..... If I eat it will stop me feeling frightened
18. ..... Go on, eat more to punish yourself
19. ..... One more bite won't hurt
20. ..... I'll have to vomit (exercise, take laxatives)
21. ..... If I don't eat then I'll be overwhelmed with distressing thoughts and feelings
22. ..... I'll have to go on a strict diet
23. ..... If I eat it will all hurt less inside
24. ..... If I eat it will stop me feeling bored
25. ..... I'll look a mess after eating so much—fat and disgusting
26. ..... If I eat it means I don't have to think about unpleasant things

BELIEFS QUESTIONNAIRE

Cooper, Cohen-Tovee, Todd, Wells, & Tovee (1997)

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

Rating scale:

0	10	20	30	40	50	60	70	80	90	100
I do not usually believe this at all									I am usually completely convinced that this is true	

1. ..... I'm unloveable
2. ..... If my flesh is firm I'm more attractive
3. ..... I'm ugly
4. ..... I'm useless
5. ..... I'm a failure
6. ..... If I eat a forbidden food I won't be able to stop
7. ..... If my stomach is flat I'll be more desirable
8. ..... If I lose weight I'll count more in the world
9. ..... If I eat desserts or puddings I'll get fat
10. ..... If I stay hungry I can guard against losing control and getting fat
11. ..... I'm all alone
12. ..... If I eat bad foods such as fats, sweets, bread and cereals they will turn into fat

13. ..... I’m no good
14. ..... If I eat normally I’ll gain weight
15. ..... If I eat three meals a day like other people I’ll gain weight
16. ..... If I’ve eaten something I have to get rid of it as soon as possible
17. ..... I’m not a likeable person
18. ..... If my hips are thin people will approve of me
19. ..... If I lose weight people will be friendly and want to get to know me
20. ..... If I gain weight it means I’m a bad person
21. ..... If my thighs are firm it means I’m a better person
22. ..... I don’t like myself very much
23. ..... If I gain weight I’m nothing
24. ..... If my hips are narrow it means I’m successful
25. ..... If I lose weight people will care about me
26. ..... If my body shape is in proportion people will love me
27. ..... I’m dull
28. ..... If I binge and vomit I can stay in control
29. ..... I’m stupid
30. ..... If my body is lean I can feel good about myself
31. ..... If my bottom is small people will take me seriously
32. ..... Body fat/flabbiness is disgusting

Appendix D

Addenbrookes' Obesity Clinic Participant Information Sheet

Cambridgeshire Community Services' Participant Information Sheet

PARTICIPANT INFORMATION SHEET

ADDENBROOKES' OBESITY CLINIC

Title of project: Thinking styles and beliefs in obesity and binge eating

Name of researchers: Georgina Hartley and Stephanie Ashton (Trainee Clinical Psychologists)

Invitation paragraph

You are being invited to take part in two research studies. The first study involves asking a large number of people to complete some questionnaires and the second smaller study involves interviewing a small number of people. Before you decide whether to participate in these studies it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please contact us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

This information sheet refers to both the research studies. The studies are being conducted by the same group of researchers who are investigating similar areas. This information sheet provides you with information which relates to both studies, as well as a more in-depth description of what each study involves.

Thank you for reading this.

What is the purpose of these studies?

The purpose of these studies is to investigate and try to understand the thinking styles and beliefs of people who are classified as medically obese and report binge eating compared to people who are obese who do not report binge eating. This is to help describe and increase the understanding of such thinking styles.

Why have I been invited to take part?

You have been invited because you have been referred to an obesity clinic. We are interested in recruiting people who report binge eating and people who do not report this behaviour. We are hoping to recruit 128 people in total for Study 1 (the questionnaire study) , and 10 people for Study 2 (the interview study).We would like people who take part in the interview study to have also completed the questionnaires.

Do I have to take part?

No, participation in this research is completely voluntary. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part will not affect the treatment you receive in the clinic at present, or in the future.

Study 1 Questionnaire Study

What will happen to me if I take part in study 1?

Study 1 involves completing eight questionnaires. The questionnaires should take between 30-45 minutes to complete in total.

The questionnaires will be given to you in a questionnaire pack. The pack will contain all questionnaires, instructions for completion, a consent form and a stamp addressed envelope for you to return the completed questionnaires to us.

How do I take part in the questionnaire study?

If you are interested in taking part in this study, please ask staff at the clinic to provide you with an information and questionnaire pack. Completed questionnaires and consent forms can be returned in the stamped addressed envelope provided. If you would prefer, you can also post them in a special study post box located at the obesity clinic. If you do decide to take part, we would ask you to return the completed questionnaires within 4 weeks of receiving them.

We would like your permission for us to access a small section of your medical records so that we can obtain measures of your most recent weight and height. If your give your permission for us to do this , please indicate this on the consent form by initialling the appropriate box. All weights and heights recorded will remain confidential.

Study 2 The Interview Study

What will happen to me if I take part in this study?

Study 2 involves completing an interview about your thoughts about eating. We are hoping to conduct interviews with 10 people who have also completed the questionnaires. This interview would be conducted individually, at a convenient time, date and location for you, usually at the clinic. Any travel expenses incurred to you will be reimbursed. The interviews typically vary in length from approximately 45 minutes to one hour and 45 minutes.

With your consent, the interviews will be audio recorded, this is to enable the researchers to transcribe and analyse the interviews. Once the interviews have been transcribed we will give you the option to read through your transcript to ensure that you feel it accurately reflects what you said. The final report will contain some direct quotes from the interviews, but all quotes will be anonymised, and so it will not be possible to personally identify you.

How do I take part in the Interview study?

If you would be interested in taking part in the interview study please complete the separate interview reply slip and record your name, address and contact phone number. We will contact you between January and March 2012 to let you know whether we would like you to take part in the interview, and if so arrange a convenient time, date and location for the interview to be conducted. If lots of people offer to be interviewed we may not be able to interview everybody due to time constraints. We would like everybody that takes part in the interview to have also completed the questionnaires.

Further Information Relating To Both Studies

What are the possible disadvantages and risks of taking part in either study?

Answering the questions will take up some of your time but we do not anticipate that the questionnaires or the interview will cause any distress.

However, if you do become distressed you can take a break or withdraw from the study at any time if you want to. If you become distressed during the interview, the researcher will stop the interview if necessary and will provide support. The researchers have clinical skills and experience of dealing with distress and will be able to use these skills if necessary.

If you find any of the questions upsetting, have any concerns, or if you would like any further information, you can contact either of the researchers, Georgina Hartley or Stephanie Ashton, on the email addresses at the bottom of this information sheet. We will if necessary suggest who might be the best person to deal with your concerns, for example, your GP or a member of staff at the obesity clinic.

What are the possible benefits of taking part?

There are no individual benefits in taking part. However, we hope that the information we gain from this research will help us to learn more about the thinking styles and beliefs of people that are obese and those that binge eat. We hope that furthering our understanding of these areas may have helpful implications for future treatment programmes.

What happens when the research study stops?

The results will be written up by members of the research team. It will not be possible to identify you individually in this report. The report will be shared with people who work at the obesity/weight loss clinic. Another copy of the report will be submitted to the University of East Anglia as part of the coursework of the members of the research team. The results may also be published in academic journals. You will not be identified in any of these reports. If you would like to receive a summary of the results please indicate this on the consent form and you will need to provide your name and contact details.

What if something goes wrong?

If you are harmed by taking part in this research project there are no special compensation arrangements. If you are harmed due to someone's negligence, then you may have grounds for a legal action but you may have to pay for it. The University of East Anglia has arranged insurance cover for this research. If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, you

can do this through the National Health Service complaints procedure. Details of which can be obtained from the NHS website www.nhs.uk.

You can also contact the Patient Advice and Liaison Service (PALS) at Addenbrooke's if you wish to report any concerns (email: pals@addenbrookes.nhs.uk / telephone number: 01223 216 756).

Will my taking part in this study be kept confidential?

Yes, all information which is collected about you during the course of the research will be kept strictly confidential. Any information about you will have your name and address removed so you cannot be identified from it.

However, there are some exceptions where we would need to break confidentiality. If you disclose something which suggests that you or others could be at risk of harm, or if there is any suggestion of criminal activity or malpractice then the relevant persons or authorities will be informed.

Who is organising and funding the research?

The research is part of the researcher's course, the doctorate in clinical psychology at the University of East Anglia. As a Trainee Clinical Psychologist, the researcher is employed by Cambridge and Peterborough NHS Foundation Trust.

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people called a Research Ethics Committee to protect your safety, rights, wellbeing and dignity. This study has been reviewed and approved by NHS Research Ethics Committee.

Contact for further information

If you wish to speak to us about the study for any reason, please do not hesitate to approach us when we next visit the obesity/weight loss clinic or contact us via the email addresses below.

Georgina Hartley (researcher and Trainee Clinical Psychologist); G.Hartley@uea.ac.uk

Stephanie Ashton (researcher and Trainee Clinical Psychologist); S.Ashton@uea.ac.uk

Dr Sian Coker (researcher's primary supervisor and clinical lecturer): S.Coker@uea.ac.uk

Dr Gillian Todd (researcher's second supervisor and clinical lecturer): G.Todd@uea.ac.uk

Version 5 27/10/11

PARTICIPANT INFORMATION SHEET

COMMUNITY WEIGHT LOSS SERVICE

Title of project: Thinking styles and beliefs in obesity and binge eating

Name of researchers: Georgina Hartley and Stephanie Ashton (Trainee Clinical Psychologists)

Invitation paragraph

You are being invited to take part in two research studies. The first study involves asking a large number of people to complete some questionnaires and the second smaller study involves interviewing a small number of people. Before you decide whether to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please contact us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

This information sheet refers to both the research studies. The studies are being conducted by the same group of researchers who are investigating similar areas. This information sheet provides you with information which relates to both studies, as well as a more in-depth description of what each study involves.

Thank you for reading this.

What is the purpose of these studies?

The purpose of both of these studies is to investigate and try to understand the thinking styles and beliefs of people who are medically classified as obese and report binge eating compared to people who are medically classified as obese who do not report binge eating. This is to help describe and increase the understanding of such thinking styles.

Why have I been invited to take part?

You have been invited because you have been referred to a weight loss programme. We are interested in recruiting people who report binge eating and people who do not report this behaviour. We are hoping to recruit 128 people in total for Study 1 (the questionnaire study) , and 10 people for Study 2 (the interview study).We would like people who take part in the interview study to have also completed the questionnaires.

Do I have to take part?

No, participation in this research is completely voluntary. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time or a decision not to take part will not affect the treatment you receive, now or in the future.

Study 1 Questionnaire Study

What will happen to me if I take part in study 1?

Study 1 involves completing eight questionnaires. The questionnaires will take between 30-45 minutes to complete in total.

The questionnaires will be given to you in a questionnaire pack. The pack will contain all questionnaires, instructions for completion, a consent form and a stamp addressed envelope for you to return the completed questionnaires to us.

How do I take part in the questionnaire study?

If you are interested in taking part in this study please provide your contact details at the end of this sheet and return this form at your first appointment at the weight loss clinic. Staff at the clinic will then pass your contact details to us. Researchers will then telephone you to ask whether you are still interested in participating in this research. If you do decide to take part, we will send you the questionnaire pack to complete Completed questionnaires and consent forms can be returned in the stamped addressed envelope provided. We would ask you to return the completed questionnaires within 4 weeks of receiving them.

We would like your permission for us to access a small section of your medical records so that we can obtain measures of your most recent weight and height. If your give your permission for us to do this, please indicate this on the consent form by initialling the appropriate box. All weights and heights recorded will remain confidential.

Study 2 The Interview Study

What will happen to me if I take part in this study?

Study 2 involves completing an interview about your thoughts about eating. We are hoping to conduct interviews with 10 people who have also completed the questionnaires. This interview would be conducted individually, at a convenient time, date and location for you, usually at the clinic. Any travel expenses incurred to you will be reimbursed. The interviews typically vary in length from approximately 45 minutes to one hour and 45 minutes.

With your consent, the interviews will be audio recorded, this is to enable the researchers to transcribe and analyse the interviews. Once the interviews have been transcribed we will give you the option to read through your transcript to ensure that you feel it accurately reflects what you said. The final report will contain some direct quotes from the interviews, but all quotes will be anonymised, and so it will not be possible to personally identify you.

How do I take part in the Interview study?

If you would be interested in taking part in the interview study please complete the separate interview reply slip and record your name, address and contact phone number. We will contact you between January and March 2012 to let you know whether we would like you to take part in the interview, and if so arrange a convenient time, date and location for the interview to be conducted. If lots of people offer to be interviewed we may not be able to

interview everybody due to time constraints. We would like everybody that takes part in the interview to have also completed the questionnaires

Further Information Relating To Both Studies

What are the possible disadvantages and risks of taking part in either study?

Answering the questions will take up some of your time but we do not anticipate that the questionnaires or the interview will cause any distress.

However, if you do become distressed at any point you can take a break or withdraw from the study at any time if you want to. If you become distressed during the interview, the researcher will stop the interview if necessary and will provide support. The researchers have clinical skills and experience of dealing with distress and will be able to use these skills if necessary.

If you find any of the questions upsetting, have any concerns, or if you would like any further information, you can contact either of the researchers, Georgina Hartley or Stephanie Ashton, on the email addresses at the bottom of this information sheet. We will if necessary suggest who might be the best person to deal with your concerns, for example your GP or a member of staff at the weight loss clinic.

What are the possible benefits of taking part in either study?

There are no individual benefits in taking part. However, we hope that the information we gain from this research will help us to learn more about the thinking styles and beliefs of people that are obese and those that binge eat. We hope that furthering our understanding of these areas may have helpful implications for future treatment programmes.

What happens when the research studies stop?

The results will be written up by members of the research team. It will not be possible to identify you individually in this report. The report will be shared with people who work at the obesity/weight loss clinic. Another copy of the report will be submitted to the University of East Anglia as part of the coursework of the members of the research team. The results may also be published in academic journals. You will not be identified in any of these reports. If you would like to receive a summary of the results please indicate this on the consent form and you will need to provide your name and contact details.

What if something goes wrong?

If you are harmed by taking part in these research projects there are no special compensation arrangements. If you are harmed due to someone's negligence, then you may have grounds for a legal action but you may have to pay for it. The University of East Anglia has arranged insurance cover for this research. If you wish to complain, or have any concerns about any

aspect of the way you have been approached or treated during the course of this study, you can do this through the National Health Service complaints procedure. Details of which can be obtained from the NHS website www.nhs.uk.

Will my taking part in this study be kept confidential?

Yes, all information which is collected about you during the course of the research will be kept strictly confidential. Any information about you will have your name and address removed so you cannot be identified from it.

However, there are some exceptions where we would need to break confidentiality. If you disclose something which suggests that you or others could be at risk of harm, or if there is any suggestion of criminal activity or malpractice then the relevant persons or authorities will be informed.

Who is organising and funding the research?

The research is part of the researchers' course, the doctorate in clinical psychology at the University of East Anglia. As a Trainee Clinical Psychologist, the researchers are employed by Cambridge and Peterborough NHS Foundation Trust.

Who has reviewed the research?

All research in the NHS is looked at by an independent group of people called a Research Ethics Committee to protect your safety, rights, wellbeing and dignity. This study has been reviewed and approved by NHS Research Ethics Committee.

Contact for further information

If you wish to speak to us about the study for any reason, please do not hesitate to approach us when we next visit the obesity/weight loss clinic or contact us via the email addresses below.

Georgina Hartley (researcher and Trainee Clinical Psychologist); G.Hartley@uea.ac.uk

Stephanie Ashton (researcher and Trainee Clinical Psychologist); S.Ashton@uea.ac.uk

Dr Sian Coker (researcher's primary supervisor and clinical lecturer): S.Coker@uea.ac.uk

Dr Gillian Todd (researcher's second supervisor and clinical lecturer): G.Todd@uea.ac.uk

Please initial box

I have read and understand the information sheet for these projects. ☐

I am happy for my contact details to be passed on to the researchers so that they can contact me about taking part in either of these research projects. ☐

Name.....

Contact Phone number.....

Best time to be contacted.....

Address.....

.....

.....

Thank you. Please return this to the weight loss clinic

Appendix E

Questionnaire and Interview Consent Forms

University of East Anglia

CONSENT FORM

Study 1: Questionnaires

Title of project: Thinking styles and beliefs in obesity and binge eating

Name of researchers: Georgina Hartley and Stephanie Ashton

Please initial box

1. I have read and understand the information sheet for this project ☐

2. I understand that I do not have to take part and that I can stop being in the project at any time without giving any reasons. I understand that if I do decide to stop the project, this will not affect the help I am given at the obesity/weight loss clinic now or in the future. ☐

3. I understand that small sections of my medical notes may be looked at by members of the research team to obtain my height and weight, where it is relevant to my taking part in research. I give permission for these individuals to have access to this section of my records. ☐

4. I have had the opportunity to ask questions. ☐

5. I agree to take part in the project. ☐

Participant

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

Researcher

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

If you wish to receive feedback on the results of the study, please include your name and contact details here.

Name.....

Address.....
.....
.....

Thank you. Please return this consent form to the clinic or in the SAE provided.

Version 4 27/10/11

University of East Anglia

CONSENT FORM

Study 2; Interview

Title of project: Thinking styles and beliefs in obesity and binge eating

Name of researchers: Georgina Hartley and Stephanie Ashton

	Please initial box
1. I have read and understand the information about the interview.	☐
2. I understand that I do not have to take part in the interview and that I can stop the interview at any time without giving any reasons. I understand that if I decide to stop being interviewed, this will not affect the help I am given at the obesity/weight loss clinic either currently or in the future.	☐
3. I understand that the interview will be audio recorded and transcribed and I will be given the option to read through the transcript of my interview.	☐
4. I understand that the final report will contain some direct quotes from the interviews, but all quotes will be anonymised, and so it will not be possible to personally identify me.	☐
5. I have had the opportunity to ask questions about the interview.	☐
6. I agree to take part in the interview.	☐

Participant

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

Researcher

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

Thank you. Please return this consent form to the clinic or in the SAE provided.

Appendix F

Invitation to Take Part in the Semi-Structured Interview

Version 2

28/04/11

CONSENT FORM FOR INTERVIEW

University of East Anglia

Title of project: Thinking styles and beliefs in obesity and binge eating

Name of researchers: Georgina Hartley and Stephanie Ashton

Please initial box

1. I have read and understand the information about the interview. ☐
2. I understand that I do not have to take part in the interview and that I can stop the interview at any time without giving any reasons. I understand that if I decide to stop being interviewed, this will not affect the help I am given at Addenbrooke's obesity clinic either currently or in the future. ☐
3. I agree to be contacted about taking part in the interview. ☐

Name: .....

Signature: .....

Contact Phone Number:.....

Thank you. Please return this consent form with your completed questionnaires to Addenbrooke's obesity clinic or in the SAE provided.

Appendix G

Final Ethical Approval

NHS
National Research Ethics Service
NRES Committee East of England - Essex
East of England Rec Office 1
Victoria House
Capital Park
Fulbourn
Cambridge
CB21 5XB
Telephone: 01223 597693
Facsimile: 01223 597645

29 November 2011

Dr Gillian Todd
Senior Lecturer in Cognitive Behavioural Therapy, University of East Anglia
University of East Anglia
Postgraduate Research Office, Elizabeth Fry Building
Faculty of Medicine and Health Sciences
University of East Anglia, Norwich
NR4 7TJ

Dear Dr Todd

Study title:	**An investigation in to metacognitions, negative self beliefs,positive and negative beliefs about eating, weight and shape concerns and differences in the use of metacognitive control strategies reported in obese people with binge eating and binge eating disorder compared to obese people without binge eating and binge eating disorder.**
REC reference:	**11/EE/0401**

Thank you for your letter of 09 November 2011, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation [as revised], subject to the conditions specified below.

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Advertisement	"Would you like to take part in a research project?" Version 3	06 August 2011
Evidence of insurance or indemnity	- Zurich Municipal	28 June 2011
Evidence of insurance or indemnity	- UEA	23 August 2011
Interview Schedules/Topic Guides	- Metacognitive Profiling Interview Schedule	
Investigator CV	- Dr Gillian Todd	
Other: CV for Academic Supervisor (2) - Sian Coker		
Other: CV for Student - Georgina Hartley		09 September 2011
Other: CV for Student - Stephanie Ashton		26 July 2011
Other: Reply Slip		
Other: Thanks for volunteering/No thank you letter	1.0	07 November 2011
Participant Consent Form: Study 1 Questionnaire	4.0	27 October 2011
Participant Consent Form: Study 2 Interview	4.0	27 October 2011
Participant Information Sheet: Addenbrooke's Obesity Clinic	4.0	27 October 2011
Participant Information Sheet: Community Weight Loss Service	5.0	27 October 2011
Protocol	4.0	27 October 2011
Questionnaire: Eating Questionnaire		
Questionnaire: Meta-Cognitions Questionnaire 30		

Questionnaire: Thought Control Questionnaire		
Questionnaire: Hospital Anxiety Depression Scale (HADS)		
Questionnaire: Thoughts Questionnaire		
Questionnaire: Beliefs Questionnaire		
Questionnaire: Demographic Information Form	Version 3	06 August 2011
Questionnaire: DSM-IV Diagnostic criteria for BINGE EATING DISORDER		
Questionnaire: YSQ-SI		
REC application	Submission code: 82969/244864/1/144	28 July 2011
Response to Request for Further Information		09 November 2011

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

Further information is available at National Research Ethics Service website > After Review

11/EE/0401	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project

Yours sincerely

pp.

Dr Alan Lamont
Chair

This Research Ethics Committee is an advisory committee to East of England Strategic Health Authority
The National Research Ethics Service (NRES) represents the NRES Directorate within the National Patient Safety Agency and Research Ethics Committees in England

Email: suzanne.emerton@eoe.nhs.uk

Enclosures: "After ethical review – guidance for researchers"

Copy to: Mrs Sue Steel

Stephen Kelleher

Appendix H

Addenbrookes' Research Governance Approval

Cambridgeshire Community Services' Research Governance Approval

Cambridge University Hospitals NHS
NHS Foundation Trust

Research and Development Department

R&D ref: A092453

11 January 2012

Box 277
Addenbrooke's Hospital
Hills Road
Cambridge
CB2 0QQ

Direct Dial: 01223 596371 Ext 6371

Switchboard: 01223 245151

E-mail:rachel.kyd@addenbrookes.nhs.uk
r&denquiries@addenbrookes.nhs.uk
www.addenbrookes.org.uk

Dr Adrian Park
Cambridge University Hospitals NHS Foundation Trust
Wolfson Diabetes & Endocrine Centre
Box 281
Addenbrooke's Hospital

Dear Dr Park

Re: 11/EE/0401 An investigation in to metacognitions, negative self beliefs,positive and negative beliefs about eating, weight and shape concerns and differences in the use of metacognitivecontrol strategies reported in obese people with binge eating and binge eating disorder compared to obese peoplewithout binge eating and binge eating disorder.

In accordance with the Department of Health's Research Governance Framework for Health and Social Care, all research projects taking place within the Trust must receive a favourable opinion from an ethics committee and approval from the Department of Research and Development (R&D) prior to commencement.

R&D have reviewed the documentation submitted for this project, and has undertaken a **site specific assessment** based on the information provided in the SSI form, and I am pleased to inform you that we have no objection to the research proceeding within Cambridge University Hospitals NHS Foundation Trust.

Sponsor: University of East Anglia

Funder: No Funding

End date: 01/10/2012

Protocol: version 4 dated 27/10/11

The project must follow the agreed protocol and be conducted in accordance with all Trust Policies and Procedures especially those relating to research and data management.

You and your research team must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice and the Data Protection Act 1998 and are aware of your responsibilities in relation to the Human Tissue Act 2004, Good Clinical Practice, the NHS Research Governance Framework for Health and Social Care, Second Edition April 2005 and any further legislation released during the time of this study.

Members of the research team must have appropriate substantive or honorary contracts with the Trust prior to the study commencing. Any additional researchers who join the study at a later stage must also hold a suitable contract.

If the project is a clinical trial under the European Union Clinical Trials Directive the following must also be complied with:

- the EU Directive on Clinical Trials (Directive 2001/20/EC) and UK's implementation of the Directive: The Medicines for Human Use (Clinical Trials) Regulations 2004;

- the EU Directive on Principles and Guidelines for Good Clinical Practice (EU Commission Directive 2005/28/EC); and UK's implementation of the Directive: The Medicines for Human Use (Clinical Trials) Amendment Regulations 2006;

Amendments

Please ensure that you submit a copy of any amendments made to this study to the R&D Department.

Annual Report

It is obligatory that an annual report is submitted by the Chief Investigator to the research ethics committee, and we ask that a copy is sent to the R&D Department. The yearly period commences from the date of receiving a favourable opinion from the ethics committee.

Please refer to our website www.cuh.org.uk/research for all information relating to R&D including honorary contract forms, policies and procedures and data protection.

Should you require any further information please do not hesitate to contact us.

Yours sincerely

Louise Stockley
Research Governance Manager

Cambridgeshire Community Services NHS
NHS Trust

RMG Office
Lockton House
Clarendon Road
Cambridgeshire
CB2 8FH
camstrad@cambridgeshire.nhs.uk

Direct dial: 01223 725466

6th December 2011

Miss Stephanie Ashton
Cambridgeshire and Peterborough NHS Foundation Trust
Ida Darwin Hospital
Fulbourn
Cambridge
CB21 5EE

Dear Miss Ashton

Re: An investigation in to metacognitions, negative self beliefs, positive and negative beliefs about eating, weight and shape concerns and differences in the use of metacognitive control strategies reported in obese people with binge eating and binge eating disorder compared to obese people without binge eating and binge eating disorder

Re: 11/EE/0401

Your proposal has been reviewed by the Medical Director of Cambridgeshire Community Services NHS Trust.

I am pleased to inform you that Cambridgeshire Community Services NHS Trust has given permission for the following research to take place.

This permission is subject to the enclosed standard terms and conditions and conditional upon you notifying the research governance team of any changes to the study-related paperwork.

Unless we hear from you within a month of this letter, we will assume that you are abiding by these conditions.

The project must follow the agreed protocol and be conducted in accordance with Trust policy and procedures in particular in regard to data protection, health & safety and information governance standards. The research team are required to follow the reasonable instructions of the research site manager and can contact the RMG office for RMG advice or the Trust RMG lead in relation to queries on local policy.

On completion of clinical trials of interventional medicinal products/devices participants need to be aware that local Trust prescribing policy and formulary applies therefore participants cannot expect to continue on the research trial product/device on completion of the trial.

Approval is subject to adherence to the Data Protection Act 1998, NHS Confidentiality Code of Practice, the Human Tissue Act 2004, the NHS Research Governance Framework for Health and Social Care, (2nd edition) April 2005, the Mental Capacity Act and any further legislation released during the time of this study. Approval for Clinical Trials is on the basis that they are conducted in accordance with European Union Directive and the Medicines for Human Use (Clinical Trials) Regulations 2004 principles, guidelines and later revisions, and in accordance ICH Good Clinical Practice.

Members of the research team must where instructed have appropriate substantive or honorary research contracts or letters of access with the Trust prior to commencing work on the study, additional researchers who join the study must also hold a suitable contract or letter of access before they start.

You will be required to complete monitoring information during the course of the research, as requested by the RMG office. Cambridgeshire Community Services NHS Trust reserves the right to withdraw research management approval for a project if researchers fail to respond to audit and monitoring requests.

Should any adverse incidents occur during the research, Cambridgeshire Community Services NHS Trust Incident and Near Miss Reporting Policy should be used, the RMG Office informed and incident procedures adhered to at the research site.

If you make any amendments to your project, please ensure that these are submitted to the research ethics committee and the RMG office and that any changes are not implemented until approval has been received.

We welcome feedback about your experience of this review process to help us improve our systems. May I take this opportunity to wish you well with your research and we look forward to hearing the progress and outcomes for the study.

Please contact the RMG team should you have any queries.

Yours sincerely,

Dr David Vickers
Medical Director
Cambridgeshire Community Services NHS Trust

cc: Mrs Sue Steel

Appendix I

Addenbrookes' Letter of Access

Cambridgeshire Community Services' Letter of Access

Cambridge University Hospitals NHS
NHS Foundation Trust

Research and Development Department

Box 277
Addenbrooke's Hospital
Hills Road
Cambridge
CB2 0QQ

R&D Manager: Stephen Kelleher
stephen.kelleher@addenbrookes.nhs.uk
01223 217418

R&D HR Manager: Debbie Richards
01223 274660
deborah.richards@addenbrookes.nhs.uk

R&D Administrator: Sarah Boxell
01223 596395
sarah.boxell@addenbrookes.nhs.uk

Ms Stephanie Ashton
Trainee clinical Psychologist
Ida Darwin Hospital
Fulbourn
Cambs
CB1 5EE

11th January 2012

Dear Stephanie

Letter of access for research – A092456; Obesity, binge eating and metacognitions

As an existing NHS employee you do not require an additional honorary research contract with this NHS organisation. We are satisfied that the research activities that you will undertake in this NHS organisation are commensurate with the activities you undertake for your employer. Your employer is fully responsible for ensuring such checks as are necessary have been carried out. Your employer has confirmed in writing to this NHS organisation that the necessary pre-engagement check are in place in accordance with the role you plan to carry out in this organisation. This letter confirms your right of access to conduct research through Cambridge University Hospitals NHS Foundation Trust for the purpose and on the terms and conditions set out below. This right of access commences on 4th January 2012 and ends on 30th September 2012 unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving permission to conduct the project and you have provided the Trust's R&D department with written evidence that you have completed GCP training from an EU institution before you start your research.

You are considered to be a legal visitor to Cambridge University Hospitals NHS Foundation Trust premises. You are not entitled to any form of payment or access to other benefits provided by this organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking research through Cambridge University Hospitals NHS Foundation Trust, you will remain accountable to your employer Cambridge and Peterborough

challenged. Please note that this NHS organisation accepts no responsibility for damage to or loss of personal property.

We may terminate your right to attend at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence.
Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

INDUCTION AND MANDATORY TRAINING
You are responsible for familiarising yourself with the Trust's policies and mandatory training courses such as Moving and Handling, Health and Safety, Fire Training etc and be aware of the responsibility to maintain a safe environment for patients, staff and visitors

Your host Manager will ensure that you receive a comprehensive Departmental Induction. She/he will also provide you with details of Corporate Induction, research specific induction and annual Mandatory Refresher Training.

If your letter of access is for more than 3 months, you must attend Corporate Induction. Where your letter of access is for more that 12 months, you must attend annual Mandatory Refresher Training.

If your circumstances change in relation to your health, criminal record, professional registration or any other aspect that may impact on your suitability to conduct research, or your role in research changes, you must inform the NHS organisation that employs you through its normal procedures. You must also inform your nominated manager in this NHS organisation.

Yours sincerely

Stephen Kelleher
R&D Manager, Cambridge University Hospitals NHS Foundation Trust

cc: Prof K. Chatterjee, Clinical Director, Diabetes and Endocrinology
Dr Adrian Park, Study PI
Sue Moncrief, Business Manager (Recruitment and training), ASP

Enc: P6 form to confirm Letter of Access issued

Cambridgeshire Community Services NHS
NHS Trust

C/o RMG Office
NHS Cambridgeshire
Lockton House
Clarendon Road
Cambridge
Cambs
CB2 8FH

12th January 2012

Miss Stephanie Ashton,
Cambridgeshire & Peterborough Foundation Trust,
Elizabeth House,
Fulborn,
Cambridge,
CB21 5EF

Dear Miss Ashton,

Letter of access for research

As an existing NHS employee you do not require an additional honorary research contract with this NHS organisation. We are satisfied that the research activities that you will undertake in this NHS organisation are commensurate with the activities you undertake for your employer. Your employer is fully responsible for ensuring such checks as are necessary have been carried out. Your employer has confirmed in writing to this NHS organisation that the necessary pre-engagement check are in place in accordance with the role you plan to carry out in this organisation. This letter confirms your right of access to conduct research through Cambridgeshire Community Services NHS Trust for the purpose and on the terms and conditions set out below. This right of access commences on **1st January 2012** and ends on **30th September 2012** unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving permission to conduct the project.

You are considered to be a legal visitor to Cambridgeshire Community Services NHS Trust premises. You are not entitled to any form of payment or access to other benefits provided by this organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking research through Cambridgeshire Community Services NHS Trust you will remain accountable to your employer, **Cambridgeshire & Peterborough Foundation Trust**, but you are required to follow the reasonable instructions of your nominated manager, Dr David Vickers Medical Director, this NHS organisation or those given on his behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by this NHS organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with Cambridgeshire Community Services NHS Trust policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with Cambridgeshire Community Services NHS Trust in discharging its duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on Cambridgeshire Community Services NHS Trust premises. Although you are not a contract holder, you must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of a contract holder and you must act appropriately, responsibly and professionally at all times.

You are required to ensure that all information regarding patients or staff remains **secure and strictly confidential** at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice (http://www.dh.gov.uk/assetRoot/04/06/92/54/04069254.pdf) and the Data Protection Act 1998. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

Cambridgeshire Community Services NHS Trust will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

You should ensure that, where you are issued with an identity or security card, a bleep number, email or library account, keys or protective clothing, these are returned upon termination of this arrangement. Please also ensure that while on the premises you wear your ID badge at all times, or are able to prove your identity if challenged. Please note that this NHS organisation accepts no responsibility for damage to or loss of personal property.

We may terminate your right to attend at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence. Where applicable, your substantive employer will initiate your Independent Safeguarding Authority (ISA) registration in-line with the phasing strategy adopted within the NHS and the applicable legislation. Once you are ISA-registered, your employer will continue to monitor your ISA registration status via the on-line ISA service. Should you cease to be ISA-registered, this letter of access is immediately terminated. Your substantive employer will immediately withdraw you from undertaking this or any other regulated activity and you MUST stop undertaking any regulated activity.

Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

If your circumstances change in relation to your health, criminal record, professional registration or ISA registration, or any other aspect that may impact on your suitability to conduct research, or your role in research changes, you must inform the NHS organisation that employs you through its normal procedures. You must also inform your nominated manager in this NHS organisation.

Yours sincerely

Dr David Vickers
Medical Director
Cambridgeshire Community Services NHS Trust

cc: Vivienne Shaw CLRN RMG Manager, RMG office, Lockton House, Clarendon Road Cambridge CB2 8FH

cc: Sue Moncrief, Business Manager, Recruitment & Training Admin, Kingfisher House, Kingfisher Way, Huntingdon, PE29 6FH

Appendix J

Excerpt from the transcript of Participant 1 (binge eater) to show progression of levels of analysis alongside excerpts from the reflective journal

Excerpt from the transcript of Participant 1 (binge eater) to show progression of levels of analysis

Analysis Stage 1

Familiarisation with the transcript – annotated in italics to highlight key ideas and recurrent themes.

315 P1: Normally I eat it and then relax, it's done. *Feeling of relaxation following binge*

316 Interviewer: So once you've, you feel, you feel relaxed. How long does that last?

317 P1: I feel relaxed as I have nothing else to do about it, but then I have to deal with
318 the situation that I have eaten it and over 2000 calories in one meal. That feels like
319 "oh you're crap, your worthless", the same feelings I had before. *Feeling of relaxation temporary – shift to feeling bad about self – reinforces negative self-beliefs?*
320 The goal is to not binge eat and 99.9% of the time I do not achieve the goal,
321 but remember it was the second cake. I still had over 4000 calories in one meal,
322 it's crazy. Am I really this bad? The goal when I try to stop myself, is also how can I
323 not need it, gain control. And I can't find the answer. This is why I keep writing in
324 the notebook, I keep asking myself "why do I need it?" I can't find an answer. It's
325 weird, it's like, umm because if I don't eat it *Sense of bingeing being out of control / Asking questions of self*

326 Interviewer: You're really trying to challenge yourself, and the thoughts you're
327 having, and rationalise them

328 P1: Yeah, before I never used to but since I had that realisation in the mirror I
329 really do. So I realised it was something I was doing which was unconscious before.
330 Because you can binge eat and not realise, I don't know if other people do that.
Not always a conscious process

331 Interviewer: Its' a big struggle

332 P1: Yeah

333 Interviewer: Ok, so when you're binge eating, what are you focusing your
334 attention on, is it the food or your feelings? What is the most salient thing when
335 you are eating?

336 P1: It's interesting, I have to eat this and I have to finish it *Rationale for binge?*

337 Interviewer: So it is on the finishing the task, getting it done

338 P1: It's like something I have to do, it is not something I enjoy, but I have to finish
339 it *Have to do/finish it?*

340 Interviewer: So you're not thinking, if I eat this I will feel much better?

341 P1: No, that is more before and after, but at the time it's I have to get it done.
342 Before I feel a need to eat this so I can feel safe, whilst I'm eating it I feel I am

343 eating it because I need to finish it and then once I've eaten it I feel "oh shit I've
344 just eaten that". I'm relaxed that I have finished it, but anxious that I will be fat
345 again, and I feel worthless because I gave in *Sense before binge that bingeing will result in feeling better – make her feel safe / during the binge - thoughts around getting it done / After the binge – initial relaxation but then anxiety – thoughts about being fat – negative self-beliefs reinforced*

346 Interviewer: So does that ever lead you to binge eat again?

347 P1: Not there and then, unless there is another cake in the fridge

Analysis Stage 2

Following the review of two complete transcripts for both binge eaters and non-binge eaters, key concepts were identified from the a priori themes and the interview data. Two initial templates were compiled against which the remaining transcripts could be compared. These initial templates were modified and refined in line with subsequent findings to form the two final templates found in section 3.4.2.

Initial Template for obese binge eaters:

Negative self-beliefs
- Worthless
- Useless
- Alone

Metacognitive knowledge
- Positive metacognitive beliefs
    - Worry is helpful
        - Worrying about yourself means you care about yourself
        - Worrying about bingeing can stop it from happening
- Negative metacognitive beliefs
    - Worry is unhelpful
        - Thinking about bingeing can make it more likely to happen
        - Worrying about what others think of me is bad for me
        - Overwhelming

Positive beliefs related to eating
- Bingeing is a helpful behavior
    - Pleasurable
    - Safety / security
    - Comfortable / familiar
    - Completing a task / achievement
    - Relaxing
    - Comforting to self
    - Makes you feel better
    - Distraction from negative thoughts / emotion
- Emotional attachment to food
- Food is non-judging
- Food is easily accessible

Initial Template for obese binge eaters:

Negative beliefs related to eating

- Bingeing is uncontrollable
- Sense of failure / disappointment
- Guilt
- Unsafe around food
- Task to complete
- Some foods are bad / wrong
- Weight and shape concerns
    - Thoughts about self
    - Comparison to others
    - Physical weight and shape concerns
- Wasted effort
- Bingeing makes you feel worse
- Don't like the way I look when I binge

Reflections

- Questioning
- Hopes
- Justifications

Initial Template for obese non-binge eaters:

Negative self-beliefs
- Self-loathing
    - Worthless
    - Not good enough

Metacognitive knowledge

Positive beliefs related to eating
- Eating is pleasurable
    - Mechanical process
    - Sensory experience
        - Awareness of taste, aroma, texture
    - Cravings
- Food is pleasurable
    - A passion
    - To be shared with others
- Cooking is pleasurable
    - Creative outlet
    - Relaxing
- Food to fill an emotion
- Emotional attachment to food
- Should not waste / throw anything away
- In control
- Positive thoughts about being overweight
    - Part of identity
    - Protective

Negative beliefs related to eating
- Habit
- Resignation
- Weight and shape concerns
    - Finding clothes
    - Physical health concerns
    - Impact on family members
    - Benefits of losing weight
        - Have more energy
        - Able to do more

Analysis Stage 3.

The initial templates are applied to the data

315 P1: Normally I eat it and then relax, it's done. *Positive belief about eating – bingeing is helpful - relaxing*

316 Interviewer: So once you've, you feel, you feel relaxed. How long does that last?

317 P1: I feel relaxed as I have nothing else to do about it, but then I have to deal with
318 the situation that I have eaten it and over 2000 calories in one meal. That feels like
319 "oh you're crap, your worthless", the same feelings I had before. *Negative self-belief - worthless*
320 The goal is to not binge eat and 99.9% of the time I do not achieve the goal,
321 but remember it was the second cake. I still had over 4000 calories in one meal,
322 it's crazy. Am I really this bad? The goal when I try to stop myself, is also how can I
323 not need it, gain control. And I can't find the answer. This is why I keep writing in
324 the notebook, I keep asking myself "why do I need it?" I can't find an answer. It's
325 weird, it's like, umm because if I don't eat it *Reflection - questioning*

326 Interviewer: You're really trying to challenge yourself, and the thoughts you're
327 having, and rationalise them

328 P1: Yeah, before I never used to but since I had that realisation in the mirror I
329 really do. So I realised it was something I was doing which was unconscious before.
330 Because you can binge eat and not realise, I don't know if other people do that.

331 Interviewer: Its' a big struggle

332 P1: Yeah

333 Interviewer: Ok, so when you're binge eating, what are you focusing your
334 attention on, is it the food or your feelings? What is the most salient thing when
335 you are eating?

336 P1: It's interesting, I have to eat this and I have to finish it *Positive and negative belief about eating – completing a task*

337 Interviewer: So it is on the finishing the task, getting it done

338 P1: It's like something I have to do, it is not something I enjoy, but I have to finish
339 it *Positive and negative belief about eating – completing a task*

340 Interviewer: So you're not thinking, if I eat this I will feel much better?

341 P1: No, that is more before and after, but at the time it's I have to get it done.
342 Before I feel a need to eat this so I can feel safe, whilst I'm eating it I feel I am
343 eating it because I need to finish it and then once I've eaten it I feel "oh shit I've
344 just eaten that". I'm relaxed that I have finished it, but anxious that I will be fat
345 again, and I feel worthless because I gave in Positive beliefs about eating –

bingeing is helpful – makes you feel safe / relaxed. Negative belief about eating – weight and shape concerns. Negative self-belief

346 Interviewer: So does that ever lead you to binge eat again?

347 P1: Not there and then, unless there is another cake in the fridge

This extract also illustrates the importance of being familiar with the entire transcript before the templates can be successfully applied. For example, line would not necessarily have been coded as a positive or negative belief about eating as taken on its own it is unclear what the participant means. However, in the context of the rest of the transcript, the meaning becomes clearer and the line is able to be coded appropriately, for example:

192 P1: ...but I think for me, a big disadvantage of it is the fact that it feels like
193 another work task, it's weird.

459 P1: I think when I have these thoughts now and go to binge eat, it is very much

460 related to the task. I have to prove my worthiness by finishing to the task

All transcripts were coded against the initial templates and refinements and modifications made in order to produce two final templates. All transcripts were then read again and if necessary recoded in line with the final transcripts.

Analysis Stage 4

This section is taken from the results section and illustrates the distilling of information from the templates and the selection of illustrative passages for quotation in the text.

3.4.4.2 Negative self-beliefs.

...When exploring what had precipitated one participant's BE episode, they explained they had been thinking about what had "gone wrong" (P2: 426) in their life, such as not having a job and not being able to finish college. This had then led them to think, "I'm worthless and I'm never going to amount to anything" (P2: 447). Another participant's beliefs around being worthless and being alone were also activated prior to a BE episode, "I was alone in the house, and I hate being alone, when I am alone, I feel very un-human, I feel very unsafe and insecure" (P1: 120), "...the feeling of worthlessness came to mind because I was alone, and I was like there's no one here with me, so no one cares about me and so I am worthless" (P1: 129). Following the BE episode, it appeared their beliefs about being worthless were reactivated, "...I have to deal with the situation that I have eaten it and over 2000 calories in one meal. That feels like, oh you're c*** (expletive), you're worthless, the same feelings I had before" (P1: 317).

Analysis Stage 5. Mapping and interpretation

During this stage, the researcher reviews the research notes; compares and contrasts the perceptions, accounts, or experiences; searches for patterns and connections and seeks explanations for these internally within the data.

This is best illustrated in the discussion of the theme:

3.4.4.2 Negative self-beliefs.

Four out of the five obese binge eaters reported negative beliefs about themselves. Negative self-beliefs are important components of both the S-REF model and the cognitive model of BN (Cooper et al., 2009). The S-REF model emphasises the role of negative self-beliefs in psychopathology and sees them as products of running particular processing routines (Wells, 2000). In the cognitive model of BN, negative self-beliefs are thought to be important in the development of BN and consequently BE as they constitute a vulnerability that can lead to the disorder when they occur in conjunction with metacognitions. Despite their inclusion in both these models, in this study negative self-beliefs were not listed as one of the a priori themes. This was because the metacognitive profiling interview was not designed to explore such beliefs and therefore they were not expected to be identified. However, some participants clearly identified these beliefs being present both prior to and after a BE episode. Negative self-beliefs around being worthless were most common with three of the participants explicitly making reference to this. In all these interviews, it was apparent that these beliefs had been activated prior to a BE episode.

Reflexive Journal

The reflexive journal included a number of relevant entries around the themes highlighted in the transcript and the themes discussed above. These are linked with the researcher's position and expectations outlined at the end of the method section.

Excerpt 1

I have been struck by the insight a number of the binge eating participants have into their thoughts, feelings and behaviours. Many have also been able to make their own links between their negative thoughts / self-beliefs and their binge eating. Despite this I have also felt saddened that many of the participants have struggled with binge eating for years.

Excerpt 2

Although I have been struck by their insight, I am left wondering why or how these participants feel able to express some of these painful beliefs? It feels different compared to my (somewhat limited) clinical experiences working in a community eating disorders team with predominantly AN and BN clients who can present as very closed. Is it the fact it is a one-off interview and they will not have to address potentially painful issues? Are interviews much more direct than therapy? Are they more able to access cognitions than for example someone with AN? Are these thoughts and beliefs they have been aware of for years?

Appendix K

Example Extracts from Reflective Journal

Reflective diary entry 1:

This was a difficult process and considerable time was spent reviewing the transcripts and searching for the most helpful themes that reflected the personal and detailed ideas being offered. I was aware of the risk of introducing bias within the interpretation process and was careful to keep challenging my perspective, assumptions and the emerging templates.

Reflective diary entry 2:

When reviewing the transcripts, the full breadth of data produced by the interviews became apparent. This led to difficulty when attempting to capture all the relevant individual ideas within each of the final templates. Whilst doing this process I was aware of the importance of reflexivity on my part so as to ensure the detail and validity of the data remained.

I was also aware of trying to remain true to the specific research questions and only selecting the data relevant to these. This meant much of the data produced by the interviews was unfortunately not included in this specific project but served to highlight the complexity of the populations being investigated.

Reflective diary entry 3:

When starting to recruit, feedback from commercial weight loss programmes who ultimately chose not to assist with the study was that it would be difficult to recruit as participants might not feel comfortable talking about their eating, weight and shape. As the project developed it became clear that at least for those participants who took part this was not the case and they were very keen to share their experiences.

Reflective diary entry 4:

I found it difficult to hear some of the participants talk about themselves in this way. Although as a trainee psychologist I have worked with many people who can be critical of themselves, it seemed particularly difficult to hear in this situation. I wondered if it was to do with the context of this being a one off research interview and therefore knowing that I would not see the participants again or be able to work with them in a therapeutic context.

Reflective diary entry 5:

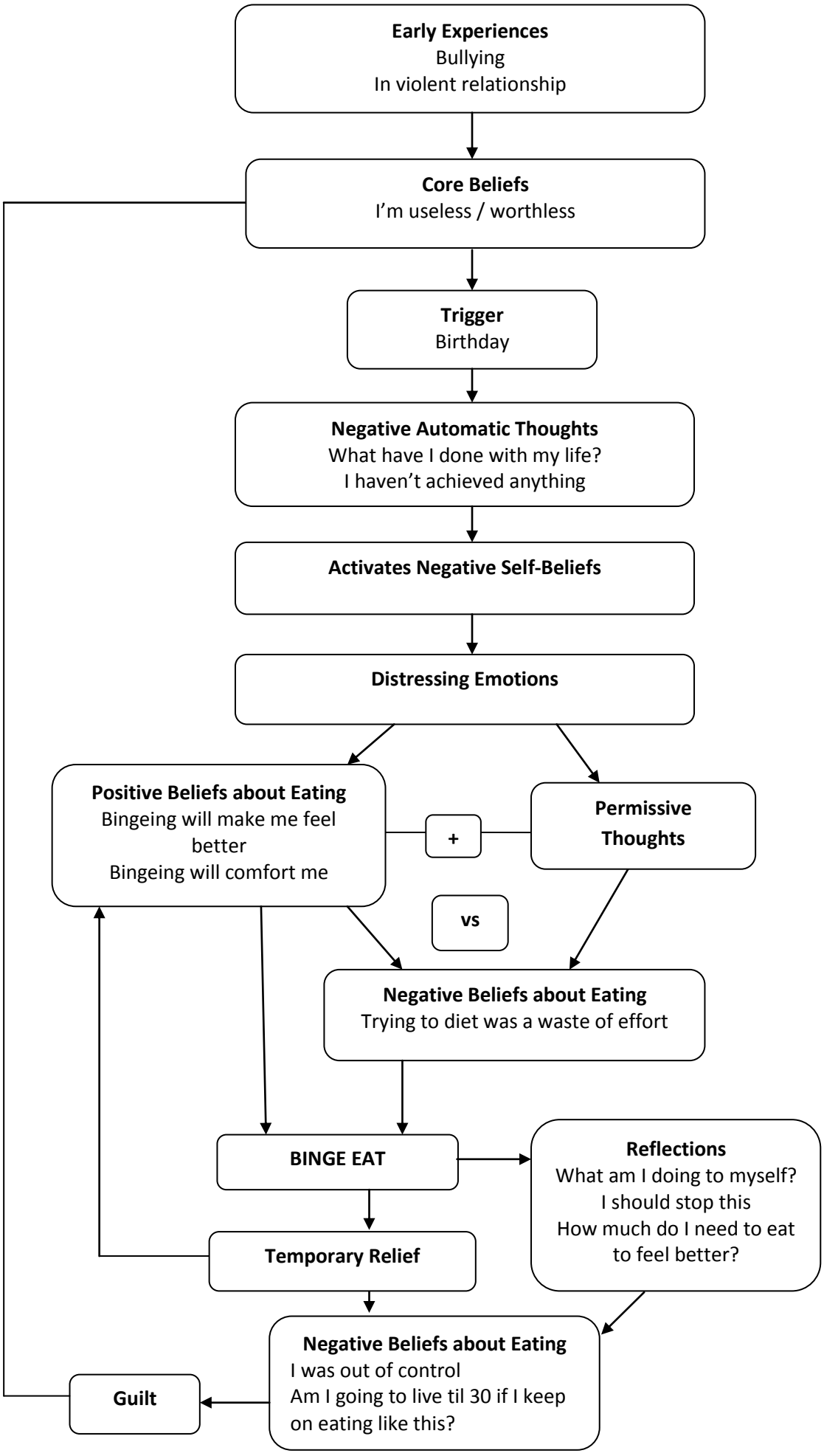
A couple of the participants made reference to my body weight and shape in comparison to theirs and wondered whether this would influence my opinion of them. These comparisons made me feel uncomfortable as I did not want them to think I was judging them in any way. It also made me wonder if these are comparisons they often make to individuals who are normal weight.

Reflective diary entry 6:

I was taken aback by some the stories of victimisation and abuse reported by some participants. I felt very angry that they have had to endure such experiences and I also felt somewhat naive that I had not imagined such instances would occur.

Appendix L

Example Formulation for Participant 2


Early Experiences
Bullying
In violent relationship
Core Beliefs
I'm useless / worthless
Trigger
Birthday
Negative Automatic Thoughts
What have I done with my life?
I haven't achieved anything
Activates Negative Self-Beliefs
Distressing Emotions
Positive Beliefs about Eating
Bingeing will make me feel better
Bingeing will comfort me
+
Permissive Thoughts
vs
Negative Beliefs about Eating
Trying to diet was a waste of effort
BINGE EAT
Reflections
What am I doing to myself?
I should stop this
How much do I need to eat to feel better?
Temporary Relief
Negative Beliefs about Eating
I was out of control
Am I going to live til 30 if I keep on eating like this?
Guilt