

# **Emotional Processing In Eating Disorders**

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**2009**



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## **Declaration**

The research described, and the preparation and composition of this thesis, is my own work, except where the contribution of others are documented and acknowledged.

John R.E. Fox  
December 2009

## Preface and Acknowledgements

The research described in this thesis was driven by an interest in eating disorders. Through my work as a clinical psychologist, both within outpatient and inpatient eating disorders services, I have been struck by the challenges people with eating disorders have with their own emotions. I have always sought to understand different theoretical approaches in order to meet the challenges of therapeutic work, however, my examination of the literature on the topic of emotions and eating disorders left with a sense that there is a sizeable gap on this topic. This realisation sowed the seeds of what is now five year's research on the role of emotions within the eating disorders.

This work could not have been carried out with the support and guidance of a significant number of individuals and organisations. Thanks are due to Manchester Mental Health and Social Care NHS Trust, both for their financial support and for allowing access to participants. Thanks are also due to Affinity Healthcare, and in particular, Dr. Ty Glover, John McGovern and Kris Reilly who has supported this research, both financially and by allowing access to patients. This thesis would not have been possible without this support. Finally, thanks are also due to B-EAT (formally known as the Eating Disorders Association) for their support and allowing access to their research database.

Thanks are also due to Amy Harrison who collected the data for the study presented in chapter 4 and to Kate Froom, who assisted in the data collection and developing the SPSS database for the study presented in chapter 5. Their assistance and enthusiasm was so invaluable throughout the whole of this thesis. For the study presented in chapter 6, thanks are due to Emily Smithson, Ingrid Mayr, Sarah Kellett, Stephanie Leyland and Nuno Ferreira for this assistance in data collection. Their role as volunteer research assistants during parts of this program was invaluable and was much appreciated.

A special thank you goes to Prof. Mick Power, University of Edinburgh, for the stimulation, encouragement, support and advice he provided as my supervisor for this PhD. I would also like to state my appreciation for the advice provided by Matthias Schwannauer who read drafts of my qualitative study chapter and provided some very useful feedback. I am also very grateful to all the participants who gave up their time to take part in the studies presented in this thesis. Their willingness to take part has been an inspiration to me, and it is my hope that I can repay this debt by developing the knowledge base that helps to develop interventions that assist in their struggle with their eating disorders.

Finally, a big thank you goes to Kirsti, Shannon and Lewis. You have always been my inspiration and this thesis would not have been possible without your support, love and guidance. I promise not to be such an absent father and husband in the future!!

To all of you, my warmest thanks.



## Abstract

Research into emotional processing in eating disorders (ED) is still very much in its infancy. Milligan and Waller (2000), Waller et al (2003) and others have shown that there is difficulty with the emotion of anger, especially in its expression. Whilst others (e.g. Troop et al, 2000) have demonstrated an increased sensitivity for disgust with an ED population. In recent years, there has been significant development in CBT models of eating disorders; in particular, bulimia nervosa and these models have started to suggest that eating disorder symptomatology acts as an emotional regulator (e.g. Cooper et al, 2004; Waller et al, 2007). Although these models are a useful start in understanding emotions in eating, there is a lack of a theoretical understanding of why people with eating disorders have particular difficulties with certain emotions. This thesis presented a detailed consideration of the literature that has attempted to understand the relationship between emotions and eating disorder symptomatology by proposing a new model of eating disorders that is based upon the recent theoretical developments in emotional processing (i.e. SPAARS model, Power and Dalgleish, 1997, 1999). This SPAARS-ED model was used as the theoretical backdrop for the thesis, and the data from the four studies were designed to test some of the key hypotheses stemming from the model. The first study was a grounded theory study that investigated perceptions of the basic emotions and the developmental histories of emotions within a group of 11 people with severe anorexia nervosa. The results highlighted themes of anger and sadness being suppressed, and were often regarded as being 'toxic'. Furthermore, themes were also explored that focused on meta-emotional skills and participants recollections of how their parents, peers and caregivers used to respond to their emotions. The second study directly tested the theoretical idea of 'coupled emotions', and this study found data that demonstrated increased levels of disgust following an anger induction for people with bulimic symptoms, in comparison to control participants. The third study was a survey based study that quantitatively looked at both the predictive power of each of the basic emotions for disordered eating patterns, and also how certain emotion response styles from carers (e.g. punitive, dismissive, etc towards an emotion) were related to disorder eating. The results showed that anger and sadness predicted eating disorder symptoms, and the effect was large. However, there were no significant associations between emotion response styles and disordered eating. The final study was a hybrid study that was based on the two quantitative studies in this thesis. In a cross sectional study, a group of participants with anorexia nervosa were compared to control participants. This study had two parts, with the first part focusing on emotion regulation styles and core beliefs, whilst the second part repeated and developed the experimental methodology from study 2. The results showed that people with anorexia nervosa had significantly more internal dysfunctional emotion regulation style, and significantly more negative beliefs about the self and others when compared to controls. Interestingly these core beliefs patterns were significantly correlated with state emotions, with negative other beliefs being correlated to state anger, whilst negative internal beliefs were significantly correlated to state emotions of disgust and sadness. The second part of this study showed that, following an induced anger emotion, people with anorexia nervosa showed significantly higher levels of disgust, and estimation of body size. This was taken as further evidence of a potential coupled emotion effect, between anger and disgust within eating disorders. These findings were then discussed, in relation to both the SPAARS-ED model, and the general literature.

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## Chapter 1 Introduction

### 1.1 *Eating Disorders: Diagnosis and Classification*

Eating disorders often attract considerable public and media interest, with many magazines commonly discussing 'stars' difficulties with their eating or their body sizes. Fairburn and Harrison (2003) pointed out that eating disorders are a significant source of physical and psychosocial morbidity, and they carry the highest mortality rate of any of the psychiatric disorders (e.g. Herzog et al. 2000). Eating disorders have been grouped into three types; anorexia nervosa, bulimia nervosa and atypical eating disorders or eating disorders not otherwise specified (EDNOS). Across these three eating disorder diagnoses are the extreme concerns about shape and weight, described by Russell (1970) as a 'morbid fear of fatness'. There is always a marked tendency to evaluate one's own self-worth by body shape and weight, and an extreme preoccupation to be 'thin'.

The term 'anorexia nervosa' is of Greek origin, which translates to a 'lack of desire to eat', and the first reported cases stem back to the 19<sup>th</sup> Century. There were numerous reports of 'fasting girls' in the late part of the 19<sup>th</sup> Century, with Mollie Fancher, otherwise known as the "Brooklyn Enigma", being very well known for her claim of not eating, or eating very little for extended periods of time. There was also the famous case of the 'Welsh Fasting Girl' (Sarah Jacob) who claimed not to eat any food at all after the age of twelve. Sadly, Sarah died shortly after being admitted into hospital after the effects of pronounced starvation (for fuller details please see Brumberg, 2001). Recent history has also led this scientific/medical condition to become the focus of popular media, and famous cases have continued to fascinate the

public, with such cases as Karen Carpenter and the Brazilian model, Ana Carolina Reston, dying from complications stemming from anorexia nervosa. According to the main diagnosis systems (DSM-IV, APA, 1994), anorexia nervosa is classified by an inability to maintain body weight above 85% of what would be normally expected for a person of a particular height. This is often operationalised as having a body mass index (BMI) of below 17.5<sup>1</sup> (World Health Organisation, WHO, 1992). As discussed above, a diagnosis of anorexia nervosa, according to DSM-IV, also requires the person to have a profound fear of putting on weight, and overvalued ideas of weight and shape. A diagnosis of anorexia nervosa is divided into two type sub-types, restriction (AN-R) (with no bingeing or purging present) and binge-purge sub-type (AN-B/P). Within anorexia nervosa, it is very common to have marked episodes of excessive exercise.

The word *bulimia* derives from the Greek *βουλῖμια* (boulīmia; ravenous hunger), a compound of *βους* (bous), ox and *λίμος* (līmos), hunger, and is now understood as meaning an ‘ox like hunger’. Unlike anorexia nervosa, the history of bulimia is considerably shorter, with Gerald Russell publishing the first account of bulimia nervosa in 1979 (Russell, 1979). Like anorexia, recent interest in the popular media has become considerable, with famous cases disclosing their own struggles with the condition, including Diana, Princess of Wales, Geri Halliwell and John Prescott. According to DSM-IV (APA, 1994), a diagnosis of bulimia nervosa requires frequent episodes of bingeing and vomiting, with no associated weight loss. Therefore, weight should be within normal limits for what would be expected for the person’s height. It

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<sup>1</sup> Body mass index is a statistically representation of the relation between height and weight. Normal body weight is defined as between 20 and 25, whilst under 20 is underweight and over 25 is overweight.

is, perhaps, not surprising that people with bulimia nervosa often describe themselves as 'failed anorexics' (Fairburn and Harrison, 2003).

Eating disorders not otherwise specified (EDNOS) is defined within DSM-IV as individuals with clinically severe eating disorders, but do not conform to the diagnostic criteria for either anorexia nervosa or bulimia nervosa. The appendix of DSM-IV also provides a provisional criterion for binge eating disorder (BED), a subtype of atypical eating disorders, which is hallmarked by episodes of binge eating without frequent use of inappropriate compensatory behaviours (e.g. bingeing-vomiting). (Please see appendix 1 for a complete list of DSM –IV criteria for eating disorders).

## **1.2. *Distribution and Course***

Eating disorders are by their nature very secretive and, as a consequence, it is difficult to ascertain their exact prevalence. This secretive nature of eating disorders is often due to the ego-syntonic nature of thinness within anorexia nervosa (Serpell et al, 1999) and the shame associated with bulimia nervosa (Hayaki et al, 2002). However, despite these difficulties there is evidence that the occurrence of eating disorders has increased over recent years (Willi et al. 1990; Tunbull et al. 1996). Polivy and Herman (2002) estimated that the incidence of eating disorders range from 3% to 10% of females aged 15 years to 29 years, with the incidence of anorexia nervosa and bulimia nervosa ranging from 0.3% to 0.9% and 1% to 1.5%, respectively, among Western European and American young women (Hoek and Van Hocken, 2003; Hudson et al. 2007). The increase in incidence rates may be, in part, due to better diagnostic practices, better detection and increased help-seeking behaviours,

especially in anorexia nervosa (Van Hoeken and Lucas, 1998). In terms of EDNOS, recent research has suggested that there is a prevalence rate of 2.4% (Machado et al. 2007).

The course and outcome of eating disorders is extremely variable, with a complex interplay of a number of variables that appear to dictate the nature of the course of the eating disorder. Steinhausen (2002) argued that the age of onset, length of history, severity of weight loss and development of bingeing and vomiting appear to lead to a poor prognosis in anorexia nervosa. It also appears that for 10-20% of cases, anorexia nervosa becomes unremitting and intractable (Sullivan et al. 1998), with 50% of the cases developing into bulimia nervosa ((BN) Bulik et al. 1997). As discussed above, anorexia nervosa has the highest mortality rate of all the psychiatric disorders, with 5% to 8% dying from conditions directly relating to their anorexia nervosa (Herzog et al., 2000; Steinhausen et al. 2000).

For bulimia nervosa, the course is slightly different. As discussed above, individuals with a history of anorexia nervosa often develop bulimia nervosa (Fichter and Quadflieg, 2007). Whilst for those without a history of anorexia, it often starts later in life than anorexia nervosa. In this instance, bulimia nervosa often starts via dietary restriction which then descends into a vicious cycle of bingeing and vomiting with no associated weight loss (Fairburn et al., 2000). Prognosis for bulimia nervosa is not good, as up to 50% of individuals meeting criteria for bulimia will continue to meet diagnostic criteria for an eating disorder (normally EDNOS) five to ten years after initial onset (Collings and King, 1994; Keel et al., 1999). Similarly, atypical eating



disorders have been shown to also have a poor prognosis, and they often develop into anorexia or bulimia nervosa (Herzog et al., 1993).

### **1.3. *Issues with Diagnosis***

Over recent years, researchers have started to give consideration to how accurately the diagnosis systems capture the clinical reality of eating pathology. One such area has been to consider whether mild eating disorders are quantifiably different to diagnosed formal eating disorders. This debate has been labeled as the ‘continuum versus discontinuity’ debate, with various authors taking difference stances (e.g. Stice et al., 1998; Ruderman and Besbeas, 1992). One such study that has attempted to address this question demonstrated that eating disordered women differed significantly from women with milder eating pathology (such as ‘symptomatic dieters’) on their psychological/ cognitive profile, with eating disordered women endorsing more core beliefs relevant to emotional deprivation, mistrust, social isolation, shame and failure to achieve. Interestingly, there was not a significant difference between the groups on the actual eating symptomatology (Leung and Price, 2007). This finding gave support to the discontinuity models of eating disorders, and this may have significant implications for treatment. However, Cooper and Fairburn (1992) argued that EDNOS could be regarded as evidence of people suffering with milder forms of disordered eating, which means that a continuity model maybe implicated, as people may move along the continuum depending on their eating symptomatology and level of negative core beliefs (as above).

The issue of the actual distinction between the eating disorders has attracted much debate in recent years. In medical terms, a diagnosis is a cornerstone of medical



practice as it allows the clinician to hypothesize about aetiology, know the likely prognosis and what would be the best treatment. However, the diagnostic process within the eating disorders is far from clear. According to Fairburn, the core elements of eating disorders are essentially the same (i.e. across AN, BN and EDNOS), because they all over-evaluate shape, weight and the control of eating. According to this view, there is a similarity in the expression of similar attitudes and behaviour across both disorders; thus, according to Fairburn, "...patients with anorexia nervosa restrict their food intake in the same rigid and extreme way as patients with bulimia nervosa, and they too may vomit, misuse laxatives or diuretics, and over-exercise" (Fairburn, Cooper and Shafran, 2003, p. 519). In these disorders, there is marked body dissatisfaction and this plays a powerful maintaining role for the disorders (e.g. marked fear of being fat). Research has also demonstrated that binge eating does not distinguish between anorexia nervosa and bulimia nervosa because there is a subgroup of patients with anorexia who also binge eat (with or without compensatory purging) (e.g. Casper, Eckert, Halima, Goldberg, & Davis, 1980; Garfinkel, Moldofsky, & Garner, 1980). Fairburn & Harrison (2003) argued that the most compelling evidence for a transdiagnostic account of eating disorders comes from the longitudinal study of eating disorder diagnoses. Within their paper, they presented evidence of migration between the various eating disorder diagnoses. For example, Sullivan, Bulik, Carter, Gendell, & Joyce (1996) demonstrated that in about a quarter of cases of bulimia nervosa, there have been episodes of anorexia nervosa. In a recent prospective study, Milos and colleagues (Milos et al., 2005) found that stability in eating disorder diagnoses was low, with just a third of participants retaining their diagnoses over a 30 month period. Interestingly these results were not due to remission rates as they were low for all the participants, so consequently, movement between the diagnoses occurred in over half the cases in their study. This finding has been supported by a recent study that also demonstrated

considerable diagnostic flux (Fichter and Quadflieg, 2007). In a recent conference paper, Fairburn (2007) made the point that almost half of the people seeking help with eating difficulties do not fulfil criteria for either BN or AN and are often given the diagnosis of eating disorders not otherwise specified (EDNOS) (Ricca, Mannucci, Mezzani, et al. 2001; Millar, 1998). This group of patients often share many of the characteristics of both BN and AN, but are not accounted for by the current diagnostic specific models. Likewise, a mixture of both bulimic and anorexic symptoms for almost half of presenting patient suggested that a trans-diagnostic approach would be the best way to formulate and understand eating disorders.

Other authors have suggested alternatives to a complete trans-diagnostic model of eating disorders. In line with developments in the psychosis field 15 to 20 years ago (e.g. Bentall, 1992, Boyle, 2002) some authors have started to suggest that eating disorders should be distinguished according to their predominant symptoms. Based on a review of research studies Williamson and colleagues postulated a difference according to whether the person binge ate or not, along with a continuum between restriction, normal eating and obesity (Williamson et al., 2005). Equally, Eddy et al. (2007) argued that a distinction between the sub-types of the same diagnostic category should be based upon their prognostic path, such as bulimia nervosa with or without a history of anorexia nervosa. What is significant about this debate is how it highlights the importance of distinguishing the eating disorders via a closer examination of the underlying psychological mechanisms that underpin the eating disorders.

### **1.3 Psychiatric Co-Morbidity**

It is often an observed feature of the clinical presentation of people with eating disorders that they present with a whole host of co-morbid difficulties. Milos et al., (2003) discussed how research has tended to focus on the high level of co-morbidity with affective disorders and personality disorders. Co-morbidity within eating disorders is very common (e.g. Halmi, 1995), with depression being the most common co-morbid problem (O'Brien & Vincent, 2003), with levels of co-morbidity ranging from 45% in mixed eating disorders (Geist, Davies & Heinman, 1998) to 86% in an AN group (Rastam, 1992). For bulimia nervosa, Brewerton et al. (1995) reported that 63% of their bulimia sample also suffered from major depression. Hudson et al (2007) argued that both anorexia and bulimia nervosa are highly positively associated with the core DSM-IV mood, anxiety, impulse-control and substance use disorders.

In terms of co-morbid personality disorders, research has demonstrated that bulimic symptoms often co-exist with cluster B personality disorders (e.g. Borderline personality disorders) which are associated with impulsivity and emotional dysregulation (Spindler and Milos, 2007; Sansone et al., 2005). For anorexia nervosa, there appears to be a link with obsessive-compulsive disorder (Binder et al., 2006) and obsessive-compulsive personality cluster disorders (Bruce and Steiger, 2005). When considering the co-morbidity of personality disorder with eating disorders, there is often a tautological aspect to the process of diagnosis, as the features of the eating disorders (especially anorexia nervosa) often fulfil criteria for personality disorder in

their own right (e.g. tolerance of uncertainty within obsessionality personality disorder).

As discussed above, depression is the most common co-morbid condition of eating disorders, with anxiety also being a significant co-morbid condition. This has led some authors to argue that eating disorders should be regarded as an extension of anxiety disorders (e.g. Pallister and Waller, 2008; Waller, 2008). This chapter will now discuss the theories that relate these disorders to eating disorders, as it will be argued later in the thesis that theories of eating disorders often fail to account for the co-morbidity in eating disorders.

### **1.3.1 Depression and Eating Disorders**

A focus within the literature has been upon the debate as to which disorder predates the other. One line of research has indicated that starvation may play a significant part in the development of depression within anorexia nervosa. Altemus & Gold (1992) demonstrated that starvation and/ or protein malnutrition can lead to elevations in corticotrophin-releasing hormone (CRH), which may play a role in depression. A number of other studies have demonstrated that calorie controlled diets lead to a reduction in 5-HT functioning, which may contribute to depressed mood (Cowen, Anderson & Fairburn, 1992). In the seminal work by Keys, Brozek, Henschel, Mickelsen & Taylor (1950) it was found that 'psychologically robust' men who were placed on a 'semi-starvation diet' all had significant lowering of mood over the course of the study, which lasted for 6 to 12 months post refeeding. Interestingly, Laessle, Platte, Schweiger & Pirke (1996) found some evidence that, in normal weight healthy

controls, alternating a diet of restriction with unlimited eating was associated with a significant lowering of mood, feelings of loss of control, and heightened irritability. In comparison with the Keys study, a significant proportion of participants started to binge and purge and their mood deteriorated. Fluctuating eating patterns do seem to be related to a lowering of mood. However, in all of these studies, it is not clear whether the lowering of mood ever reached clinical caseness levels. For example, in the Laessle et al. study, mood only deteriorated by a mean average of 10% between the dieting days and the unlimited intake days.

As pointed out by O'Brien & Vincent (2003), there is evidence to suggest that caloric deprivation may act as a contributor to depressive symptomatology within women with bulimia and anorexia, but it does not appear to account fully for the high level of co-morbidity. On this point, Levy & Dixon (1985), in their review, argued that the data suggested that the association between AN and depression is more complex than only being the result of starvation. Unfortunately, in their review, there were a number of methodological difficulties with the studies presented. However, these authors stated there was sufficient evidence to suggest that depression often predates the onset of the eating disorder and it often continues once the eating disorder has abated. Interestingly, they also discussed the fact that there is a high prevalence of depression in the relatives of people with an eating disorder and this may be a clue to the emotional environment and genetic transmission.

Stice (2001) undertook a sophisticated prospective study in which he tested his Dual Pathway model of bulimia nervosa. This model stated that both societal pressure for thinness and a thin-ideal internalisation contributed to body dissatisfaction, which

then predicted dieting and negative affect, which in turn, predicted bulimic symptoms. Furthermore, in keeping with research cited above, Stice proposed that dieting also had a significant effect upon the lowering of mood. In testing this model, Stice (2001) found that in a sample of 231 high school girls the model was supported by the data. However, it is interesting that dieting only marginally predicted negative affect in the sample. Stice argued that his study presented evidence of how the social norms of thinness for woman, and the internalisation of these norms, lead to marked body dissatisfaction, which played a direct role in the development of negative affect and dieting. In relation to the above discussion, the study gave evidence that negative affect is both a significant contributor and consequence of dieting and body dissatisfaction. However, the study has some important drawbacks; first, the dual pathway model only accounted for 23% of the variance from the data, and therefore, it is clear that other significant variables play a role in developing bulimic symptoms. Secondly, the model does not adequately account for why some women are particularly prone to internalise the thin-ideal, nor does it explain the findings from Milos et al. (2005), who showed significant movement between the diagnoses. Recent research has demonstrated that the vast majority of women have significant levels of body dissatisfaction (e.g. Levine, Piran & Stoddard, 1999); however, Stice's model does not help to explain why certain women develop pathological levels of body dissatisfaction and eating disorders, whilst others do not. Recent research has started to clarify these points a little, with Measelle, Stice and Hogansen (2006) finding that depressive symptoms predict eating disorders in 13-18 year old girls over a four year period, but not the reverse. Furthermore, Burton, Stice, Bearman, and Rohde (2007) found further evidence of the relationship between depressive symptoms and bulimic



symptoms; when they developed an intervention for depression in eating disorders, they found a clinically significant improvement in the bulimic symptoms.

### **1.3.1.1 Summary of Co-morbidity of Depression and Eating Disorders**

There has been much consideration regarding the relationship between depression and eating disorders. The initial theoretical focus of this work has investigated on whether or not depression predates the eating disorder, or whether the eating disorder predates the depression. The work of Stice (2001) has demonstrated that the relationship between depression and eating disorders is a complex reciprocal process, and recent research has identified that there are many similarities in the type of cognitions present in both depression and eating disorders. As will be seen later in this chapter, cognitive theorists have started to formulate the role eating disorder symptomatology potentially plays in regulating negative affect. However, despite these advances, these cognitive approaches are still lacking. There is only one model that discusses depression in eating disorders (i.e. Wonderlich et al, 2001; 2008) but this is not discussed within the context of co-morbidity or the broad nature of affect in eating disorder, nor is there any theoretical consideration of the high levels of body dissatisfaction that is nearly always present in eating disorders. As will be discussed later in this thesis, these models are overly concerned with verbal cognition and, hence, they often fail to account for the potentially different levels of cognitive representations that are often theorised in other cognitive clinical models (e.g. Integrated Cognitive Subsystems, ICS (Teasdale and Barnard, 1993); Schematic Propositional Analogue Association Representation System (SPAARS) (Power and Dalgleish, 1997; 2008).



## **1.4 Psychological Models**

Both anorexia nervosa and bulimia nervosa are disorders that have only recently been subjected to systematic research and theory development. However, this research has yielded pointers about some of the important mechanisms that may underpin these disorders. In her review of cognitive approaches to eating disorders, Cooper (2005) argued that cognitive approaches have gone through two principal shifts in their development, especially in the theoretical account of bulimia nervosa. The 1<sup>st</sup> generation approaches for eating disorders were broadly behavioural in manner, in that they focussed on the need to change eating behaviours to reduce symptoms for the patient (e.g. Fairburn et al. 1986). The 2<sup>nd</sup> generation builds on original models of bulimia and proposes a much more enhanced cognitive-affective component to the cognitive-behavioural models and therapies of eating disorders (e.g. Cooper et al., 2005; Waller et al., 2007). This chapter will now discuss the main theories in turn.

### **1.4.1. Theoretical models of Anorexia nervosa**

#### **1.4.1.1 Anorexia nervosa: Behavioural Models**

The early models of anorexia nervosa proposed that it was a learnt disorder, which was maintained by both positive and negative reinforcement. Accordingly, the person engages in dieting behaviour which results in the losing of weight and the acceptance from peers, which leave the person with a sense of control (positive reinforcement). Whilst the dieting behaviour is negatively reinforced as it prevents social disapproval, feeling out of control and having a sense of failure (De Silva, 1995). Slade (1982) proposed a behavioural model of anorexia nervosa that was based on functional

analysis, which incorporated antecedent and predisposing factors at the onset of the anorexia nervosa. According to this model, an interaction between individual predisposing factors, such as perfectionistic tendencies, low self-esteem or family conflicts, interface with challenges with the young girl's interpersonal life (e.g. independence and autonomy). These dynamics leave the young girl with a strong need for control in her life and control of the body becomes an ideal vehicle for this need, as it is entirely under the control of the self. Moreover, the body also becomes the object of control, according to the theory, as it often commented on critically by peers. Therefore, as with the above model, weight loss is positively reinforced by feelings of success and satisfaction, and it is negatively reinforced by the fear of failure and the avoidance of the stressor that predated the onset of the disorder. The outcome of these factors is that the young girl descends into a spiral of weight loss and endocrinology disturbance which results in the full blown clinical presentation of anorexia nervosa. Slade, within this model, also attempted to explain the development of bulimic symptoms, as he proposed that the strict dietary standards are broken via a starvation preoccupation with food, which is then 'remedied by weight control compensatory strategies', such as vomiting and laxative use.

Although this model highlights the importance of perfectionistic beliefs in anorexia nervosa (e.g. Bruce and Steiger, 2005) and family difficulties (e.g. Schmidt, Tiller and Treasure, 1993), there are a whole host of unanswered questions that arise from this model, for example, what is the nature of the cognitive appraisals that would mediate the relationship between societal pressures to be thin? Fairburn et al (1999) highlighted the tendency to evaluate one's self worth and well being predominantly by weight and shape, and this is missing from Slade's model. Likewise, it makes only

a small mention of emotion within the model and hence does not account for the apparent emotional difficulties within eating disorders. As will be discussed with a number of the theoretical accounts of eating disorders, this model fails to explain co-morbid conditions that often occur with eating disorders (e.g. depression, please see below), and this is especially true as the model proposes that the positive reinforcement of the disorder leads to feelings of success and satisfaction.

#### **1.4.1.2. Anorexia nervosa: A Flight from Maturation**

Crisp (1980) proposed that anorexia nervosa was essentially a flight from growing up/maturation. According to the theory, anorexia nervosa is an extreme way of coping with the demands and challenges stemming from puberty and growing up. These challenges include, sexual development, body changes, becoming sexually aware and starting to understand the world from an adult perspective that includes the finite nature of the life. Therefore, according to Crisp, returning the body weight to pre-puberty weight offers the individual a way to eliminate these impulses by way of delaying the process of sexual development maturation. Within this theory, the tension comes with the reduction of weight to an unstable level, as the body attempts to force the individual to eat via starvation feelings, cravings, etc. Crisp also argued that certain environmental factors contribute significantly to the development of anorexia nervosa, such being female and growing up within a middle class family where love and support are conditional on compliance, and emotional expression and confrontation are inhibited. These factors are important for the theory, as Crisp argues that the sexual impulses that accompany the puberty stage often are associated with feelings of anger and disgust (especially if the young female has experienced negative

sexual experiences), and the family of origin denies the opportunity to express these feelings.

This model of anorexia was an important first step in starting to understand anorexia nervosa, as it offers an integrated theory of both developmental and environment factors. Unlike the above theory proposed by Slade (1982), Crisp (1980) discussed the importance of emotional variables in anorexia nervosa and how being a low weight can operate as an emotional avoidance strategy. This point has been picked up by cognitive theorists and will be discussed later in this chapter. Also, the treatment implications from this model are clear and Crisp (1980) advocated that for treatment to work, the patient needs to be supported to put weight on so that the maturation process can restart and support can be offered over this period. It is interesting that throughout this process, Crisp argued that 'recovery from anorexia nervosa often requires that some degree of depression and related self-awareness be experienced' (Crisp, 1997, p.240). This is the first mention within the literature of the connection between depression and anorexia nervosa, and this will be built upon throughout this thesis.

#### **1.4.1.3 Anorexia Nervosa: Cognitive-Behavioural Models**

Cognitive-behavioural therapies have been successfully applied to a number of psychological disorders, stemming from depression (Beck et al., 1979) and anxiety (Wells, 1997). Its application to anorexia nervosa stems back to the early 1980s, where Garner and Bermis (1982) proposed a model that suggested that distortions about weight and shape of the body maintain the condition, and in keeping with the behavioural models discussed above, they argued that positive reinforcement from

peers about their slimness and an overriding sense of control act as important maintainers for the anorexia nervosa. Just under ten years later, Vitousek and Orimoto (1993) developed a cognitive-behavioural model that builds upon Garner and Bermis' model, as they acknowledge the positive consequence that food restriction holds for the individual, such as a sense of success, pride, superiority, control and receipt of attention from others. In many ways this model incorporates the contextual factors that were first discussed by the behavioural model of Slade (1982), as Vitousek and Orimoto argued that the individual's sense of self is challenged by a stressor (e.g. change, loss, onset of puberty), which is then 'resolved' by a belief that thinness is the solution to personal distress. These beliefs are fuelled by certain contextual factors, such as societal views of thinness, low self-esteem, perfectionism and asceticism. Although this model does address some of the weaknesses that are inherent in the behavioural accounts of anorexia nervosa, the model is very vague and it lacks detail on the specific processes that are hypothesised to occur within this model.

Fairburn et al., (1999) proposed a model that attempted to address some of the deficits in the Vitousek and Orimoto (1993) model. Fairburn et al proposed that the key construct for the onset and maintenance of anorexia nervosa is one of control. This need for control is driven by feelings of ineffectiveness, perfectionism and low self-esteem. According to the model, tight dietary restriction directly reinforces a sense of control within the individual, and this becomes the barometer of the individual's overall sense of control and of self-worth. However, in line with Crisp's theory, maintaining this low weight requires more and more effort due to the effects of starvation that accompany restriction (e.g. intense hunger, increased sense of fullness, reduced concentration). These interactions between the need for control over eating

and the pressures of the physical effects of starvation create vicious cycles where the individual engages in body checking and sense of failure following eating, and the reinstatement of strict dieting regime. Fairburn et al (1999) postulated that, 'by successfully controlling their eating these individuals are controlling all that is important in their lives....In this way they are also avoiding having to face other difficulties, such as family problems, forming relationships and the issue of sex.'

(p.5). Although this adds to the previous cognitive models, it leaves many unanswered questions, such as the issue of co-morbidity and the nature of emotions in eating disorders. Also, as discussed by Cooper (2005), the available treatment studies based upon these models only provide weak evidence for them, and despite some of the advances they offer in understanding the linkages between cognitive, emotional and interpersonal factors, they lack an account of how eating disorders act as an emotion regulation strategy. Furthermore, they do not account for how anorexia nervosa is also ego syntonic and it clearly plays an important role in someone's life that goes beyond weight and shape.

Wolff and Serpell (1998) proposed a model that emphasised the importance of meta-cognitions in anorexia nervosa. Within this context, meta-cognition can be defined as beliefs about thinking and actions that pertain to thinking regulation. Models of meta-cognition have been applied to other psychological disorders, such as depression (Teasdale, 1985), generalised anxiety disorder (Wells, 1997) and OCD (Wells, 1997). The Wolff and Serpell model proposed that pro anorexic meta-beliefs play an important role in maintaining the anorexia nervosa. For example, having the belief that not having anorexia would lead to their 'world falling apart' would have a significant negative effect upon the levels of motivation within the person.



Interestingly, the authors argued that it may be a therapeutic error to solely focus on negative automatic thoughts pertaining to the actual eating disorder, as it may lead the therapist to miss positive meta-beliefs that may assist in the process of change.

Following on from Wolff and Serpell's theory, Schmidt and Treasure (2006) developed a cognitive-interpersonal maintenance model of AN, which places particular focus on the 'valued and visible' nature of anorexia nervosa. Interestingly, it does not emphasise the importance of shape and weight concerns that previous cognitive accounts have emphasised, but it advocates that the response of key others interlink with a number of cognitive variables, such as perfectionistic personality traits/ cognitive rigidity, experiential avoidance and pro-anorexic beliefs (in keeping with the above theory). This theory appears to draw heavily from the early behavioural models of eating disorders, in that, it proposes that reinforcement (both positive and negative) maintains the anorexia nervosa. Again, although it is useful in reflecting upon the interaction between cognitive and interpersonal variables, these arguments do not appear to have moved the discussion on much further than the behavioural accounts of anorexia nervosa.

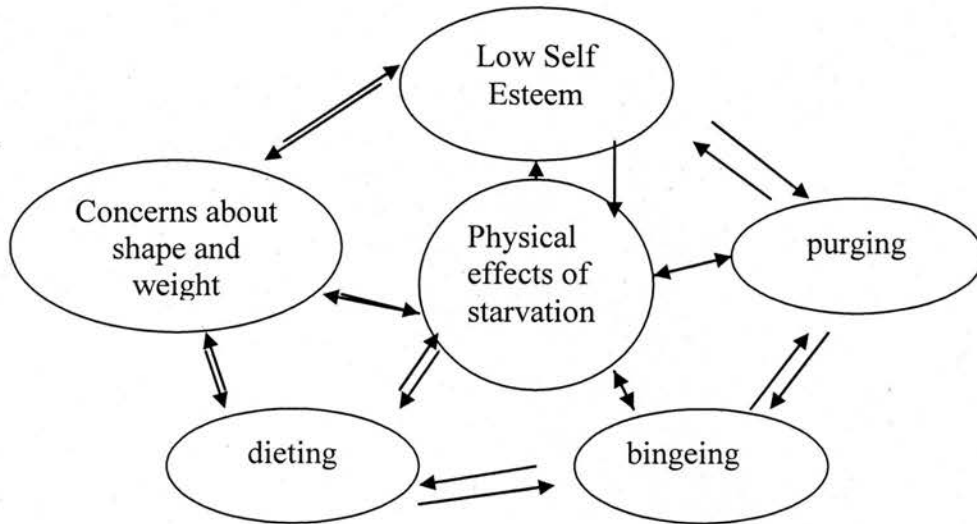
## **1.4.2. Theoretical Accounts of Bulimia Nervosa**

### **1.4.2.1 Bulimia Nervosa: Cognitive - Behavioural Models (1<sup>st</sup> Generation Models)**

Cognitive-behavioural treatments of bulimia nervosa (CBT-BN) have the strongest efficacy of all the psychological treatments in all the eating disorders (Fairburn et al, 1986). In outcome research, CBT-BN has only been shown to be effective in 50% of cases. It started out as predominantly a maintenance model that originally worked on



a dietary and behavioural level. Please see the figure below for a visual version of the CBT-BN (Fairburn et al, 1986).



**Figure 1:** Fairburn’s CBT model of Bulimia Nervosa (Fairburn et al. 1986).

According to this model, cognitions relating to the over valuation of shape and weight and their relation to self-worth/ self-esteem are at the heart of bulimia nervosa. These factors lead to intense and rigid dieting, via perfectionistic beliefs. In the original model, bingeing occurs when the physiological pressures to eat become overwhelming for the person, or when there is an abandonment of dietary restraint following a minor transgression of rigid dietary rules. In 1997, in response to research demonstrating how bingeing can reduce negative affect (e.g. Heatherton and Baumeister, 1991), Fairburn proposed that bingeing can occur in response to negative affect. However, he discussed, via his revision, that the use of bingeing to reduce negative affect actually reinforces negative self-evaluation, shape and weight

concerns and dietary restraint. Furthermore, following a binge, the individual typically responds by vomiting, and the use of laxatives and diuretics. These are negatively reinforced by reducing anxiety and potential weight gain, but have a deleterious effect upon self-esteem and self-evaluation. Although this is a useful model in beginning to explain the relation between cognition, physiology, and, later, negative affect, it leaves a number of questions unanswered. For example, it does not explain what differentiates a person from succeeding to restrict their diet, to someone who ultimately ends up bingeing and vomiting. Although mention is made of the relation between negative affect and binge eating, no consideration is given to the underlying mechanisms that underpin this process.

#### **1.4.2.2. Eating Disorders: Cognitive-Behavioural Accounts: 2<sup>nd</sup> Generation Accounts**

Cooper (2005) discussed how the application of cognitive theory to eating disorders has gone through a number of significant developments over the last few years (for a full discussion of the cognitive theory in eating disorders, see Cooper, 2005).

Previously, cognitive theory was broadly concerned with the role of behaviour and physiology in eating disorders, in particular, BN (Fairburn, Cooper, & Cooper 1986).

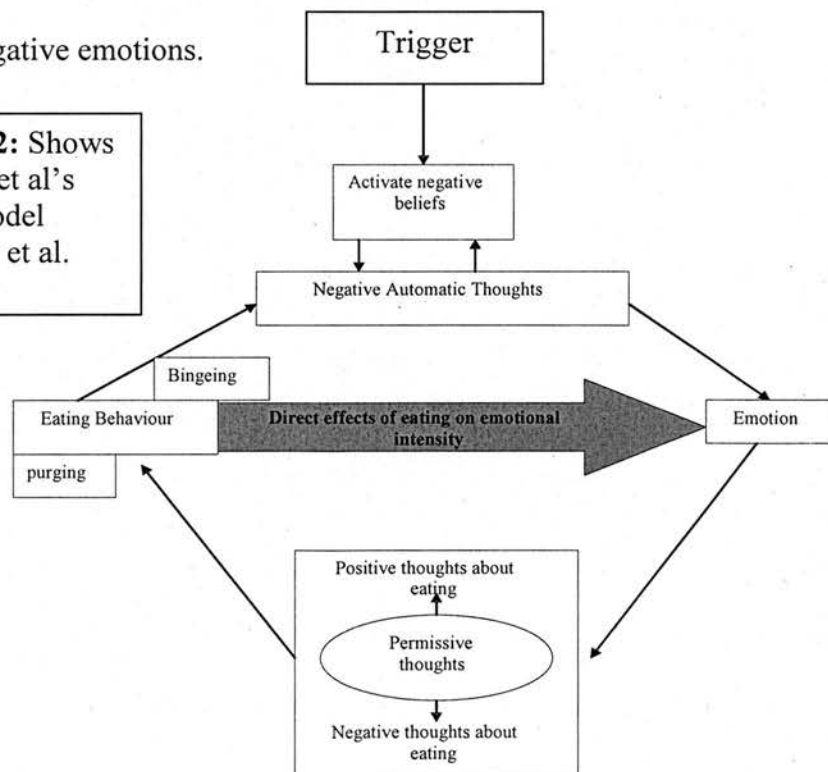
However, there have been a number of important theoretical advances over recent years. Cooper (2005) argued that over recent years, 2<sup>nd</sup> generation cognitive theories of eating disorders have appeared within the literature which postulate that the cognition-affect dimension is of central importance. These theoretical developments were built on research that revealed how eating disorder symptomatology appears to operate as an escape from aversive self-awareness and emotional distress (e.g.

Heatherton and Baumeister, 1991; Root, Fallon & Friedrich, 1986).

Building on this empirical basis, Cooper et al. (2004) developed a model of BN that worked on the tenet that eating helps the self to dissociate from painful cognitions and negative affect. According to this model, external events activate negative self-beliefs which facilitate negative emotion. This triggering of negative emotions leads to bulimic symptoms, especially bingeing. The decision to binge is facilitated by positive beliefs (e.g. ‘eating will make the distress go away’), but is also accompanied by negative beliefs (e.g. eating will make me fat’). This leads to the triggering of permissible thoughts to reduce the subsequent cognitive dissonance that occurs between the negative and positive beliefs (e.g. ‘I have no control of my eating’). Therefore, in this model, the beliefs that bingeing will help the self to dissociate from negative affect are central to understanding bulimia nervosa. In keeping with Cooper et al’s model, Corstorphine, Mountford, Tomlinson, Waller and Meyer (2007) found further evidence that people with eating disorders avoid their emotions, and are intolerant of their negative emotions.

**Figure 2**

**Figure 2:** Shows Cooper et al’s CBT model (Cooper et al. 2004).



Waller, Kennerley & Ohanian (2007) proposed a slightly different cognitive theory of eating disorders that was largely based on schema theory (Young, Klosko & Weishaar, 2003). According to the broader theory, a schema is defined as a pervasive set of beliefs and emotions that a person has about themselves, others and the world. It is argued that these schemas originate from experiences in childhood (Young et al. 2003) and research has demonstrated that eating disordered patients have more 'pathological schemas' when compared to normal participants and dieters (e.g. Cooper, 1997; Cooper & Hunt, 1998; Leung, Waller & Thomas, 1999; Waller, Ohanian, Meyer & Osman, 2000; Waller, Dickson & Ohanian, 2002).

The types of schemas that have been found to be important in eating disorders are the socially orientated schemas, such as abandonment, mistrust/ abuse, defectiveness/ shame (Meyer & Waller, 1999). Cooper, Todd and Wells (1998) found evidence of higher levels of negative self-belief in people with eating disorders, which appeared to focus on themes of worthlessness, uselessness, failure, abandonment and being alone, when compared to a control group. On the basis of these results, Waller, Kennerley, and Ohanian (2007) proposed a theory that attempted to account for the different symptom patterns within eating disorders (e.g. restriction vs. bingeing-purging). Again, as with Cooper et al.'s model, Waller et al.'s model is essentially an affect regulation model as it proposed that food restriction is used as a strategy for primary avoidance of the distress associated with negative emotions and schemas, whilst bingeing is viewed as a strategy for secondary avoidance of the distress of triggered negative emotions and schemas.

Corstorphine (2006) building on the above models, proposed a cognitive-affective model of eating disorders that is broadly based upon dialectical behavioural therapy (DBT; Linehan, 1993). The main points of this model are that individuals learn in their childhoods that certain emotions and individual traits are not tolerated by their caregivers. Therefore, the young females who are destined to develop eating disorders grow up learning that certain emotions are not 'acceptable' and/ or are 'dangerous'. In keeping with the other cognitive-affective models discussed above, bingeing-purging/ restriction is used to distance or prevent an emotion from occurring, however, the avoidance of a primary emotion is then related to the emergence of a secondary emotion. For example, feeling angry at a betrayal (primary emotion) which is suppressed, the individual then develops guilt at having experienced anger (secondary emotion). Corstorphine (2006) argued that it is the secondary emotion that causes much of the distress that is present in eating disorders.

For all three of these cognitive-affective theories, the emphasis is very much on the cognitive variables. The emotions discussed are often not specified, and it is not stated whether the emotion generated in the model is akin to depression, or whether it is something different. In the consideration of theoretical movements within the arena of affective disorders, the role of negative core beliefs and associated negative cognitions have long been shown to play an important role in depression (Beck, Rush, Shaw & Emery. 1979). Although it remains an empirical question, the most parsimonious account of the negative emotion alluded to in these '2<sup>nd</sup> generation cognitive models' is that the high co-morbidity between depression and eating disorders can be formulated and understood. This question has received some empirical consideration. Waller and colleagues (Waller, Shah, Ohanian, & Elliott

2001) compared severely depressed patients to moderately to severely depressed bulimic patients, and they found equivalent levels of core beliefs in each group. However, when they performed a discriminate analysis on their data, they found only failure beliefs could distinguish the depressed and the depressed bulimic groups. Unfortunately, there were a number of methodological problems with this study. For example, the patient groups having very small n sizes, with the BN and low depression group only having seven participants. Cooper and colleagues undertook an analogue study that attempted to address some of the methodological weaknesses of the Waller et al study (Cooper, Rose & Turner, 2006). They compared four groups of adolescent girls on a specific measure of self-beliefs within eating disorders, using the Eating Disorder Belief Questionnaire (EDBQ) and the Young Schema Questionnaire (YSQ), in which they were classified according to their scores on the Beck Depression Inventory (BDI) and the Eating Attitudes Test (EAT). These groups were 'healthy' (low BDI & low EAT scores), high BDI (with low EAT scores), high EAT (with low BDI scores) and 'unhealthy' (high BDI and high EAT scores). They found that both measures could distinguish the 'healthy group' from the high BDI group, but could not distinguish the high EAT group from the 'healthy group'. Both the YSQ and EDBQ measures could not distinguish between the 'unhealthy group' and the high BDI group. Within a discriminate function analysis, Cooper et al (2006) found that only two beliefs (as measured on the EDBQ) were specifically related to eating disorder symptoms. These were 'I'm stupid' and 'I'm ugly'. Although this study demonstrated that there were some differences in the core beliefs between the four conditions, it is hard to draw any definitive conclusions from this or from Waller's data. Both studies were cross-sectional, and the fact that failure seems to be a dominant theme may well be accounted for by the actual bulimia



symptomatology. A feature of bulimia that has been discussed by other authors, is that there is a strong desire to lose weight, but fail due to the presence of physiological mechanisms (e.g. Fairburn et al., 1993), so it is perhaps not surprising that they feel like a 'failure'. This criticism is also potentially applicable to the belief of being 'ugly'. Within the Cooper et al (2006) study, the group means were very low in comparison with clinical norms on the BDI and EAT. Therefore, it is hard to make any firm conclusions about the relevance of these results for clinical populations. Despite these criticisms, it does appear that there is preliminary evidence that suggests there is some commonality in the type of beliefs between people with eating disorders and people with depression. This is certainly an area that warrants further investigation.

Wonderlich et al., (2001) presented a model that attempts to integrate some of the above ideas on emotions and cognitions in their Integrated Cognitive-Affective Therapy model (ICAT). According to this model, the person with bulimia nervosa has a discrepancy between the 'ideal self' and the 'perceived self', which creates negative emotion, which they argued could be regarded as depression or anxiety, within the individual. Once this has been created, the person resorts to a 'self-directed style', where the individual engages in coping strategies that include cognitive (e.g., self-criticism, absence of self-acceptance) and behavioural (e.g., rigorous regimens of exercise, extreme dieting, or binge and purge behaviours) efforts. These strategies aimed at the self, would have the impact of reducing awareness of negative emotions through simple distraction or blocking, but may also represent motivated efforts to modify the actual self (i.e., lose weight). Wonderlich et al., (2008) published two studies that supported the ICAT model, as their data indicated that females with

bulimia nervosa displayed higher levels of self discrepancy and negative self-directed styles. They also found that negative mood states mediated relations between bulimic status and negative self directed coping styles. This model also fits the data from Dunkley and Grilo (2007) who found that the relation between self-criticism and over-valuation of weight and shape was partly mediated or explained by low self-esteem and depressive symptoms for people with binge eating disorder. Although this study's data refers to binge eating disorder, there are many similarities between binge-eating disorder and bulimia nervosa.

This model is a useful start in attempting to connect the body of research that has demonstrated that people with bulimia nervosa often have co-morbid depression and anxiety. Furthermore, it starts to offer some of the cognitive constructs that would help to explain the co-morbidity and how they may well fuel the actual eating disorder. However, this model lacks a significant amount of detail about why people with bulimia nervosa resort to self-directed strategies, nor does it explain why the individual has to engage in bulimic symptoms, as opposed to just restriction (as in anorexia nervosa), or other emotion regulation strategies, such as self-harm. In other words, there appears to be a link missing that connects the low mood to the eating disorder. This model appears to suffer the same fate as those by Cooper et al (2004) and Waller et al., (2007), in that, it cannot actually account for the full array of eating disorder symptoms, such as the profound body dissatisfaction. Another criticism of these studies, and indeed, of many on the topic of eating disorders and emotions, is the reliance on self-report measures to collect data. Self-report measures are open to biases in recall and may not capture the real time experience of the emotion.

Researchers from the US have started to use alternative research methodologies, in order to by-pass the reliance on self-report, which have included laboratory techniques and the use of real time recording techniques, such as palm pilots. An interesting lab study was completed by Agras and Telch (1998) where they examined the effects of calorie deprivation and negative mood on binge eating individuals. Within this study, people with binge eating disorder were randomly allocated to either a neutral mood induction or a negative mood induction. They found that negative mood, but not caloric deprivation, led to a significant increase in the loss of control over eating, as demonstrated by their eating behaviour at a buffet laid on by the researchers. Using hand held technology, Engelberg et al., (2007) found that over a 7 to 29 day period, negative affect and altered states of awareness preceded binges in people with bulimia nervosa. The authors argued that this provides further evidence of the causal role that negative mood appears to have in bulimic symptomatology. Although these studies have given further support that bingeing has the function of managing affect, these results do not move on the theoretical understanding of eating disorders a great deal. This lack of theoretical sophistication echoes the views of authors from other psychopathology fields, who argue that the problems and limitations of current cognitive behavioural treatments may actually be due to the lack of explanatory power in contemporary models of eating disorders (e.g. Cooper, 2005; Grilo, Devlin, Cachelin & Yanovski, 1997). In terms of accounting for the complex relationships between emotions that are present in eating disorders, Corstorphine's (2006) model and Wonderlich et al. (2001) make a good start in considering how beliefs about emotions are important in understanding eating disorders. However, as discussed above, they fail to incorporate contemporary emotion theory and they failed to explain co-morbidity with other affective disorders in an adequate fashion. None of

the cognitive-affective models explain why eating disorders occur, in that why does a young woman choose eating to manage her emotions rather than some other method (e.g. substance use), or why does the eating disorder always come with pathological body dissatisfaction.

## **1.5 *Developmental Factors in Eating Disorders***

As has been discussed above, there has been consideration of the role of upbringing and childhood development in the aetiology of eating disorders. The now classical theory of Crisp (1980) proposed that anorexia rises out of a maturational crisis around puberty. Other authors have argued that specific traumas are of importance in understanding the aetiology of eating disorders, whilst others have focused upon the actual attachment between the person with the eating disorders and (typically) their mother. This section will now consider these issues in turn.

### **1.5.1 Childhood Abuse**

The discussion of whether or not childhood abuse (e.g. sexual, physical, and emotional) plays an aetiological role in eating pathology has attracted much attention in recent years. Some authors have argued that there does appear to be a connection between bulimic symptomatology and childhood sexual abuse (Smolak & Levine, 2007), whilst other authors have stated that the relationship between childhood sexual abuse and eating pathology is overstated (e.g. Polivy & Herman, 2002). These authors discussed how childhood sexual abuse is also associated with depression and other psychological disturbances, and hence specific effects cannot be concluded. Smolak and Levine (2007) argued that there is sufficient evidence to link bulimic symptoms with a history of childhood sexual abuse, whilst it is still not clear for anorexia-

restricting symptoms. Within their review, they also discussed how there is some evidence beginning to suggest that other forms of trauma (both in childhood and in adulthood) may well be related to eating/ body image disturbance (e.g. Faravelli, Guigni, Salatori, & Ricca, 2004; Treuer, Koperdak, Rozsa, & Furedi, 2005).

In considering the nature of the relationship between childhood abuse and future psychopathology, Andrews (1995) demonstrated that body shame moderates the relationship between abusive experiences (both adult and child) and depression. In a follow up study, Andrews (1997) demonstrated that the relationship between bulimic symptomatology and childhood abuse was moderated by body shame. Although depression was not measured in this study, the results are in keeping with the point already raised, in that, Andrews has tried to develop more complex models of the relationship between abuse and symptomatology. This suggests that abuse may play a role in the development of bodily shame and any subsequent depression/ eating pathology. Likewise, this depression may play a moderating role in the development of eating disorder symptomatology (as hypothesised by Wonderlich et al. 2001). The problem with this research is that it lacks any real theoretical underpinning on why body shame is significant for the development of both depression and an eating disorder in people who have been abused. This is important because the roles of particular emotions seem to be significant (e.g. sadness, disgust), and any theory would need to incorporate these emotional factors (please see later in the thesis). Interestingly, some researchers have suggested that one of the key factors in the abusive experiences is not just the act *per se*, but the emotional messages that are communicated both directly and indirectly, via the abuse. Kent and Waller (2000), on this issue, argued that the emotional environment in which childhood abuse occurs

moderates its impact upon the person, as these traumas often occur within relationships that are 'emotionally damaging'. It is well documented that experiences of sexual abuse may leave the victim vulnerable to shame towards their own body; these types of experiences may include sexual excitement resulting from the abuse, seeking abuse in order to avoid being rejected, etc (e.g. Ainscough and Toon, 2000). Briere (1996) proposed a model that goes some way to address the above points, as it is proposed that childhood abuse disrupts the development of self-identity and affect tolerance/ regulation, where the individual often resorts to distractive coping strategies, such as bingeing and restriction to deal with overwhelming affect (e.g. Linehan, 1993).

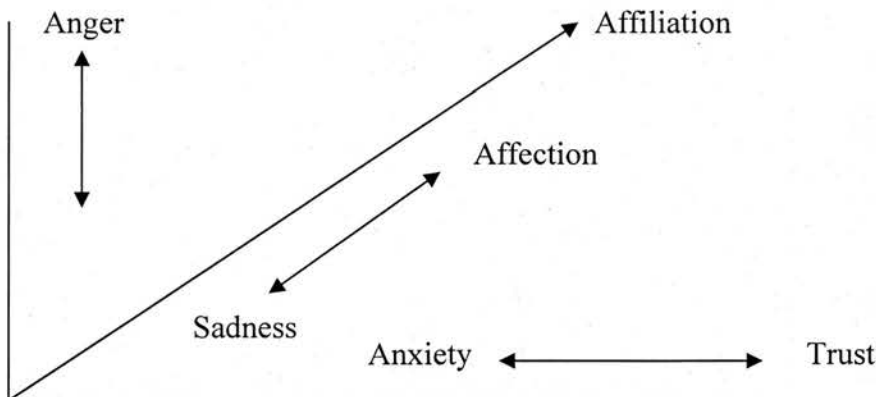
### **1.5.2 Attachment Patterns**

As discussed at the end of the last section, Briere's model places an emphasis upon early attachment relationships, and these relationships shape the development of skills to regulate and tolerate negative affect. The importance of attachment figures has been the topic of researchers and theorists for decades and has included notable writings by Bowlby (1969). Although it is clearly beyond the scope of this chapter to detail the literature pertaining to attachment, it is an important theoretical construct that runs alongside emotion functioning. As will be seen below, Oatley (1987) and Power and Dalgleish (2008) argue that emotions are functional and work on the premise of guiding appraisal for a given situation (e.g. finding a bear in the wood – threat to physical safety – fear). It is argued by many authors that some of the main functions of emotions are to guide social processes, such as attachment, and its sister concept, affiliation. Jenkins and Oatley (1996) devised a model of three principal



social motivations which looked at the emotional overtures of attachment, affiliation and assertion. It has long been argued that attachment is an evolutionary mechanism that has the function of protecting the new born. This idea of a 'secure base' continues into adolescence (Allen et al, 2003). According to the theory, the child feels safe, secure and comfort when close to the attachment figure, but feels fear, anxiety and distress when they are not around. According to MacDonald (1992) affiliation is a system of warmth and affection, and it is an autonomous process to attachment (please see diagram below). Unlike attachment, affiliation and warmth is associated with joy and affection, whilst lack of affiliation and warmth leads to sadness. A study by Fox and Davidson (1987) found that babies who were approached by their mothers with open arms showed joy and activation on the left cortex.

**Figure 3**



**Figure 3:** Shows the Jenkins and Oatley schema of three principal social motivations, attachment, affiliation and assertion (as orthogonal dimensions). The emotions are presented as movements in three dimensional space.

Within the eating disorders field, Bruch (1973) argued that understanding attachment problems in eating disorders is crucial. Likewise, Cooper (2005) argued that a disturbance in the caregiver-infant relationship, where the caregiver responses are not in tune with the infant's internal state, result in ego deficits, which she describes as a disturbance of self-awareness and self-concept, which results in an inability to

distinguish hunger and satiety from other needs and discomforts. Within this framework, it is adolescence that places the individual under stress which reveals the inherent difficulties with self-identity and self-reflection. Shoebridge and Gowers (2000) found that mothers of a child that goes on to develop anorexia nervosa often report heightened anxiety during the prenatal and perinatal period. Moreover, they argue that this suggests that the mothers resort to being over-controlling and overprotective throughout the child's development. Ward et al. (2000; 2001) also found evidence of a dismissive attachment style, which was also associated with reduced emotional expression and deficits in emotional processing with people with anorexia nervosa and their parents. Although it remains an empirical question, one hypothesis is that these attachment patterns also allude to difficulties in maternal affection, which, according to Jenkins and Oatley (1996), leave the child with a propensity to experience sadness.

As has been discussed above, early relationships have been regarded as the corner stone of helping the child to learn affect regulation skills, and problems with these attachments may lead the child to develop alexithymia. According to Stefanos (1973), alexithymia can be regarded as a difficulty in identifying feelings, distinguishing feelings from bodily sensations of emotional arousal, and describing feelings to other people. A number of research studies have identified a relationship between eating disorders symptomatology and alexithymia, in particular within anorexia nervosa (Troop et al., 1995; Zonneville-Bender et al., 2002). Alexithymia will be discussed more fully below.

### 1.5.3 Family Environment

Kent and Waller (2000) argued that emotional abuse has often been the 'elephant in the room' when the role of childhood abuse and eating disorders has been discussed in the literature. Within their review, they pointed out that there appears to be a phenomenological link between childhood emotional abuse and eating pathology and this link may have a broader impact upon eating pathology than other types of trauma. Furthermore, they proposed that the relationship between childhood emotional abuse (CEA) and eating pathology is moderated by low self-esteem. According to these authors, childhood emotional abuse has a profound effect upon self-esteem, because its toxic effect cannot be easily attributed to external factors (e.g. the abuser). They argued that CEA operates as a generalised risk factor for both bulimic and restricting symptom patterns.

Drawing on dialectical behavioural therapy (DBT), Corstorphine (2006) argued that a key origin of emotional regulation difficulties often present in people with eating disorders is growing up in an environment that is perceived to be invalidating, where there is a discordance between the actual emotion being expressed and the responses from key individuals in the child's life (e.g. caregivers). According to Corstorphine (2006), this often means that emotions are either responded to negatively or ignored, and positive emotions are encouraged and are held in high esteem by the family.

Some of the ideas from DBT are also reflected in the expressed emotions (EE) literature. The EE concept refers to the number of critical comments, hostility and emotional over-involvement that occurs within the environment around the person with the disorder, and this has been extensively researched for many psychiatric disorders, including psychosis (e.g. Vaughn and Leff, 1976a, b). The relation

between emotional expressiveness in the family environment and a child's ability to identify and describe their feelings has been documented in the literature (Kench and Irwin, 2000). As was discussed with the Briere model, it may well be that the interrelation between inherited influences and the lack of skill in the parent in describing their feelings may explain these links. Related to this point, Espina (2003) found that parents of children with eating disorders reported significantly higher levels of alexithymia, as measured by the Toronto Alexithymia Scale (TAS), whilst Kyriacou et al, 2008 has shown that parents of individuals with anorexia nervosa exhibited higher levels of expressed emotion (e.g. such as emotional over-involvement and criticism), when compared to normal controls. Waller, Corstorphine and Mountford (2007) argued that these 'invalidating environments' lead to the development of two principal emotional difficulties in adulthood, being chaotic-dissociative and detached-alexithymic presentations. The chaotic-dissociative presentation is hallmarked by an impulsive-bulimic presentation, where the individual experiences their emotions as overwhelming and terrifying, and is often engaged in behaviours to reduce or dissociate from her emotions. The detached-alexithymic presentation is where the person presents in a much more detached and 'emotionally cut off' manner. It is argued that the key difference between these presentations is the point at which the emotion is inhibited. In other words, in the chaotic-dissociative presentation, the emotion is inhibited once it enters consciousness, whilst for the detached-alexithymic presentation, the emotion is inhibited before the emotion is experienced consciously. These authors argued that this earlier inhibition is the reason why clients with this type of presentation often deny any emotional experience. This point is important in terms of theoretical development, because it fits with the schema

approaches that Waller and colleagues (Waller, Kennerley and Ohanian, 2007) have proposed, which were discussed above.

#### **1.5.4 Summary of Developmental Factors**

It does appear that there is a growing consensus that emotional invalidation during upbringing is important in the development of emotional difficulties in adulthood (e.g. Krause et al, 2003). The work of Waller and colleagues (Waller, Cordery, Corstorphine, Hinrichsen, Lawson, Mountford and Russell, 2007; Waller, Kennerley and Ohanian, 2007) has highlighted how a potential key factor in delineating the eating disorders is when the emotional inhibition occurs and this can lead to markedly different presentations. However, there is a lack of theory in how this accounts for comorbid depression and body dissatisfaction. Moreover, the theoretical consideration of emotions is very simplistic. There is no attempt to discuss which potential emotions may be effected by upbringing, as there is some suggestion from emotions theory that environmental responses to individual emotional states may actually create different relationships with different emotions. For example, the SPAARS model (Power and Dalgleish, 1997; 2008) argued, from a basic emotions perspective, that emotions develop as semi-independent cognitive modules (in keeping with other domains of cognitive development, such as memory, or perception). Therefore, the external influences may 'invalidate' certain emotions by claiming that they are wrong or not allowed, and as such, certain emotional states may become ego dystonic and frightening to the sense of self if they are evoked.

## 1.6 Research on Emotional Factors in Eating Disorders

As has been seen above, research has identified the role of emotional functioning in eating disorders, with the role of negative affect being of significance in the onset and maintenance of the eating disorders (e.g. Arnow et al., 1995; Wegner et al., 2002; Binford et al., 2004; Fairburn et al., 2003). Although it remains an empirical question, there has been debate in the literature about the nature of affect in eating disorders, as it is not clear from contemporary models of eating disorders, whether the actual level of emotion or the ability to tolerate negative emotions is more important. In an interesting study, Anestis et al. (2007) found in an analogue study, with undergraduate students, that high scores on the distress intolerance scale (Simons and Garner, 2005) predicted bulimic symptomatology, when they controlled for depression and anxiety symptoms. Also, within this analysis, the authors found that distress intolerance further mediated the relationship between anxiety sensitivity (defined as the actual physical symptoms and their perceived consequences) and bulimic symptoms. Anestis et al. (2007) argued that it is not simply the presence of negative affect that predicts eating pathology, but whether the negative affect is perceived to be intolerable. Despite this finding, it still needs to be tested whether individuals with eating disorders experience significantly higher levels of emotion than control participants within situations, where the triggering of an emotion can be controlled. In other words, this question needs to be addressed by the types of methodologies that induce emotion within the laboratory (e.g. Agras and Telch, 1998). This will be a feature of this thesis. This section will now consider the research that has applied the five basic emotions to eating disorders. However, before this discussion can proceed, it is important to note that there has been a significant debate about the nature of emotions and whether there are dimensions of emotionality (e.g. negative affect) or distinct



basic emotions. Furthermore, no consideration of emotion within eating disorders would be complete without an analysis of the issue of alexithymia within the eating disorders. These two topics will now be discussed.

### **1.6.1 Basic Emotions or Dimensions of Emotionality?**

The issue of whether emotion can be understood as differences along two continuums of positive and negative affect (e.g. Berkowitz, 1999; Watson and Clark, 1992) or as discreet, individual emotions (e.g. Arnold, 1960; Ekman et al., 1992a; Oatley and Johnson-Laird, 1987) has been the source of debate for many years in the study of emotion. Although it remains somewhat controversial, there is some agreement that there are a number of broadly distinct and separate basic emotions, namely fear, disgust, anger, sadness and happiness. Power and Dalglish (1997; 2008) argued that there are a number of sources of evidence for a basic emotions approach, including a conceptual argument for different appraisals across the different emotions (e.g. appraisal of loss in sadness), pan cultural awareness of different emotions (e.g. Ekman, 1973; Ekman, 1992a; Ekman, 1992b) and the linguistic analysis of emotional terms by Oatley and Johnson-Laird (Johnson-Laird & Oatley, 1989). Interestingly, research has started to highlight how there appears to be emotion specific physiology, within autonomic arousal. This work is not without its critics, as some authors have argued that the similarities between different types of arousal patterns outweigh any similarities (e.g. Stemler, 1989). This debate is bound to continue; however, it is the perspective of this thesis that there is now enough evidence to argue for a basic emotions approach and this approach will be used across the rest of this thesis.

This debate about the primacy of particular basic emotions is missing from much of the literature of eating disorders. For instance, throughout this chapter, it has been shown that many theorists have argued that negative emotion causes bingeing (e.g. Cooper et al, 2004, Wonderlich et al, 2001) or the fear of negative emotion causes restriction (e.g. Waller, Kennerley, and Ohanian, 2007; Corstorphine, 2006).

However, there is very little consideration of which emotions are important. Related to this literature on emotional processing, there is no account, within the eating disorder research, of the actual architecture of emotional processing such as the different types of regulation that can occur for an emotion over its time course (e.g. How fast does an emotion return to baseline after it has been activated?)

### **1.6.1 Eating Disorders and Alexithymia**

As already discussed in this chapter, a number of authors have linked the adverse effects of childhood abuse and/ or problematic dynamics within the family home to the development of problematic knowledge of the emotions within the self. These difficulties have been called alexithymia. This idea of a difficulty identifying, distinguishing and expressing emotions in eating disorders has a long history stemming back to Bruch (1962). Bruch (1962) felt that the main problem in anorexia was a difficulty in distinguishing and expressing emotions, and having a sense of total lack of control within one's life. As detailed earlier, a body of research has identified how people with eating disorders, especially anorexia nervosa, appear to have a high degree of alexithymia, with most of this research using the Toronto Alexithymia Scale (TAS). Alexithymia has been shown to be an important variable for predicting outcome, as it has been shown to have negative impact upon prognosis (Speranza et al., 2007).

Sim and Zeman (2005), using an analogue study, found that the relation between body dissatisfaction and dysregulated eating was partly mediated by the frequency of negative emotional experience, poor emotional awareness and non-constructive coping with negative affect. There have been several hypotheses about what this mediated relationship signified, with one hypothesis being that individuals with poor emotional recognition and coping skills may attribute their negative emotions to their body, via body dissatisfaction, and use disordered eating to reduce their uncomfortable level of arousal. Whilst other hypotheses suggested that it could be the other way round, with body dissatisfaction compromising one's ability to identify and cope with negative affect, and therefore, using disordered eating to manage ambiguous emotional states. A related study that directly assessed the relation between body dissatisfaction and emotional expressiveness was conducted by Hayaki and colleagues (Hayaki et al, 2002). Within this analogue study, they found that poor emotional expression predicted body dissatisfaction, when depression and assertiveness were controlled.

Much of the research on alexithymia in eating disorders has tended to be rather simplistic in how it considers their relation, with recent research demonstrating that the role of low mood may be an important variable to consider. Bydlowski et al. (2005) and Kessler et al. (2006) found that there is a close link between measures of anxiety and depression, and alexithymia. Whilst, Eisguirrea et al. (2004) found that the relationship between eating pathology and alexithymia was moderated by levels of depression. What is interesting about these results is how they emphasise the apparent conceptual contradiction within analysis of alexithymia; how it is possible for

individuals who are unable to distinguish and name their emotional states be able to fill out measures about their own emotional status (e.g. mood measures, etc).

Likewise, the construct itself has a confused conceptual underpinning, in that, some authors refer to it as a trait phenomena (Taylor et al. 1997), whilst others use it as a state construct (Honkalampi et al. 2001).

Secondly, the majority of studies have not considered the meta-emotional skills that underpin alexithymia, and it may be that certain emotional skills remain intact whilst others are problematic. For example, it may be that people with eating disorders are able to acknowledge their own emotional states, but are too frightened to express this emotion. This would certainly fit with a SPAARS/ basic emotions view, in that, certain emotional states are ego dystonic, and hence, perceived to be overwhelming to the self. Related to this point is the fact the majority of the studies on alexithymia are predominantly correlational, and as such, the direction of causation is not clear between alexithymia and eating disorder symptomatology. Keys et al (1950) found in their seminal study of the effects of starvation that reduced weight and food intake was associated with reduction in emotional expressiveness. It may well be that the noted effects from an extreme diet may actually account for the alexithymic presentation. There is only one study that has attempted to address this point, Schmidt et al (1993) looked at TAS scores between bulimia and anorexia groups, and compared them to controls. This was also done across two time points, and they found that improvement in symptoms (due to medication) was not related to improvement on the TAS. Although they argued that this suggests that alexithymia acts more as a trait like construct, they did acknowledge that most of their participants at time 2 still met clinical caseness levels. It was interesting, however, that BMI did not correlate

with TAS, and they concluded that this was evidence that alexithymia was not just a product of weight loss and malnourishment.

As will be discussed throughout this thesis, the SPAARS model (Power and Dalgleish, 1997; 2008) proposed a model that suggesting that different learning experiences, whilst growing up, lead the individual to have different relationships with each of their basic emotions. Therefore, it is theoretically possible that someone may have developed an emotion which is ego dystonic and lost to the self, whilst other emotions are much more integrated with the sense of self. In this instance, it would be plausible for an individual to be alexithymic for certain emotions, whilst still be able to express and regulate the other basic emotions.

This section will now consider the five basic emotions in turn.

### **1.6.1 Anger**

Research over the last five years has demonstrated that anger is a particularly difficult emotion for people with both bulimia and anorexia nervosa. Waller, Babbs, Milligan, Meyer, Ohanian and Leung (2003) found that women with eating disorders, especially those with bulimic symptoms, reported significantly higher state anger scores and significantly higher anger suppression scores when compared to university student controls. In other words, Waller et al. (2003) found that their participants had an increase in their levels of anger, but were less likely to express this emotion.

Interestingly these authors found that higher levels of trait anger were associated with 'unhealthy core beliefs' in both groups, whilst the same core beliefs were only associated with anger inhibition in the eating disorder group. Within this paper, the

authors discussed how their results could have implications for the treatment of eating disorders, as a feature of therapy could be to consider whether problem-solving strategies would assist the patient in making changes to their environment that either reduced the anger eliciting components, or helped in the expression of anger. Waller, Kennerley and Ohanian (2007) discussed the evidence of the relation between state anger and anger suppression, and these authors argued that binge eating served as an emotional-avoidance function (as discussed above). In a recent study, Ioannou and Fox (in press) found that depression and the perception of threat from the emotion of anger predicted poor emotional expression in people with eating pathology, whilst Coggins and Fox (2009) found in a qualitative study of emotional inhibition that anger was the most difficult emotion to be experienced and this was linked directly, by the participants, to dieting and food restriction.

Within restricting eating disorders, Geller and colleagues (Geller et al., 2000) found that people with a diagnosis of AN exhibited significantly higher levels of anger suppression, when compared to psychiatric and normal controls. Related to this anger suppression, Geller et al. (2000) also found that their participants endorsed more care and self-sacrifice schemas (i.e. putting the needs of others before their own) and silenced self schemas (the inhibition of self-expression and action to avoid confrontation and interpersonal conflict).

Milligan, Waller, & Andrews (2002) undertook a study that looked at the relationship between anger and disordered eating within a female prison population. These authors found that levels of probable eating disorders, as measured by the SCOFF<sup>2</sup>, were

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<sup>2</sup> The SCOFF is a 5 item screening measure of eating disorders that asks questions about levels of vomiting, loss of control over eating, losing of weight, beliefs of being overweight when not and a sense that food dominates life (Morgan, Reid, & Lacey, 1999).



significantly higher than would be expected in the general population. In terms of difficulties with anger, these authors found that bulimic symptoms were associated with levels of trait anger, whilst restricting symptoms were associated with state anger. Therefore, these authors concluded that the restrictive environment (i.e. prison) prevents an outlet for anger, and the women regulated these emotions by using differing eating disorder symptomatology. This regulatory aspect of eating disorders controlling or inhibiting anger was also shown in a recent paper by Engel et al. (2007), as these authors found that levels of anger predicted binge eating episodes and this relationship was moderated by levels of subjective impulsivity. Interestingly, this study used palm pilot technology to collect data from participants within their everyday life. Furthermore, Telch, Agras and Linehan (2001) undertook a trial of DBT, in group format, for people with binge eating disorder. They found for the people, who undertook DBT, the vast majority had stopped bingeing at the end of treatment (89%). Interesting, the only measure that reduced (apart from symptoms) was the urge to binge in response to anger. Although the authors do not discuss this finding in any real depth, it does appear to be an important finding as it could be interpreted that anger was the main driver for the binges, which was reduced via the DBT. These findings are very much in keeping with the models discussed above, such as Cooper et al. (2004) and Waller, Kennerley, and Ohanian (2007), and these theoretical points will be explored later in this thesis.

A final point in attempting to detail the relationship of anger with eating disorders is the need to consider the research that has examined the relationship between anger and depression. As detailed above, the co-morbidity between depression and eating disorders is high and a number of theories have proposed that depression originates

from difficulties with anger. Freud (1917/1963) argued that depression originated from a mixture of anger and sadness at the loss of a significant other. In their review of the relationship between depression and anger, DiGiuseppe and Tafrate (2007) argued that there was some evidence which suggested that depression can be a product of an inability to express anger (e.g. Mook et al, 1990). However, they argued that these relationships may be different between populations. Keeping this in mind, this potential relationship between inhibited anger, eating disorders and depression is an important theoretical point that will be returned to later in this thesis.

### **1.6.2 Sadness**

As has been discussed above, the literature on the role of sadness in eating disorders has not been researched at all. In a review of the literature, not one single reference was identified that looked at the role of sadness in eating disorders. However, as detailed in the above section, the relation of depression to eating disorders has been extensively researched and the literature seems to be indicating that there is both a cause and a consequence of depression within disordered eating. Although there are potential conceptual problems with claiming that depression is a disorder of sadness, Power and Tarsia (2007), using the basic emotions scale, found that the main emotion of depression (measured using the Beck Depression Inventory, BDI) was sadness. These authors also found that the emotion of disgust was also important in depression, and it will be argued later in this thesis that this relationship between sadness, disgust and eating disorders is significant in understanding the co-morbidity between eating disorders and depression.

### **1.6.3 Happiness**

The overt consideration of happiness in eating disorders is still rather limited. As already been detailed elsewhere in this thesis, research has tended to focus on negative emotions and how these play a role in eating disorders. Research by Overton, Selway, Strongman and Houston (2005) highlighted how eating disorder symptoms can be used to regulate negative emotions and, importantly, facilitate the experience of pleasant emotion. Linked to this perspective is the work by Goss and Gilbert (2002) who have argued that eating disorders, in particular, restricting eating disorders, are often linked to pride. These authors, drawing on the work of Bruch (1973), argued that the eating disorder starts as means of gaining acceptance, avoiding rejection and painful emotions, which results in pride. This pride becomes internalised and it becomes a source of internal pride with the self. In other words, this pride is used to defend against some of the more painful emotions (e.g. shame) and thoughts that were there prior to the start of the eating disorder. As with sadness and depression, there are a number of conceptual problems with linking pride with happiness, but it is suggestive of a link that warrants research. Indeed, it would be very interesting to consider how the emotion of happiness is managed within individuals with binge-purging presentations, as it may be incongruous to their main emotional state and therefore suppressed or avoided.

### **1.6.4 Fear**

Within DSM-IV (APA, 1994), fear is regarded as a key diagnostic feature of Anorexia Nervosa, especially in relation to the fear of becoming 'fat'. However,

despite its apparent salience in eating disorders, it has not received a significant amount of attention within the eating disorders literature. In a recent article, Waller (2008) argued that next editions of the diagnostic systems (e.g. DSM and ICD) should reframe eating disorders as a subset of anxiety, as there is such a high co-morbidity of anxiety with eating disorders (e.g. Goddart, Flament, Perdereau and Jeammet, 2002; Pallister and Waller, 2008). Furthermore, research has demonstrated that anxiety tends to precede eating concerns (e.g. Bulik, Sullivan, Fear and Joyce, 1997; Swinbourne and Touyz, 2007). In a recent review paper by Pallister and Waller (2008), it is argued that the relationship between anxiety and eating disorders is an unclear one, as the chronology between the two disorders is not clear. However, Pallister and Waller (2008) argued that it is possible to conceptually relate anxiety and eating disorders, as they may share common aetiological factors and these factors can increase susceptibility to either disorder. In contrast to this thesis, they took a traditional cognitive-behavioural view and argue that safety behaviours and vulnerability schemas are the main cognitive constructs behind these disorders (for a fuller discussion, see Pallister and Waller, 2008).

In a more direct experimental test of the effect of fear on eating behaviours, Heatherton, Herman and Polivy (1991) undertook a study in which they looked at the effects of the fear of threat (both physical and ego) on eating in restrained and unrestrained eaters. They found that ego threat (e.g. failing at an easy task), but not physical threat (e.g. electric shock), led to an increase in a restrained eater's eating, whilst unrestrained eaters showed no such increase in their eating. For the physical threat, the unrestrained eaters showed a significant reduction in their eating, but the restrained eaters showed no change in their eating levels. The authors argued that

these findings highlight how fear of a more personal nature makes self-awareness more painful and the shift towards disinhibition helps the individual to 'escape from the self'.

In a study that looked directly at the effects of fear and disgust on eating attitudes, Harvey et al. (2002) found that disgust was as equally important as fear in the avoidance of certain stimuli (high calorie foods and large body sizes). As discussed by Haidt, Rozin, McCauley and Imada (1997), disgust is often regarded as the emotion that has been used by humans to keep a distance between oneself and objects that would be hazardous to health if ingested. Uher et al. (2005) found that measures of anxiety and disgust often correlate highly (+0.7) and this may offer a position where it could be argued that they both have the function of distancing oneself from a feared object or outcome. It may be that disgust of one's body or of food may actually account for the 'fear' reaction towards perceived body weight within the eating disorders. Davey, Bickerstaffe and MacDonald (2006) found evidence for this type of relationship between disgust and fear/ anxiety, using an experimental methodology. They found that induced disgust led to an increase in negative interpretational bias which maintained levels of anxiety in their participants, and these authors argued that this provides evidence for the causal role of disgust in anxiety psychopathologies. This confusion between fear/ anxiety and disgust has the potential to be an important theoretical point in the understanding of eating disorders, because the long reported 'fear of food' or the 'fear of becoming fat' may actually be disgust reactions, and hence, may account for the high co-morbidity between anxiety and eating disorders (Waller, 2008).

### 1.6.5 Disgust

Davey (1994) defined disgust as; 'a type of rejection response that is characterised by a specific facial expression, a desire to distance oneself from the object of disgust, a physiological manifestation of mild nausea'. Given that a common feature of eating disorders is the feeling of disgust towards the patient's own body, it is perhaps surprising that there has been so little research in this area. Nick Troop and colleagues found a mixed picture when they investigated disgust in eating disorders (Troop, Murphy, Bramon, & Treasure, 2000; Troop, Treasure, & Serpell, 2002). They hypothesised that eating disorders would be associated with an increased general sensitivity towards the emotion of disgust. Interestingly, they found that patients with a current eating disorder did demonstrate an increased sensitivity towards disgust that was associated with body or food, but not with more general areas of disgust (e.g. sexual practices). In a similar study, Burney and Irwin demonstrated that shame towards the body and eating are uniquely predictive of eating pathology (Burney & Irwin, 2000). It has been discussed elsewhere that shame is a complex emotion that is derived from the basic emotion of disgust (e.g. Power and Dalglish, 1997; 2008). Indeed, a study by Marziller and Davey (2004) found evidence for primary and secondary disgust. It was argued that primary disgust was defined by the stimulus' ability to elicit fear of oral incorporation or stemming from an animal origin, whilst secondary disgust was defined by moral or social transgressions. In many ways, it appears that the secondary disgust, as proposed by Marziller and Davey (2004), is very much like the complex emotion of shame and fits with the Power and Dalglish (1997; 2008) notion of shame being a multifaceted more complex version of disgust.



The Troop et al findings (2000, 2002) are interesting for their potential theoretical implications. Some authors have argued that within AN, the feelings of anger towards an external object are unacceptable, and as a consequence, they are directed towards the self in terms of the physical body being perceived as 'fat' (Bruch, 1973, 1978). Although, Bruch does not talk about this perception of being 'fat' in disgust terms, it is alluded to. In other words, feelings of disgust towards the body could potentially work in a way to manage other more painful or 'ego dystonic' emotions, such as anger (as discussed above). This may help to explain why the participants in Troop et al's studies were more sensitive for disgust directed at their own bodies. Emerging from within the research literature, there is some preliminary evidence to support this hypothesis. Geller et al (2000) found, in the study reported above, that inhibited expression of emotions was related to body dissatisfaction. This finding was reinforced by the findings from Hayaki, Friedman and Brownell (2002) when they found that limited emotional expression predicted body dissatisfaction in an analogue sample (when BMI, non-assertiveness and depressive symptoms were controlled in their analysis).

As described above, it is argued that shame is a complex version of disgust, and shame has been shown to be of significance in eating disorders. Goss and Gilbert (2002) argued that shame is a central emotion in eating disorders and involves two forms of shame, internal (negative self-evaluation) and external (others looking down upon them). Frank (1991) highlighted that people with eating disorders have significantly higher shame and guilt about eating, when compared to depressed and control participants. Cook (1994) found that internal shame was significantly higher in eating disorders groups than in all other clinical comparison groups. On the issue of

body shame, Swan and Andrews (2003) found that symptomatic and recovered females with eating disorders have significantly higher level of body shame and shame about eating than controls, whilst Polivy and Herman (1993) and DeSilva (1995) found that binge eating can regulate shame affect in participants with eating disorders. In a qualitative study by Skarderud (2007) data were gathered that highlighted how people with AN feel shame over a number of domains, including shame for some of the emotions they are feeling (in keeping with the Corstophine, 2006 cognitive-affective model), body shame, shame for not achieving more, shame for not controlling their behaviour, and shame for having an eating disorder. Skarderud (2007) also found evidence that an eating disorder can give someone pride in their life for keeping control within their lives and maintaining thinness.

Some research has started to suggest that females are more predisposed to experience disgust and associated emotions (e.g. shame) than males. This particular point was addressed by Barrett and colleagues when they found that female children were more likely to react with shame when a toy broke (the participants withdrew from the broken toy), whilst male children appeared to react more with guilt (they attempted to fix the toy) (Barrett, Zahn-Waxler, & Cole, 1993).

As discussed above, there is a growing body of evidence that certain emotions are being inhibited and are 'managed' by other, more acceptable emotions. The theoretical treatment of disgust has highlighted how it is the emotion of rejection and is often behind the desire to distance oneself from the object of disgust (Davey, 1994), such as food or body shape (as seen in eating disorders). The picture that disgust and its derivative, shame, are being 'used' as a way of managing other emotional states is allowing the eating disorder literature to move away from simplistic models of

maintenance and 'pure cognition'. This is a key construct of this chapter, in that, emotions can become connected and have either a facilitatory or inhibitory function to one other. In other words, experiencing disgust can be used to inhibit other more painful, ego dystonic emotions from being expressed and/ or experienced.

## **1.7 Summary and Conclusions**

The early cognitive accounts of eating disorders (e.g. Fairburn et al., 1986), in particular bulimia nervosa, proposed a maintenance level model that showed how extreme dieting led to breakthrough bingeing and associated purging methods to avoid weight gain. This model led to the development of a manualised CBT for BN which had some success in treating bulimic symptoms in normal weight individuals. However, the therapy only accounted for a 50% improvement in patients and it was clear that there were gaps in the theory and the intervention. One of the main gaps in these early models was the explicit role of both cognitive and emotional triggers for eating disorder symptoms (e.g. Cooper, Todd and Wells, 1998; Cooper, Rose and Turner, 2006). Furthermore, these models offered no attempt to understand co-morbidity in the eating disorders, especially with depression. The works of Cooper et al (2004), Waller, Kennerley, and Ohanian (2007) and Wonderlich et al. (2001) have highlighted how certain eating disorder symptoms (e.g. bingeing-vomiting and restriction) are used to regulate and manage 'painful emotional states' and associated cognitions. These points of their models highlight an important theoretical advancement in the understanding of eating disorders. However, the way that emotion is conceptualised is simplistic and does not take into account the research that has highlighted a more complex relationship between emotional expression and eating disorders. For example, it is not clear from these cognitive models why eating

disorder symptoms are chosen as emotion regulation strategies, instead of other behaviours (e.g. self-harm). Moreover, there is a complete lack of consideration of the marked body dissatisfaction that is almost always present in eating disorders, with the works of Geller et al (2000) and Hayaki et al (2002) suggesting that there is an inverse relationship between the expression of emotion and body dissatisfaction. The nature of the emotions behind the eating disorder symptoms is also neglected, as none of these models have attempted to incorporate the apparent difficulties with anger and disgust into their models (as shown by previous research).

It is argued that these 2<sup>nd</sup> generation cognitive models have allowed the theory to move beyond simple cognitive-behavioural accounts of eating disorders, as they have highlighted the need to consider emotional factors. But, in keeping with Cooper's (2005) point, theoretical accounts of eating disorders need to be developed to account for the research on specific emotion functioning, the high level of body dissatisfaction and co-morbidity. In keeping with Fairburn and Harrison's (2003) point, it is argued that where there are shared distinctive clinical features across diagnoses and there are significant movements of patients between different diagnostic states, clinical phenomena should be understood from a transdiagnostic perspective. As has been highlighted throughout this thesis, patients nearly always present with co-morbid depression and anxiety, but the paucity of theory has limited our understanding of this potential transdiagnostic process.

Finally, cognitive behavioural models of psychopathology have also come under criticism from a number of authors for only considering emotion eliciting propositions within a verbal format (e.g. negative automatic thoughts) (e.g. Power and Dalgleish,

1997; 2008; Jones, 2001). There are a number of potential emotion eliciting stimuli that could play a role in the generation of affect (both positive and negative) and it is clear from clinical work with people with eating disorders that there are potentially different schematic representations of emotions in eating disorders. For example, the disgust towards the body generated by the sensation of a pair of jeans being too tight, or the visual image of the self being 'fat' (e.g. Cooper et al, 2007). It will be argued that these analogical representations are of specific importance in understanding emotions in the eating disorders, and this theoretical point is in keeping with other authors' observations in other psychological disorders, where it is argued that single level cognitive behavioural models lack explanatory power, which compromise their ability to generate effective clinical interventions (Dalglish, 2004; Jones, 2001).

### **1.7.1 Introduction to a New Theory of Eating Disorders – SPAARS-ED**

As can be seen through the introduction chapter, it is argued that a new model of eating disorders needs to account for the difficulties with certain basic emotions (e.g. anger and disgust), and for the relationship between expression of emotion and body dissatisfaction, and the high level of co-morbidity between depression and anxiety. Furthermore, theoretical consideration needs to be given to the different representations of information that can elicit emotion.

Although a more comprehensive introduction to the SPAARS model will be given, its key points will be presented here to highlight how this model addresses the gaps in the literature and allows for the generation of a new model of eating disorders. Within the SPAARS model, it is argued that certain emotions can become 'coupled', where two

emotions become linked and work together either in a facilitatory or inhibitory way. As will be seen below, this emotional process may help to explain the findings of the low emotional expression and high body dissatisfaction (Hayaki et al, 2002; Geller et al, 2000). Furthermore, Power and Dalglish (1997; 2008) argued that common emotion processes may account for co-morbidity and this may help to explain co-morbidity in eating disorders. Finally, the SPAARS model incorporates a second route to emotion generation that can work without cognitive awareness, which has the potential to explain the clinically observed link between different representations and emotional responses (e.g. 'tight jeans' = disgust). All of these points are new concepts in the study of eating disorders and it is argued that considering eating disorders from a SPAARS perspective allows for an important theoretical advancement from the cognitive-behavioural models discussed above. This thesis will now present a more detailed overview of the SPAARS model (Power and Dalglish, 1997; 2008).



## **Chapter 2: Outline of the New Theoretical Model - Aims for the Thesis**

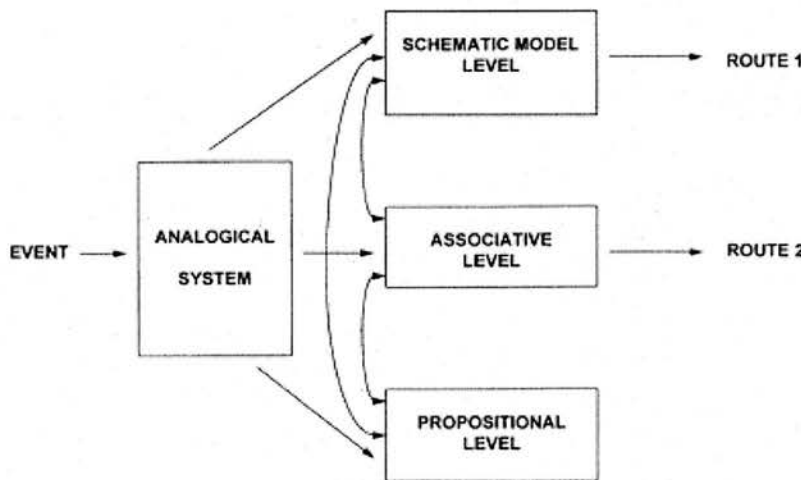
As seen at the end of the last chapter, the literature review identified that emotions and emotional regulation have now come to be regarded as a core construct in understanding eating disorders. The literature, to date, has discussed how there is an important interaction between cognitive and emotional variables, but often the notion of emotion has not been particularly well developed in current theories. Furthermore, research in this field has often been compromised by the choice of methodologies. This thesis will undertake a number of studies that test some of the assumptions that the SPAARS-ED model proposes in response to some of these empirical and theoretical weakness from the research literature. However, before this plan is detailed in this chapter, an overview of the SPAARS model of emotion shall be presented, and its application to eating disorders shall also be discussed.

### *2.1 Multi-Level Approach to Cognition and Emotion – SPAARS Model (Power and Dalgleish, 1997; 2008)*

As has been more fully discussed elsewhere (Power and Dalgleish, 1997; 2008), cognitive theory of mental disorder has tended to be based on single-level approaches to emotion, where, for example, there is a direct link between verbal propositional cognition (e.g. a negative automatic thought) and emotion (e.g. depression). Although there have been clear benefits from this type of operationalised cognition in therapy (Gloaguen, Cottraux, Cucherat, & Blackburn, 1998), CBT still has its drawbacks and theoretical difficulties, including its difficulty in accounting for why certain

propositions in verbal form often miss how other stimuli (e.g. visual) can generate emotion (Teasdale and Barnard, 1993). Also, as noted by Jones (2001) the classic ‘Beckian’ CBT approach often does not account for the complex interactions between emotion and cognition observed in therapy, and how one set of propositions (in the form of verbal thoughts) can account for a number of different emotions within one person. Finally, as Power and Dalgleish (1999) pointed out, it is often observed clinically that patients will report various emotions, but without any apparent associated cognitions. This is a potentially serious theoretical flaw in any single level approach to mental disorder.

A number of authors have proposed models that show how emotions can be potentially generated across multi-layers of processing (e.g. Integrated Cognitive Sub-system model ICS, Teasdale and Barnard, 1993; SPAARS model, Power and Dalgleish, 1997; 2008). As the SPAARS model builds upon the ICS model, this chapter will now focus on the SPAARS model. A diagram of the model can be seen below:



**Figure 1:** Power and Dalgleish’s Multilevel Model of Emotion—SPAARS.

As can be seen above, an event (either internal or external) enters the Schematic Propositional Analogical Associative Representation System (SPAARS) via the analogical system. According to Power and Dalgleish (1999), the analogical system is made up of a number of parallel processing modules that are modality-specific (e.g. verbal, olfactory, gustatory, and proprioceptive). The representations generated within a specific modality do not require a linguistic interpretation to have a meaning and modular-specific representations are present throughout the SPAARS processing. It is argued that these modular-specific representations within SPAARS are an important point in understanding certain emotional disorders. For example, in post traumatic stress disorder (PTSD), certain sights, sounds or other bodily sensations may become inherent parts of the memory of the traumatic event (Power and Dalgleish, 1997; 2008). The schematic model level is the highest processing part of the SPAARS model and it is essentially an effortful appraisal route, in which either external or internal stimuli are evaluated. This route is in keeping with contemporary theory in 'normal' emotional processing (for a fuller discussion, see Power and Dalgleish, 1997; 2008 and Teasdale and Barnard, 1993) and according to these theories, this schematic level of processing incorporates a higher level of representation that is above 'verbal expressible propositional concepts'. Within their book, Power and Dalgleish discussed the distinction between propositional and schematic model (implicational) representations, by using the example offered by Teasdale and Barnard, in which they compared a piece of prose to a piece of poetry. This is given below:

Implicational meaning

*O what can ail thee, Knight-at Arms*

*Alone and palely loitering?*

*The sedge has wither'd from the lake*

*And no birds sing*

Propositional Meaning

*What is the matter, armed old-fashioned soldier,*

*Standing by yourself and doing nothing with a pallid expression?*

*The reed-like plants have decomposed by the lake*

*And there are not any birds singing*

As noted by Teasdale and Barnard (1993, p.73) 'the implicational meaning or 'sense' conveyed by the two versions is very different. The poetic form conveys a sense of melancholy, emptiness and abandonment that is largely lost in the much more matter of fact tone of the prose example.' As Jones pointed out, this abstract level of processing is much more complex than Beck's concept of a schema (Jones, 2001). According to Beck, a schema is the sum of propositional statements that have been learnt over a period of time, whilst Power and Dalgleish argued that the schematic appraisals capture the contextual, historical and emotional information (as shown in the poetry example). Thus, within the schematic models, the system is dynamic, draws from all other parts of the system to generate rules that apply to emotion generation and, in agreement with Beck et al (1979), the SPAARS model proposed that domains of knowledge are organised around the self, others and the world.

The propositional level within the SPAARS model is representations that can be entirely described within normal language (although not one particular language). These representations are more akin to the negative automatic thoughts that are considered in other theories (e.g. Beck et al, 1979). The representations within this level are discreet (e.g. 'the tallest mountain in the world is Everest') and the propositional level does not have a direct emotion output. In agreement with Teasdale and Barnard (1993), it is argued that this level of information processing feeds into either the schematic or associative level for emotion generation, and certain words or phrases may lead to the direct generation of emotion (e.g. certain insulting or offensive words), or they may trigger associative emotion due to a certain place or person being mentioned (e.g. the name of someone who has recently died).

The second route to emotion generation is an associative route, where emotion is produced without any direct cognition. It is proposed that there are two primary pathways for an event to become linked with an emotion. The first is via an evolutionary preparedness for certain stimuli to elicit emotion (e.g. a snake phobia vs a telephone phobia). This draws from Seligman's proposal that certain stimuli may be more 'evolutionary prepared' for emotion generation (e.g. snakes, spiders, etc) (Seligman, 1975). Whilst a second source for the development of event-emotion links being developed comes from a learning perspective, in which certain pairings of events with emotions may become automated. For example, the eating of a particular food that gives someone a bad case of food poisoning could be linked with the emotion of disgust. This emotion could then be automatically generated every time that person saw the food following taste-aversion conditioning. Jones (2001) also pointed out that the event may also be internal, as well as external. For example,

propositional representations can also be linked to particular emotions, such as the thought/ feeling that 'they are out there' may be linked, over time, with the emotion of fear. Therefore, certain propositional statements can become an emotion generator in their own right, but through an automated associative route.

There are two final theoretical points from the SPAARS model that need to be considered before the model is applied to eating disorders, which are the constructs of inhibition and coupled emotions. According to the SPAARS model, inhibition can occur in three different ways, passive, active and the inhibition of particular emotion modules. Passive inhibition can be broadly understood as when the individual has an awareness of the internal emotional state and uses strategies such as distraction to inhibit the emotion, whilst active inhibition is much more akin to the psychodynamic concepts of repression and dissociation. According to the model, early learning leads to the development of schematic models that lie across the three domains of knowledge (i.e. self, others, world). Once these schematic models have been developed, they have the capacity to organise and filter information. This can be seen more clearly in the following example; Peter experiences over his childhood constant comments and opinions from his caregivers that he is not very nice person because he is loud and talkative. The schematic model of the self would develop accordingly (e.g. SELF-BAD-NOT LIKEABLE) which would then inhibit incoming information to the contrary. However, once a 'critical mass' has been achieved that represents information to the contrary, Peter may be able to develop alternative schematic models that account for the new information about the self (e.g. Peter may have started a relationship where he is loved and respected). In this instance, the original schematic model of the self might not be lost, but it could be inhibited. If events occur



that trigger the old schematic model, the prior emotion could occur (e.g. losing a relationship – sadness). In this instance, the ‘new’ schematic model would become inhibited. As discussed by Young et al. (2003) and Le Doux (1996) there is some evidence that suggests that schematic representations are laid down, through early childhood, within the sub-cortex. Although it is not clear whether their definition of schema is the same as the one proposed by Power and Dalgleish (1997; 2008), it does fit theoretically, as Le Doux proposed that once a schema has been laid within the amygdala it is very resistant to change, and it is argued that it never completely disappears.

A key point in understanding the SPAARS model’s role for emotional inhibition is that it proposes that the emotional schematic modules develop in a way that are akin to other modularised cognitive functions (e.g. elements of perception, etc).

Accordingly, an individual’s learning history may play a significant role in learning whether certain basic emotions are ‘acceptable’ or not. If, from an early age, a particular emotion is regarded as wrong or unacceptable, it is proposed that this modularised emotion ‘splits off’ from normal emotional development and becomes ‘ego-dystonic’ and modularised. Thereby, the schematic model within SPAARS operates in a way that is similar to a ‘central executive’, in that, it monitors information processing and the corresponding emotional output from the SPAARS model.

The notion of ‘coupled emotions’ is an important feature of the SPAARS model. It is argued that 2 or more basic emotions can become coupled via a person’s learning history. Power and Dalgleish argued that more complex emotions and, importantly,

emotional disorders can be the product of coupled emotions. For example, depression may be made up of the emotions of sadness and disgust directed at the self. The idea of coupled emotions compliments emotional inhibition because one emotion may be regarded as ego-dystonic, whilst the other emotion may be viewed as 'acceptable to the self'. In this instance, the acceptable emotion would be used to inhibit the unacceptable or 'ego-dystonic emotion'.

Emotional disorder occurs when the system becomes 'stuck', such as when different components of the system start to activate other parts of the system. For example, when a schematic model has been activated that indicates that the self is bad (i.e. SELF-BAD), this then leads to the activation of propositional representations (e.g. 'I am a bad person'). Through a process of repetition this then leads onto the development of an associative link to low mood.

## *2.2 Applying a Multi-Modal Emotion Approach to Eating Disorders – SPAARS-ED*

Throughout this thesis, it has been proposed that any theoretical understanding of eating disorders needs to account fully for the complex interrelationship of emotions that research has highlighted. It is argued that eating disorders are an affect regulation strategy, and hence should be regarded as an extension to affective or emotional disorders/ difficulties. The work of Waller et al (2007) and Corstorphine (2006) have shown that the interpersonal context is important, as individuals with eating disorders have a number of socially orientated 'schemas' (e.g. fear of rejection, mistrust in

relationships, unrelenting standards, etc), and there is an overall sense of the self perceiving themselves as 'bad', 'worthless' or at risk of rejection/ abandonment. According to the SPAARS model, these representations could be understood as 'SELF-BAD, OTHERS-IMPORTANT and WORLD-UNSAFE'. As has been discussed earlier, research has identified that these types of appraisals are also found in depression, and, thus, one of outputs of the schematic arm of the SPAARS is the activation of the sadness emotion module.

Research by Geller et al (2000) and Waller et al (2003) has started to suggest that the anger module is significant for people with eating disorders. It is hypothesised that the anger module may be primed by earlier experience. Moreover, anger has traditionally been regarded as a non-feminine emotion in Western Cultures and this may place a cultural propensity on females having difficulties in expressing their anger (e.g. Tavris, 1989, 1992; Lorenz, 1966). Kent and Waller (2000), in their review, pointed out that emotional abuse may well lead to the development of belief systems that are likely to involve seeing oneself as undeserving and unlovable, seeing others as dangerous and hurtful, and experiencing the world as harmful, unpredictable and unfair.

According to emotion theory (e.g. Oatley & Johnson-Laird, 1987; Power and Dagleish, 1997; 2008) anger can be understood as an emotional response to the blocking of goals; these goals can be regarded as life goals, relationship goals, etc. It is plausible that one of the main emotional responses to early life experiences is the development of a sensitive anger emotion module (e.g. at being 'let down' by carers, anger at self for being a 'bad person', etc). DiGiuseppe & Tafrate (2007) argued that

having the experiences of abuse and maltreatment in childhood left the developing child with a significant 'hurt', leading to a sense of the unfairness of the world. Interestingly, they argued that these experiences were also responsible for a number of cognitive errors, such as an expectation of threat and suspicion from others. These authors, from their review of the literature, also suggested that the research evidence on the emotion of anger shows that the relationship between perceptions of threat and anger expression is moderated by beliefs of self-efficacy (i.e. limited expression of anger is related to low self-efficacy). Related to this point on the role of self-efficacy to anger expression, Hochschild (1979) termed the phrase 'emotional deviance' which describes the dissonance between the perceptions of one's own emotional experience and the perception of socially prescribed 'emotional scripts' for the expression of certain emotions. In other words, certain environments may be perceived to limit or expressly forbid the expression of certain emotions, such as anger. These points offer some useful additions to the theoretical points raised above in the discussion of emotional abuse within eating disorders (e.g. Kent and Waller, 2000; Corstorphine, 2006). It is argued that abuse and neglect leave a child with an emotional hurt, which predisposes the young person to a sense of threat and unfairness within their surrounding world. These same experiences also predispose the same person to perceptions of low self-efficacy and therefore, according to the points raised above, limit the expression of anger. Moreover, DiGuiseppe and Tafrate (2007) also argued that there is evidence that inhibited anger leaves the person more vulnerable to episodes of depression (as discussed above).

These theoretical points about the expression of anger appear to be important in their application to eating disorders because research has shown that this is an emotion that

is inhibited within these disorders. Geller and colleagues (Geller et al., 2000) discussed how people with eating disorders may well suppress anger in an attempt to protect relationships. The points raised by DiGiuseppe and Tafrate (2007) suggest that the emotional factors in a female with an eating disorder background may well be important (e.g. neglect, frank criticism and belittlement), because abuse may well leave the individual with a sense of 'hurt', which predispose the person with the eating disorder to perceptions of being treated unfairly, and thus an increase in overall levels of anger. However, due to beliefs about low self-efficacy, this anger may be inhibited. These developmental factors, in SPAARS terms, would lead anger to become modularised and ego-dystonic and thus detached from the person's sense of self (for example, ANGER-DANGEROUS; ANGER-THREAT-OTHERS). However, there would also be in existence other anger modules that would suggest that other people are dangerous, threatening and important (For example; OTHERS-THREATENING; OTHERS-DANGEROUS), and other modules that would suggest that the world is unfair and unpredictable (WORLD-UNFAIR; WORLD-UNPREDICTABLE).

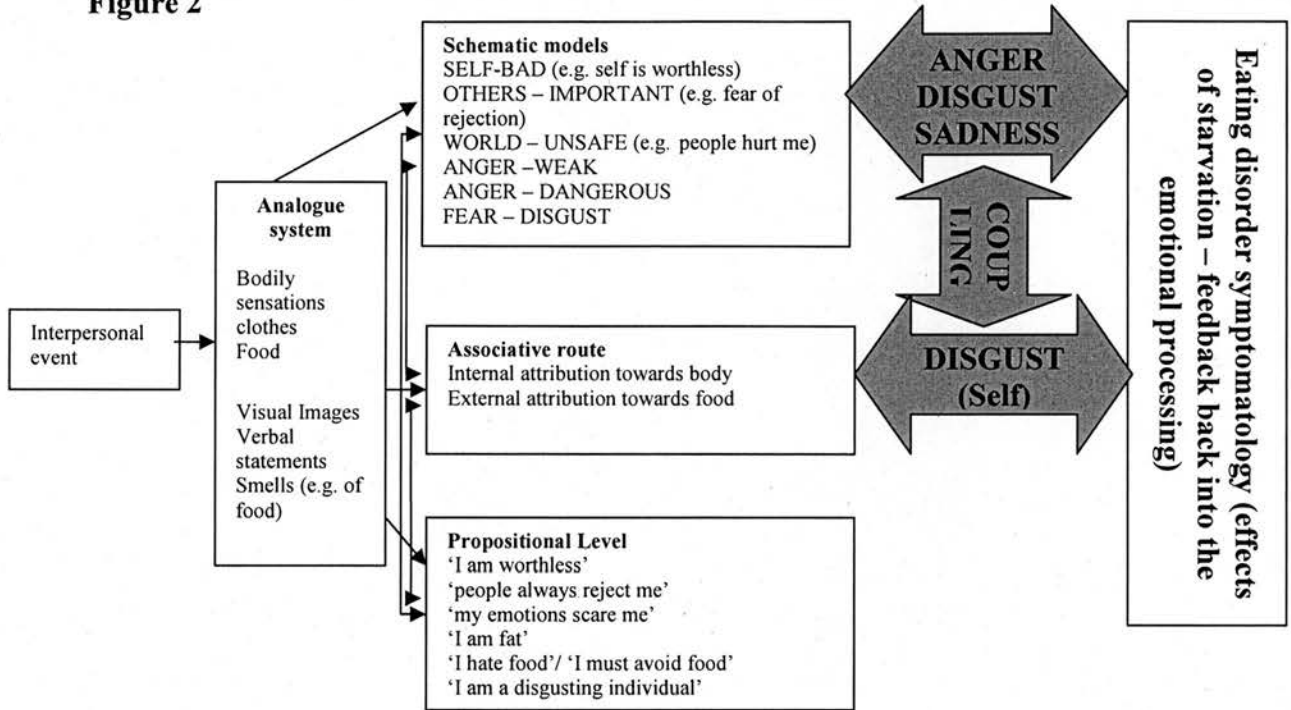
Research has highlighted the importance of disgust and its potential role in body and food related aspects of eating disorders (e.g. Troop et al, 2002). Moreover, the application of a dual level emotion theory allows for the theoretical development of the role of disgust, and its relation to other emotions. Work by Geller et al (2000) and Hayaki et al (2002) have shown that the lack of expression of emotions, in particular anger, is related to disgust and body dissatisfaction. On the basis of this research it is proposed that disgust via both 'preparedness' and 'over-learning' becomes an automatic emotion within certain contexts and interpersonal relations. Previous

research has shown that body shape concern is significantly high amongst adolescent females and negative feeling towards the body is virtually universal in modern day society (Stice, 2001; Maine & Kelly, 2005). Given the presence of socially directed schemas and the inhibition of anger, it is argued that anger and disgust (and to a lesser degree sadness) may become coupled during the course of emotional development. The work of Power and Dalglish (1997; 2008) argued that depression can be understood as the product of the coupling of disgust (in the form of self-disgust) and sadness, and this theoretical point may help to explain the high level of co-morbidity of depression and eating disorders. The coupling of anger and disgust may also help to explain the theoretical processes that are occurring in eating disorders. The potential use of the basic emotion module of disgust to suppress and 'redirect' the emotion of the anger is an important part of the model being proposed, and to a lesser degree, sadness. According to SPAARS, the representations throughout the model take different sensory modalities (e.g. olfactory, tactile, and visual). It is a common observation in clinical practice that people with eating disorders have an array of modalities that evoke disgust towards themselves and food. For example, the sensation of a 'tight pair of jeans', the smell of food cooking, the visual image of the self being fat or eating could potentially be directly related to the emotion of disgust for people with eating disorders. Anxiety is often regarded as a key emotion within eating disorders, as a morbid fear of fatness is regarded as a crucial symptom (e.g. DSM-IV, APA, 1994). It was discussed earlier in this thesis that there is a strong relationship between disgust and anxiety (fear) in eating disorders, as they are both emotions of avoidance (e.g. Uher et al, 2005). The work from Davey et al (2006) suggested that the relationship between disgust and anxiety is uni-directional with induced disgust creating a negative interpretational bias within the individual. It is



argued that the emotion of disgust leads to the development of fear, in that, there is a fear of weight gain and/ or food. In other words, the fear of disgust eliciting stimuli induces anxiety in people with eating disorders, and therefore, the anxiety is secondary to the principal emotion of disgust. This is an area that appears to warrant further investigation.

**Figure 2**



**Figure 2:** The SPAARS model of eating disorders (SPAARS-ED)

Thus, once the SPAARS-ED model has been activated in a particular fashion, it becomes biased in its appraisal of incoming information (both externally and internally) and this can lead to the development of a ‘default mode’ of operating. This ‘locking’ maintains the dominant emotion within the SPAARS-ED model, and thus, the person has a heightened sensitivity to disgust eliciting stimulus, via the associative route. The feedback loops in the SPAARS model help us to explain why it is only

self-disgust that is particularly sensitive, as the analogue system is 'locked' on the main stimuli of disgust elicitation, namely food, body and self.

According to the SPAARS model, emotional modules are shaped by an individual's own learning experiences. Power and Dalglish (1997; 2008) argued that certain environments and/ or cultures lead an individual to learn that the expression, or indeed, the feeling of a particular emotion is 'bad' or 'wrong', and in these situations the person comes to perceive that particular emotion as being ego-dystonic/ damaging to the sense of self. In these situations, the schematic arm will inhibit the experience of that emotion, although the emotion may still be generated at the associative level. Within Western culture, traditionally certain emotions are acceptable to be expressed by females, whilst others are often not allowed (e.g. anger). Perhaps it is no coincidence, therefore, that females are the vast majority of sufferers of eating disorders.

Waller et al. (2007) discussed how one of the key processes within their model was where the actual emotion was being inhibited. The notion of primary and secondary inhibition of emotion fits neatly with the definitions proposed within the general SPAARS model, of passive and active inhibition. According to the model, passive inhibition is a process that requires active inhibition of an emotion that has conscious awareness, this notion fits with all the research that has demonstrated that bingeing and vomiting occurs in relation to negative affect. The primary avoidance of negative emotion fits with the idea of active inhibition where the individual uses almost automatic procedures (e.g. repression and dissociation) to inhibit emotion. It is likely that in reality, both processes are in operation within eating disorders, but to varying

degrees. It is an empirical question whether these differences could account for the different symptoms patterns found in eating disorders (e.g. restricting versus binge-vomiting).

The final theoretical point that needs to be discussed is the role of eating disorder symptomatology that maintains the emotional components of the eating disorder. As discussed by others, eating disorder symptoms have an important physiological underpinning. For both restricting and binge-purging eating disorders, the role of extreme dieting has been shown to be important in the maintenance of the eating disorders (Fairburn et al. 1993; Keys et al. 1950). As discussed above, research suggests that extreme dieting and bingeing-purging cycles have an impact on lowering mood (e.g. Keys et al, 1950). It is argued that these physiological effects may well feedback into the emotional processes and reinforce a sense of worthlessness, disgust, and provoke a sense of anger at oneself for having the eating disorder. Furthermore, these factors lock the SPAARS model for certain emotions and therefore, maintain the disorder within the individual.

### ***2.3 Research Questions stemming from the SPAARS-ED model and an Overview of the Research Studies within this Thesis***

As can be seen above, a number of research questions arise from the SPAARS-ED model. These concern the actual nature of emotions within eating disorders, and whether there are differences between the five basic emotions within this population. It is proposed within that model that there will be particular difficulties with the

emotions of anger and, to a lesser degree, sadness. It is proposed, via a SPAARS approach, that these emotions would have a qualitatively different relationship with the sense of self for people with eating disorders. It is proposed that within the eating disorders, there would be developmental origins for these difficulties with these particular emotions and there would be issues for carers for their own meta-emotional skills. Finally, a keystone of the SPAARS-ED model is the theoretical notion of emotional coupling; in that, it is proposed that the emotions of anger and disgust are a key process within eating pathology. Within this thesis, four studies were completed to address these research questions. An overview will be presented of each study with their study aims. As will be seen these studies attempt to use different methodologies with a view of avoiding the criticisms that a significant amount of the previous research has received.

## ***2.4 A Qualitative Exploration of the Perception of Emotions in Anorexia Nervosa: A Basic Emotion and Developmental Perspective***

The above review of the literature has highlighted how people with anorexia nervosa have a difficult relationship with their own emotions. It is apparent from the literature review that there is a lack of a detailed and comprehensive study of emotions within eating disorders. This lack of in-depth research has compromised researchers from developing sophisticated theoretical accounts of emotions within eating disorders. It is for this reason that the first study in this PhD was decided to be a qualitative study of emotions in anorexia nervosa. It was designed to focus on these individuals'

experiences of emotion and their management from a basic emotions and developmental perspective. As discussed by Elliott, Fischer and Rennie (1999), exploratory qualitative methods are recommended for research areas where there are significant gaps in the knowledge base of a particular issue or problem. This methodology is particularly useful in attempting to understand particular phenomena from the perspective of the interviewees (Hodgetts and Wright, 2007). Qualitative methodology also has the distinct advantage of employing an inductive approach, which explores the subject matter in as much detail as possible whilst preserving the subtlety and ambiguity of the issue or problem under study (e.g. Elliott et al, 1999). Although there are a number of potential qualitative approaches that could have been used, a Grounded Theory perspective was chosen due to the current theoretical limitations in understanding emotional inhibition in eating disorders. It was hoped that this choice of methodology would aid further theoretical development, which would inform the design of other studies for this PhD.

## ***2.5 The Relation of Anger to Disgust: The Potential Role of Coupled Emotions within Bulimic Pathology***

Although it is beyond this section's scope to discuss the above study's findings in detail, it was found in the above study that the emotions of anger and disgust were of key theoretical significance. It was apparent from the data that participants were experiencing a high amount of anger and there was some qualitative data that suggested that participants were coupling anger and disgust. It was felt that a study that looked at these two findings in a more quantitative manner would provide evidence of this effect with a slightly different population, people with a probable

bulimic presentation. The final aim was to investigate how people with eating pathology express anger towards other people or objects, or whether they suppress anger within the self. Furthermore, this part of the study was designed to investigate the ability to control the outward expression of anger and the ability to control the expression of anger within a short time frame.

## ***2.6 An Investigation into Levels of Basic Emotions and History of Emotional Environments in Females with Eating Pathology***

As was detailed within the SPAARS-ED model, it was proposed that the principal conscious emotion within eating disorders would be disgust. This finding was given some evidence from the first two studies of this PhD, but this study was designed to investigate all the basic emotions within the group of females with eating pathology. By using this methodology, this allowed for a more detailed examination of all the emotions and to see what the emotional profile was for this group of participants. A second expectation of the model was that participants would have experienced challenging and invalidating environments towards their emotional expression. This part of the study examined responses to emotions over a number of created scenarios, and measured responses, such as distress reactions, punitive reactions, expressive encouragement, emotion-focused reactions, problem-focused reactions, minimization reactions.



## ***2.7 An Investigation into Basic Emotions, Emotional Regulation, Core Beliefs and Emotional Coupling in Anorexia Nervosa***

This study is the final study of this thesis and it incorporates many of the aspects of the three previous studies. It replicates the emotional coupling anger-disgust study, and it looks at basic emotion and emotion regulation strategies that may be present in anorexia nervosa. Another aim of this study was to examine the types of core beliefs that may be present in anorexia nervosa. The data for this study was collected at eating disorder services around the UK and it represents a truly clinical study to test the final aspect of the SPAARS-ED model for this PhD thesis.

## **Chapter 3: A Qualitative Exploration of the Perception of Emotions in Anorexia Nervosa: A Basic Emotion and Developmental Perspective**

### ***3.1 Introduction***

As discussed in the introduction, the role of emotions in eating disorders has not been adequately covered by the research literature. This forms a key aim of this study. In keeping with the basic emotions literature, this study adopted a basic emotions approach, but was also interested in understanding the emotional environment in which this study's participants grew up. Although there are some theoretical pointers from the literature, there was very little data to support these perspectives. This formed the second main aim of this study.

Within the introduction, the studies discussed have used a small set of methodologies which has limited the opportunities for a detailed exploration of individual emotions in eating disorders (as suggested by the SPAARS model). For all of these studies, the use of questionnaires and standardised measures has prevented a fuller investigation of what makes certain emotions difficult for people with eating disorders. It is argued that this field needs an inductive methodology that allows the development of a theory of emotions from the individual's experiences and their specific conceptualisation of emotion in their narratives relating to their specific difficulties. This inductive methodology would also allow the researcher to explicitly consider theory and its development as this would assist in the broader understanding of the role of emotion in the eating disorders. It is for these reasons that this study has adopted a qualitative methodological approach.

### **3.2 Study Aims**

The above literature review has left a number of questions about the nature of emotion within eating disorders, such as how do people account for their difficulties with their emotions and what is the developmental pathway for these emotional processes? The work of Eisenburg et al. (1998; 2001) and Krause et al. (2003) have highlighted that there is a need to understand emotional inhibition from a developmental perspective, and the role of parental responses (especially parental distress) to children's expressed emotions appears to be important. However, it is not known what pathways (if any) are important in the eating disorders, and it is for this reason that it is argued deductive methodologies are limiting the research in this field.

The study presented here aims to examine accounts of individuals who had a diagnosed anorexic condition. This study was designed to focus on these individuals' experiences of emotion and their management from a basic emotions and developmental perspective.

### **3.2 *Theoretical and Clinical Implications***

As discussed by Elliott, Fischer and Rennie (1999), exploratory qualitative methods are recommended for research areas where there are significant gaps in the knowledge base of a particular issue or problem. Qualitative methodology also has the distinct advantage of employing an inductive approach, which explores the subject matter in as much detail as possible whilst preserving the subtlety and ambiguity of the issue or problem under study (e.g. Elliott et al, 1999).

In terms of theory, it is anticipated that the rich data generated from this study will allow for a broader theory development on emotional functioning in eating disorders.

A qualitative study was chosen as the first study of this PhD thesis, as it is an ideal way of generating theory that would lead to the development of more accurate quantitative studies. In saying this, it is important to say that it is not proposed that qualitative methodologies are only useful for pilot data collection, as they offer rich data that stands on its own in terms of usefulness and potential clinical applications.

### **3.3 Methodology**

#### **3.3.1 Choice of Methodology**

As was discussed above in the identification of the research question, this study has chosen a qualitative methodology, due to the exploratory nature of the research topic. This section will give an overview of the debate concerning qualitative methodologies, with a focus on Grounded Theory. This section will not only provide details of the process and procedures undertaken within this study, but it will also consider how to ensure quality within qualitative research methodology.

#### **3.3.2 Qualitative versus Quantitative Methodologies: An Ongoing Debate**

Quantitative methods, which involve operationalising phenomena into quantifiable variables for the purpose of testing experimental hypotheses derived from existing theories, have been deemed inappropriate for this study due to their inability to address the subtle elements of what the perceptions and personal histories are for the basic emotions in anorexia nervosa. Qualitative methodologies place much more of an emphasis on what has been developed to permit a systematic investigation of how

people construe their world and how they experience events, including their own emotions. As summarized by Malterud (2001),

“Qualitative research methods are strategies for the systematic collection, organisation, and interpretation of textual material obtained from talk or observation, which allow the exploration of social events as experienced by individuals in their natural context.” (p397)

### ***3.3.3 Rationale for Choice of Qualitative Methodology***

As highlighted by Smith (2003) there are many different methods for conducting qualitative research. Behind these different methodologies, most have quite different epistemological positions upon which they are based. This complexity in the field in qualitative research has, at times, made it a difficult field to break into and to get to grips with the methodologies proposed. However, this level of complexity is somewhat inevitable, as they all pose different types of questions. The importance of this diversity was noted by Reicher (2000: p4),

“They have different philosophical roots, they have different theoretical assumptions and they ask different types of questions”.

Within his review of qualitative research, he identified that there were two principle epistemological positions underpinning differing qualitative methodologies, which were: -

- Methodologies which attempt to get a better understanding of people’s experiences, ways of thinking and actions. In other words, it is much preoccupied by accessing the ‘experiential’ for the participants. In

epistemological terms, this stance has often been referred to as the 'realist' stance.

- Methodologies which are much more concerned with the role of language in the construction of reality. In other words, these approaches focus on the actual descriptions and contents stemming from the data sources (e.g. interviews). From an epistemological position, this type of methodology has been referred to as a 'constructionist stance.'

Madill and colleagues (Madill, Jordan, & Shirley, 2000) developed a stance that places itself as a 'contextual constructionist' and roughly corresponds to the less extreme forms of the 'realist' and 'constructionist' positions outlined above. In essence, this orientation accepts that it is possible to learn something about the world, but regards all such knowledge as necessarily contextual and standpoint-dependent. Various researchers have sought to describe techniques that characterise an approach to qualitative enquiry in accordance with this position (and others).

Within healthcare research, there are now two principal qualitative research methodologies that are in general use - phenomenology and grounded theory (Pope, Mays and Popay, 2007). Within phenomenological analysis, the goal is to describe, interpret and understand the meanings of experiences for the participants. Therefore, research using this methodology would normally seek to demonstrate both the transferable general qualities of what makes the experience what it is, and the variety of description across a number of contexts. In grounded theory, the goal is to develop a theory in which particular concepts and activities fit together to have an explanatory power.



It was felt in the designing of this study that both types of qualitative methodologies were potentially useful for addressing the research question in this study. A phenomenological approach would have allowed for a detailed exploration of the actual experience of emotions, as well as a more experiential approach to understanding the participant's own accounts of their own upbringing. However, this study was designed to be a first study in a series of studies for a PhD, and therefore, the lack of theory within a phenomenological approach would have limited the potential applications of these findings. It was on the basis of this decision process that a grounded theory approach was decided upon, however, unlike quantitative approaches, qualitative methodologies are designed to be flexible (Charmaz, 2006) and this study was designed to incorporate an element of experiential analysis in order not to lose the richness of the emotional experience of the participants.

### ***3.3.4 Grounded Theory***

Since the inception of grounded theory in 1967 by Glaser and Strauss, there have been many differing interpretations of the key analytic principles (Glaser and Strauss, 1967). Glaser himself disagreed with the publication of Strauss and Corbin's 1990 work, where he argued that Strauss and Corbin were placing quantitative methods into to Grounded Theory, as they were attempting to force data into a theory rather than letting a theory emerge with no preconceptions (Coyne & Cowley 2006).

The process of grounded theory involves the recognition of the role of the researcher in the analysis of the data (Strauss and Corbin, 1990), and also draws on social

constructionist ideas (Charmaz, 1990). This perspective on the analysis was a crucial aspect of the treatment of the results, because it was felt that the researcher's perspective on how the emotions were displayed and acknowledged by the participant would need to be interpreted by the researcher. This acknowledgment of the researcher's perspective has been regarded as a vital component to the data analysis and theory generation and it is in keeping with Charmaz's point that 'any theoretical rendering offers an *interpretative* portrayal of the studied world, not an exact picture of it' (Charmaz, 2006, p.10). In order to ensure the quality of this study, Elliot et al. (1999) devised a set of 'evolving guidelines' which detail a range of criteria that would help the researcher to ensure the quality of their research. These guidelines were devised from reviewing 40 existing quality standards, which resulted in the establishment of 14 guidelines. Elliot et al. (1999) acknowledge that seven of these guidelines are relevant to both quantitative and qualitative methodologies (e.g. respect for the participant). However, the other seven are considered particular for qualitative methodologies and will be presented in detail below, with how this study has addressed each point.

- Owing One's Perspective

*Authors specify their theoretical orientations and personal anticipations, both as known in advance and as they become apparent during the research, recognising the role they play in understanding. Disclosure of personal values helps the readers to interpret the researchers' data and understanding of them, and to consider possible alternatives.*

In keeping with the theoretical background described above, the term reflexivity refers to the need of the grounded theorist to acknowledge his or her own

philosophical and conceptual stance of the world and how this interacts with their own knowledge base and the interview with the participants. The researcher in this study is a 38 year old male clinical psychologist. This piece of work was instigated to meet the requirements for a PhD degree. He is married and could be regarded as being middle class. He has been qualified as a clinical psychologist for over 6 years and has spent the majority of his qualified life working with adult women with eating disorders. The author works from an integrated perspective from a cognitive-behavioural through to a schema therapy perspective, and he is now receiving clinical supervision within the cognitive analytic model from a trainer on the CAT North West training programme. It is acknowledged that this clinical experience will have had an impact upon the analysis; however, it is argued that this experience would have facilitated the analysis and allowed for improved theoretical development. His interest in the topic of emotional processes in eating disorder was directly born out of his clinical experiences, where it seemed that difficulties with emotions lay at the centre of his clients' clinical formulations.

The author also worked on a clinical psychology training programme where he supervises qualitative clinical doctorates, and as such, he has some experience of using and supervising the use of grounded theory in clinical research. Although, due to the nature of undertaking a PhD and working clinically in the area it is impossible to be without knowledge of the area, the data were collected and analysed over 2006 prior to any significant reading or writing of papers for the PhD research program. It was intended that this would prevent any undue bias influencing the data collection and analysis, although it is acknowledged that the author had a significant amount of knowledge about eating disorders prior to this study's data collection and analysis.

- Situating the Sample

*Authors describe the research participants and their life circumstances to aid the reader in judging the range of persons and situations to which the findings may be relevant.*

Within this methodology section, a full description of the participants and the research setting will be given in as much detail as possible (within the general limits of confidentiality), thus allowing the reader to fully consider the relevance for other settings and samples.

- Providing Credibility Checks

*Researchers adopt a method for checking the creditability of their categories themes or accounts. For example, checking their understanding of the data with other qualitative researchers, so that they can review the data and look for discrepancies, overstatements or errors.*

This issue of validity was taken very seriously in this study and a number of checks were put in place. It is recorded within the Grounded Theory literature that there are three principal types of validation checks for qualitative research (e.g. Charmaz, 2006). These include the use of other qualitative researchers to check the codings of various parts of transcripts, to consider how the results fit with the current literature base and to check with the actual participants to see if the results fit with their understanding of the issue. In this study, two other researchers cross-validated two of the eleven transcripts (these were selected randomly). The results from this study were discussed regularly with his supervisor, where there was a constant discussion about

the data, analysis and category development. This meant the researcher stayed very close to his data, and was in a constant process of justifying and considering the data analysis. It was decided early on in the analysis not to approach participants for validation, as the analysis made a number of inferences based upon the participant's presentations and these may not have been picked up upon by the participants.

- Grounding in Examples

*Authors provide examples of the data to illustrate both the analytic procedures used and the understanding developed in light of them. Examples allow the appraisal of the fit between the data and the authors' understanding of them and allow readers to construct alternative meanings.*

Throughout the write up of the analysis, examples taken from the transcript are presented, in order to allow the reader to assess the creditability of the research. A key part of this process was to also provide examples taken from the researchers memos, so that the reader can gain insight into the researcher's perspective throughout the analysis.

- Coherence

*The understanding is represented in a way that achieves coherence and integration while preserving the nuances in the data. This understanding fits together to form a 'data-based story.'*

This study's analysis was undertaken to be true to the data and therefore, offer a creditable account of what the participants had discussed in their interviews.

Therefore the data is presented both in narrative and diagrammatic form, allowing the reader to gain a clearer understanding of how the categories relate to each other.

- Accomplishing general vs. specific research tasks.

*Where a general understanding of a phenomenon is intended, it is based on an appropriate range of instances (informants or situations). Limitations of extending the findings to other contexts and informants are specified. Where understanding a specific instance or case is the goal, it has been studied and described systematically and comprehensively enough to provide the reader a basis for attaining that understanding. Such case studies also address limitations of extending the findings to other instances.*

The issue of how generalisable a qualitative research study is a perennial question/criticism of qualitative research. The concept of generalisability in the context of the qualitative research is multi-faceted. An attempt to consider this issue was proposed by Lewis and Ritchie (2003) who considered that there are three elements of generalisability in qualitative research, which are; representational – where the results of the sample represent the more generic parent group from which the sample was drawn. Inferential – where the findings from the research can be generalised beyond the current sample, and theoretical – where the theory developed from the data has applicability to the broader group. Although these elements proposed by Lewis and Ritchie (2003) are useful, they are source of much debate within the field. The idea of having a theory that is independent of context is at odds with many of the underlying epistemologies of qualitative psychology. However, Lewis and Ritchie (2003) propose that one way of understanding theoretical generalisability is understand how this study's data fits in with the general research literature, as by doing this comparison, it can be seen if existing theories can be supported, elaborated upon or



disputed (i.e. if the research actually tells the broader research community anything about what is being investigated).

In terms of inferential generalisation, Lincoln and Guba (1985) argued that the key process is one of comparison between the 'sending context' (where the research was carried out) and the 'receiving context' (the context where the research is being applied). Lincoln and Guba (1985) proposed that providing a full description of the 'sending context' so that the reader will be able to consider how generalisable the research findings are to given context/ situation.

In terms of representational generalisation, it is normally based upon standard reliability checks that are administered by another qualitative researcher. This fits with Seale (1999) point that reflexivity and transparency involves, showing the audience ..... 'As much as possible of the procedures that have led to a particular set of conclusions' (p.158) as this may allow the reader to replicate the study for themselves. However, this does not mean that it would be expected that other researchers would come with the same categories and concepts.

- Resonating with the Readers

*The manuscript stimulates resonance in readers, meaning that the material is presented in such a way that readers, taking all other guidelines into account judge it to have represented accurately the subject matter or to have it clarified or expanded their appreciation and understanding of it.*

Through a process reflexivity and transparency, it is proposed that the reader produces an account that translates the richness of the data that was uncovered throughout the research process. It is then up to the reader to consider whether the narrative resonates with them.

### **3.3.5 Data Collection**

Data were collected from a regional eating disorder unit. This unit offers both inpatient and day treatments and the researcher, at the time of data collection, did not work clinically at the unit. However, the researcher had a good working relationship with the Lead Consultant at the Unit and he actively supported recruitment into this project. The unit had 28 inpatient beds and approximately 30 places in their day service.

### **3.3.6 Participants and recruitment process**

#### **Participants**

Ethical approval was first granted from the Local NHS ethics committee and research governance was sought from the hospital R&D committee (see appendix 2 for a copy of the ethics approval letter). Once approval was gained, the researcher went to a number of community meetings where patients met with staff to discuss issues that pertain to the ward. The inpatient unit was split into two sections; intensive care (ITU) and acute. The ITU's patients were typically very low weight and were often on non-solid diet and used nasal gastric tubes for refeeding, whilst the acute patients were

much more physically stable. There are 15 beds on the ITU and 13 beds on the acute. In conversations with the Consultant, it was decided that the researcher should focus on acute and day patients, because the ITU patients would not be physically able to engage. The researcher was mindful of this externally placed restriction on the study, and this was reflected upon throughout the results section. The researcher gave information about the study and gave out participant information sheets. Patients were then left to decide whether they would like to take part and if they decided to take part, they informed nursing staff, who informed the researcher of their decision. The day service is a service that runs in a very similar vein as the inpatient unit, with an emphasis on supported eating. Patients, in the day unit, have a tendency to need longer term support and are still symptomatic and in need of intensive support. There are approximately 30 places at the day service. For the day service, the same procedure was followed as the researcher attended the community meeting with patients and gave out participant information sheets. Patients who were interested in taking part gave their signed consent forms to the nursing staff. Data collection and first stage analysis was undertaken over a 7 month period.

Within this stage of the study, 30 participant information sheets were given out and 17 people expressed an interest in taking part. One person was excluded because he was a male patient. Five changed their minds to take part or were discharged before the interview could be arranged and eleven consented to take part in the study. Five participants were inpatients at the time of the interview, and the remaining 6 were taken from the day service. All the participants had a diagnosis of anorexia nervosa and this was confirmed by the Consultant Psychiatrist on the unit, who used ICD-10

criteria to diagnose the eating disorder. Details of the 11 participants can be seen in table 1.

| Participant number | Age | Diagnosis | BMI at admittance | BMI At Interview |
|--------------------|-----|-----------|-------------------|------------------|
| 1                  | 26  | AN-R      | 12.8              | 15.0             |
| 2                  | 51  | AN-B/P    | 14.3              | 16.2             |
| 3                  | 18  | AN-R      | 12.8              | 17.0             |
| 4                  | 42  | AN-B/P    | 15.3              | 17.1             |
| 5                  | 36  | AN-B/P    | 14.3              | 16.9             |
| 6                  | 21  | AN-R      | 13                | 16.3             |
| 7                  | 46  | AN-B/P    | 17.5              | 20.1             |
| 8                  | 46  | AN -B/P   | 16.3              | 17.0             |
| 9                  | 24  | AN-R      | 12.2              | 15.1             |
| 10                 | 32  | AN-B/P    | 10.9              | 13.3             |
| 11                 | 19  | AN-R      | 14.9              | 16.6             |

**Table 1:** shows the age, diagnosis and BMI status of each participant in this study

Each participant was interviewed for approximately 60 minutes, and the interviews were undertaken by the author. All interviews were transcribed by the first author and analysed using a qualitative data analysis software package (QSR\*NVIVO - version 6) to facilitate organisation of the data. Field notes were also made after each interview, alongside a research diary. Participant's awareness of how they understood and engaged with emotions differed. However each of the 11 interviewed were aware on some level of their emotions and they could discuss their relationships with them. Therefore, although there was some inevitable inference drawn about the participant's relationships with their emotions, the researcher sought at all times to keep the analysis grounded within the data.

### **Grounded theory interview schedule**

Eleven participants were interviewed. Participants were aware that the focus of the study was on the perception of emotions, having been introduced to the concept at the unit meeting and at the start of each interview. However, it was found that some participants had a better understanding and awareness of their own emotions as a process than others. With this in mind, an in-depth interview schedule was used to

guide the researcher’s questions during the interviews and capture the range of participant’s experiences, including both experiences, beliefs about expression and developmental histories of emotional expression in the family. This was designed by the researchers during discussion with colleagues and through reflection upon the researcher’s clinical work. These conversations involved ‘bouncing ideas’ about what the researcher was trying to research, and how best to ask the questions. For example, the researcher was keen to ask about all the emotions, and it proposed that each emotion should be asked about individually. It is for this reason why the researcher used a semi-structured interview schedule instead of using an open question to start the interview<sup>3</sup>. The researcher was conscious of using general questions that allowed the interviewee to access beliefs, ideas, etc about their individual emotions (e.g. sadness, anger, etc). The questions asked about their current understanding and experience of emotions was based on the study aims. The questions used in this study can be seen in table 2 below:

**Table 2**

|  |
|--|
| ‘Could you tell me about your eating disorder?’ (E.g. symptoms, duration of the disorder, etc.);   |
| ‘What do you understand about emotions?’ (Check out if this distinguished from drives, such as sex, hunger, etc.);   |
| ‘How do you express these emotions? (be mindful of non-verbal communication, such as behavioural expressions);   |
| Do you ever feel angry? Examples, Sad? Examples? (This was done for each basic emotion); if the person denies feeling any of the emotions ask, What would it be like to experience --- emotions? |
| Do you think that it would be comfortable to express these emotions? Would they be overwhelming?   |
| ‘Was your family an emotional family?’   |
| Did they show their emotions? (If so, how?) (Be mindful about the respondent calling their family emotional, as they were always happy, sad, etc.)   |
| Ask about each emotion individually, as above.   |

**Table 2:** shows the interview schedule for this study

<sup>3</sup> It is common practice in Grounded Theory studies to just ask one open question to allow the participant free reign to answer the question and discuss the topic of choice.

In line with grounded theory principles of theoretical sampling, the schedule was regularly reviewed and updated alongside emerging theories. This took place formally in discussion with colleagues and supervisor after interviews 3, where the following question was removed: 'what do you understand about emotions?' (Check out if this distinguished from drives, such as sex, hunger, etc.), as all the participants had an understanding about their emotions and were able to distinguish and discuss these in the research interviews. Furthermore, questions were added that actually asked about meal time experiences, to see if conflict occurred around mealtimes.

As will be seen within the results section, there is a relationship between the overall themes and the interview schedule. To some extent this is an inevitable outcome of asking each participant the same or similar set of questions. For example, based on the study aims, all participants were asked about their experiences of emotions in childhood, therefore 'emotions in childhood' is a core category within the final results. However, it is the sub categories that highlight the novel data found in the interviews and these are the concepts that have been used to create the final model of emotional processing in anorexia nervosa (Figure 2).

## **Data Analysis and grounded theory process**

Interview transcripts were analysed by the researcher using the principles of grounded theory (Glaser and Strauss 1967), but as discussed above, also incorporated a social construction element (e.g Charmaz, 2006). A brief overview of the process of grounded theory follows:

- Data are first gathered (interviews) and transcribed from the audiotape.
- The transcripts are first analysed using a process called open coding. This involves going through each line, capturing meaning and comparing data instances for similarities and differences.
- Whilst open coding is taking place and codes are being formed, new data are sampled in light of these codes. This means that data analysis takes place alongside data collection, and questions asked at interview change



according to the findings of the open coding process. This is known as theoretical sampling.

- Throughout the whole process of analysis the researcher writes memos. Memos are thoughts that arise regarding the analysis, for example emerging concepts or links to existing theories.
- After the initial stage of open coding is complete, these codes are then compared, grouped and lifted into core categories, which attempt to capture what is happening in the data. (i.e. 'axial coding'). Core categories are given conceptual definitions therefore moving them beyond descriptive tools to analytic units. This process continues until no new relevant insights can be made, known as data saturation.
- Core categories are then built into conceptual models and theories by using memos made to link them to each other and the existing literature.

(Henwood & Pidgeon, 2003; Charmaz, 2003).

Whilst this process was taking place, emerging themes were reflected upon in supervision and informed both interview schedule changes and, decisions as to who to invite to interview. For example, a particularly consistent well-evidenced theme found mid way through the analysis described challenging beliefs about anger being a 'toxic'/ dangerous emotion. This led to fuller discussion on anger occurring in the interviews. Where it was possible to engage in negative case analysis, this was done. Although, due to the pragmatic nature of recruitment this case analysis was limited, however, contrasting cases occurred in the more advanced analysing and theorising.

### ***3.3.7 Validity and reliability***

Recent qualitative validity and reliability guidelines published by Elliot et al (1999) were adhered to. These included addressing subjectivity through situating the

research and highlighting the authors' backgrounds, presenting results in an explicit and understandable way whilst providing direct interview quotes and checking credibility via a number of different methods. It also included auditing of analysis by two researchers separate from the research study, triangulation of qualitative themes and the comparison of the themes with clinical evidence and experience. The two separate researchers' cross-checked two transcripts with their accompanying codes and memos. These two researchers were experienced clinical psychology qualitative researchers (please see appendix 3)

### **3.4 Results**

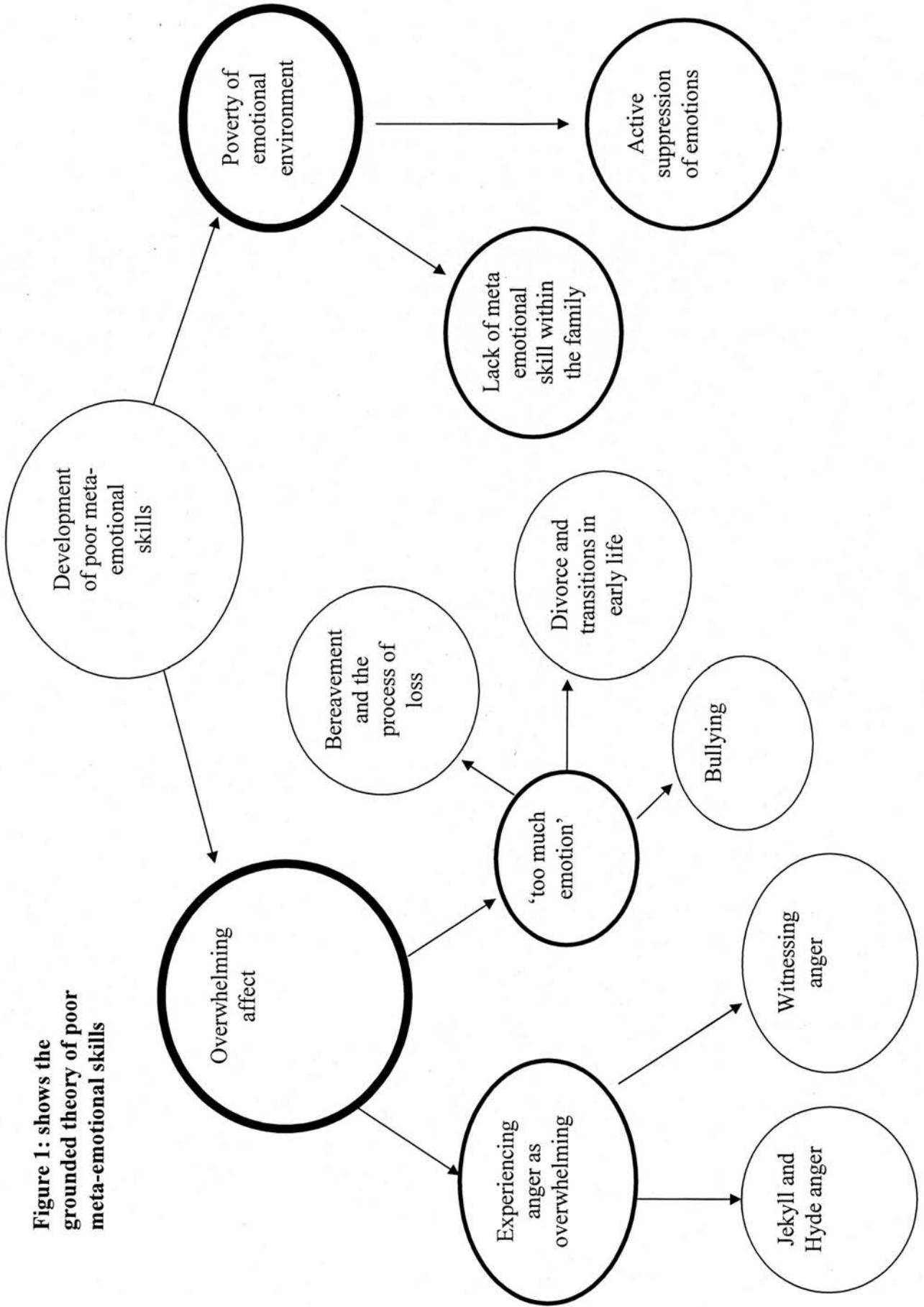
There were two principal aims of this study. The first aim was to consider the actual perception of emotional states from a basic emotions perspective, whilst the second aim was to investigate the socio-affective environment within which the participant's grew up. The results section is organised around these two principal aims. The analysis revealed that the participants in this study witnessed and experienced a significant amount of negative affect in their earlier lives. Furthermore, participants also discussed how these early emotional environments were paradoxically non-emotional and subdued. It became apparent through the analysis that the participants were often left feeling ill-equipped to deal with their emotions from these early histories and these influences were organised under the heading of 'development of poor meta-emotional skills'.

### **3.4.1      *Development of Poor Meta-Emotional Skills***

#### ***Overwhelming Affect***

Within this section of the study, participants appeared to discuss two broad themes, with one on the actual emotions generated over their childhood, whilst another was how the family of origin managed or exhibited emotions. In terms of the actual emotions generated over childhood participants discussed a number of categories that related to specific experiences as they were growing up and these fed directly into the development of two overarching categories, which were, (1) ‘experiencing anger as overwhelming’, (2) ‘too much emotion’. It is important to say at this stage that these overarching categories were not discreet, as some of the lower order themes contributed to two or more categories in the analysis. This broad model has been represented diagrammatically in Figure 1. Each category was made up of a number of components, which will be discussed in more detail.

Figure 1: shows the grounded theory of poor meta-emotional skills



## Experiencing Anger as Overwhelming

Although the interview schedule only used a broad question to ask about early history, it was striking how often the role of anger appeared to be present in the participant's upbringing. A significant number of participant's shared how they witnessed or experienced anger, which was often coupled with violence. The researcher was mindful of not only the words spoken but also the way participants talked about their experiences, for example tone and speed of speech, laughter or affect change.

Within the interview transcripts, the analysis revealed that two themes made up this overarching category, which were; 'Jekyll and Hyde Anger' and 'witnessing violence'.

### *'Jekyll and Hyde Anger'*

A number of participants discussed how they lived with someone who was unpredictable and would often get angry at the 'drop of a hat'. For example; participant 10 discussed how her stepfather was a violent man:

*P.10 "I didn't get on very well with my stepfather, he wasn't very nice"*

*Interviewer: Why was that?*

*P.10 'He was physically and verbally violent to my mother, he was nasty you know'.*

On another occasion, Participant 9 stated, "*I mean he were like Jekyll and Hyde, when he was nice, he were nice, and he was bad, he was bad*".

Participant 6 discussed how her father was very volatile and violent towards her mother and she was often scared to come home from school, as she did not know what 'type of mood' he would be having:

*P.6 'It was very tense around my mum and dad, especially my dad. He was very jealous, very aggressive and you never knew what to expect. I was sometimes scared to come home from school and find out what mood he was in'.*

For participant 6, she also discussed how she had been in a violent relationship, where she experienced repeated assaults and violence. The nature of these experiences coupled with her early life experience left participant 6 with the experience of anger as being overwhelming and dangerous.

The crucial part of this category appeared to be the unpredictability of the anger and how frightening it was for the participants. They almost seemed to be hyper aroused every time they went home. Even in the interview, both the participants seemed initially wary of talking to a male researcher (they were aware that the interviewer would be male prior to the interview). Although this will be discussed later in the results, it appears that the participants learnt that anger was a scary and dangerous emotion that needed to be avoided.

### *Witnessing Anger*

Although related to above category, this category was different in a number of key codes as participants witnessed a wide array of what they perceived as being 'destructive' or 'damaging anger'. For a number of participants, they often witnessed



the apparent futility of anger, in that, it just caused distress and upset. For example, participant 4 discussed:

*P.4 ...and then of the five children, there was one girl and one boy who were very angry and slammed doors, they'd express those sorts of emotions, erm, so yeah, that was expressed. Erm, but it never led anywhere, never got resolved, and basically it was not a good thing...'*

*p.4. ...you knew that expressing an emotion was not a good thing...'*

Participant 4 discussed how there was a lot of conflict around mealtimes and did discuss how her eating disorder was not related to her experiences with her eating. For example: *P.4 'I don't think it has anything to do with my eating disorder, but there was massive, massive conflicts at meal times'*. She continues, *'my brother lost the plot big time and mealtimes was time that they saw him, he would come and join us for tea, but he'd sit with his back to the table and he'd just be abusive to my parents'*. It struck the interviewer that this was an interesting point in the interview, as participant 4 felt angry with her brother for ruining the meals, but could not say anything about it, for example: *'I could not express that I really hated it (participant 4 looks really angry in the interview), and ask why was he was here and why can't we have our meals on our own...'*. I was left with the sense that participant 4 just kept her head down and concentrated on her eating, whilst the anger and the row ensued. This concentration on her food was felt to be significant as eating appeared to help her to cope with the experiences at mealtime. Participant 4 suffered from episodes of binge eating to manage her emotions.

Participant 3 also discussed how her family were largely aemotional, but alluded to how her family had two big arguments that have left their mark upon her.

Participant 3: *...There was not much emotion in front of me, but I do remember one or two incidents where there's been like a big confrontation...* Participant 3 looked visibly emotional as she discussed this point.

Although this overarching theme only consisted of two categories, it was striking in the interviews that strong displays of anger were perceived to be very damaging to the child. They often felt afraid, alone and a number (approximately half of the participants) seemed to develop a narrative about anger being an overwhelming and almost toxic emotion that needed to be avoided at all costs. This belief about anger being overwhelming appears to be particularly challenging as a number of participants also discussed feeling a lot of anger as a child, at events that occurred around them. This feeling of anger is the next over arching category to be discussed.

### ***'Too Much Emotion'***

One branch of the analysis revealed how participants discussed a sense of loss in their early life. This sense of loss seemed to interface with a sense of how participants as children felt that their own care needs were not met by those around them. Therefore, this sense of loss and perceived lack of care seemed to create a high level of emotion in the participants, which seemed to centre on the feelings of sadness and anger.

Within the discussions with the participants it was apparent that there was only minimal mention of frank abuse (e.g. sexual and physical abuse) and the participants

often appeared confused by the lack of an event or series of events that they could 'blame' but still had an apparent high level of 'trapped emotion' that could not be let out. Within this section, the results will be presented around the key events and themes that seemed to emerge from the data, which included; 'bereavement and the process of grief'; 'divorce/ 'transition and loss' 'and 'bullying'.

*'Bereavement and the process of grief'*

About quarter of the participants discussed how they had lost close family member. Participant 8 discusses that she lost her father and her baby in a three year period, when she was a teenager.

*Interviewer: when did your dad pass away?*

*p.8. erm, he was only 45, so 1976, I was 16'*

*Interviewer: that must have been a difficult time?*

*p.8. Oh God, yeah, yeah, definitely!!*

Participant 8 also disclosed how she had lost a baby at the age of 19.

*p.8 ...and then, when I was 19, erm, I had a baby, which lived then died so, you know its like I had a lots of issues to deal with it'.*

Participant 8 discussed how she did not manage her emotions from these events until much later in her life.

*p.8 'Obviously, I view my emotions differently and I deal with my emotions in a different way'. Within another discussion, participant 8 stated: 'I didn't really admit to myself till I was 30, when I was on my knees, that I had a problem with how I was feeling.*

Although, participant 8 did not verbally state which emotions she had felt in response to her losses, she appeared to alternate between being very sad (quite tearful) and

being quite angry in the interview. Interestingly, Participant 8 also discussed how she had a number of health issues as a child that prevented her from expressing her emotion (especially anger), as it would provoke her asthma and/ or eczema. For example:

*p.8. Interviewer: 'As a child if you would become angry?'*

*p.8: 'Erm, more than likely I'd have an asthma attack as a child'*

Another example of interplay between emotion and loss was shared by participant 10. As discussed above, participant 10 had a step father who was violent and aggressive towards her mother. This participant's parents separated when she was 10 and she discussed how her life was quite idyllic before her parents split up. Once participant 10's mother had remarried, life appeared to change for the worse and she appeared to be quite angry and frightened by this transition. However, she stated that she was very close to her mother and she felt very angry with her stepfather about how he treated her. For example: -

*Participant 10: 'He was physically and verbally violent to my mother, not me, he was nasty, you know, like a disgusting fella, he really angered me'.*

In the interviewer's memos after the interview, it was postulated that participant 10 felt anger about her mum and dad splitting and ruining her idyllic life. However, she could not tell her mum how she felt. When we considered care more generally in the interview, she appeared to have some entitlement beliefs about deserving care from people around her. For example:

*Interviewer: When was the last time you felt angry about something?*

*Participant 10: About some treatment I was having here, I didn't feel that I was getting the right treatment, so I got quite emotional and angry'.*

Although the researcher did not request the information, staff volunteered how they found her to be an angry woman, especially if they did not meet her requests as soon as it was asked. At this stage of the analysis, the researcher recorded the staff comments within a memo and this was used when constructing and reflecting upon the coding frame. It was also incorporated as it gave a good background description that fitted with the emerging theme in the analysis. When we discussed her relationship with her mother, she shared with me how close she felt they were and how she was the only one who she could share her emotions. However, in her late teens, her mother became ill with cancer and died. Even here, we discussed how she suppressed her emotions to nurse her mother and she would not let her step father be involved in her care or subsequent funeral.

For example: participant 10 states: *I didn't want my step dad to arrange or do anything. I did it all; I looked after my mum while she was poorly in the house'. She continues later in the conversation, 'sadness is a difficult emotion, and I'd think, well, I'm ok now, you know, put on a smile and get on with things, like looking after mum'. Interestingly, she discussed how she started to restrict her eating once her mother had died, participant 10: 'She died, she passed away, and that's when I think the problem started, I started to diet'.*

All through the interviews with participants who had experienced the loss of loved ones was a sense of anger and sadness at their loss. As has been discussed these emotions were strong within the participants and these emotions were not seen favourably and were often suppressed for a variety of reasons. This will be explored in later sections of the results.

#### *Divorce and transitions in early life*

As with the above category, about quarter of the participants discussed how their parents split up and their early life involved many transitions and changes. In addition to the above category, some of the participants discussed openly that they felt resentful and angry for the changes that were forced upon as a result of their parent's divorce. For example: participant 6 states that: *'my mum and dad divorced when I was 5, and then I like lived with me dad till I was probably about 8, as my mum did not have anywhere to live, so she lived with her parents'*. She continues by stating that there were two or three further moves and her father met a new partner. She then says, *'I found it hard to tell my dad that I wanted to live with my mum, and my sister took the place of my mum for a bit. I felt quite resentful and angry about all of this, and it did cause problems with my sister later on.'*

At the age of 8, participant 6 moved back with her mum, but was not able to see much of her, as she worked and left her with babysitters. This caused a lot of anger for her, but she felt unable to say anything to her mother. For example, *when I lived with my mother, I stayed at the cottage for a while, we didn't spend much time with her and we, like, with babysitters and nannies a lot. I could not tell my mum I was not happy and resentful, as I was so grateful to be living with her again.'*



Another example of how divorce and transition had an impact upon levels of affect came from participant 1; within her interview participant 6 stated that:

*'there was lots of upset in my life, like my parents divorced and we used to move around a lot, so I changed school quite a few times, so I was quite emotional and angry about that and I was not really settled until I moved to where I live now when I was about 7 or 8.'*

For the participants, the experience of change and transition following both bereavements and divorce appeared to be very challenging for all the participants in the study. It often left them feeling very angry with the situation the change has left them in, and feeling angry at the loss of a loved one. At the same time, the changes left participants feeling sad for their loss. These emotions were often perceived to be wrong and they were often suppressed. Significantly, for all the examples offered above, the start of the eating disorder could almost be pinned to these critical events in their lives.

### *Bullying*

The last category that appeared to contribute to the overarching theme of 'too much emotion' was one of 'bullying'. Participants discussed how being bullied by other children left them feeling very sad and alone, fearful, disgusted with one's own body and feeling very angry with how they were treated. For example, participant 11

discussed how one girl had made her feel all of these emotions, but in particular anger and disgust:

Participant 11: *'One girl commented on how I looked and she described me as like, chubby with spots and just not pretty, and this girl came up to me laughing, I could have said something really funny, but I just stood there'*. Later in the conversation, she starts to get angry in the interview, *'I think now I'd probably tell her, or go up to the other girl and given her a good smack now to be honest. I'd love to find her today and tell her, look what the bloody hell you have done to me, you know, it makes me really upset (interpreted as angry) such like bitchy comments and stuff like that....'*

Participant 1 discussed how bullying was both verbal and physical and she struggled at school due to this bullying. Across this bullying was how it affected her sense of self. For example:

*Interviewer: Did the bullying have an impact?*

*Participant 1: Definitely! Cos I was always criticised, it was always about me that I was criticised, so I did take it on board, took it all to heart and then criticised myself.'*

*Interviewer: (Interviewee was quite animated in the interview) you sound like you became angry with yourself, you turned it inwards?*

*Participant 1: Yeah, yeah.*

### Summary of Overwhelming Affect

Almost all the participants described their socio-emotional environments as being challenging whilst they were growing up. Throughout the analysis of the interviews, it was apparent that the emotion of anger was a difficult emotion for the participants, as they had often experienced anger as being overwhelming and dangerous from people around them. In comparison, a number of participants also discussed how events had significantly increased their levels of emotions, in particular, anger and sadness, which were often suppressed in order to protect oneself or another key individual in the participant's life. With the exception of two of the participants discussed above, all the above participants who experienced overwhelming affect and/ or witnessed this high level of emotion, either binged and/ or vomited. Although this will be covered later in the results section, it was apparent that the use of bingeing and vomiting was a powerful strategy to suppress the apparent high level of affect present in these participants. This dynamic of too much emotion which was unable to be expressed was a key construct in the analysis and it will be returned to throughout the results section.

#### **3.4.2 *Poverty of Emotional Environments***

Within this section of the study, participants appeared to discuss 2 broad themes, which were 'low level emotions in family' and 'denial of emotion'. This overarching category, at first sight, may seem to be in conflict with the above category of 'overwhelming emotions'. However, this conflict shows the complexity of the data for this participant group, participants who experienced high levels of emotions often had

an emotional back drop of little or no emotions being expressed/ shared. Within the memos, it was reflected that this contrast in the experience of emotions was potentially the most toxic of them all. A good example of this emotional dynamic was shared by participant 3 who witnessed two big angry confrontations, but for the rest of the time, her home life was largely devoid of emotion.

*Lack of Meta-Emotions skill within the Family*

A significant proportion of the participants described their families as either having low level or no emotions whilst they were growing up. This lack of emotion did not feel like an active process within the family, as it appeared to be almost the default mode for the families of participants. 4 participants discussed how they felt that their fathers were totally unable to discuss anything emotional and this seemed to be highly significant to the development of a poor emotional environment for the participant as a child. Given these apparent difficulties with how families managed and expressed their emotion, it was interesting in the interviews that some of the participants struggled to find the language to describe the emotional environment as they were growing up. For example, participant 3 stated: -

*Participant 3: I don't think that emotions weren't something what we talked about really, they're not, it was just like, it was something we didn't talk about really, we don't talk things through we just, if you've got any problems just keep them to yourself kind of thing.'*

In considering the principle theme of this category, participants discussed how their fathers often appeared not to have the skills to express or manage their own emotional states. For example:

*Participant 11: ...I think he has been really sad about like how I'm feeling upset about it, and I don't know, but he kind of never showed it, he's just silent, but I know what that means that he just doesn't know what to say and that he's upset and....*

For participant 11, she discusses that her father was almost without any expression of emotion, whilst participant 9 discusses quite sadly about how her father does not show any emotions, even after the death of one of his friends. This can be seen in the following example:

*Participant 9: 'a friend that we always sat with at football, he died recently, like quite suddenly, and I just thought, you're not, he didn't seem to show any emotion and I think it was his way of just dealing with it.'*

The difficulties were not solely related to fathers, as participant 3 discussed how her mother struggled to express her emotions. It was felt within the analysis that it was significant that participant's 3 mother had a number of mental health problems (mainly depression, with some anxiety) and these seemed to impact directly her emotional life and her ability to share her emotions or to facilitate emotional expression within the family. For example:

*Participant 3: I suppose my mum wasn't like she should be really, she were scared of going out sometimes she wouldn't answer the door, erm, she had various like bad like low points really and there was a lot of upset really.*

Later on in the interview, participant 3 answered the following:

*Interviewer: Did that have a bearing on how emotions were expressed at home?*

*Participant 3: Yeah, probably, cos she kept a lot like bottled up I think and just I think we didn't really understand what was going on because she'd never talk to us about what was happening, it was just a lot of her keeping herself to herself basically I think.*

As discussed above, participant's three family did not share their emotions with each other and it felt that the environment must have been devoid of emotions. As shall be seen later, participant 3 had marked beliefs about the toxicity of certain emotions and it felt that the interview had uncovered some of the main impacts upon this emotional development for participant 3.

### *Denial of Emotions*

In contrast to the above category, this category was felt to be an active process where families close to the participants actively suppressed the expression of emotions. A decision was made at the analysis stage about which type of poor expression of emotion was due to poor meta-emotional skills versus a denial of emotion. It could be argued that these two categories are overlapping, which may well be true of the data. However, it was felt that were different emphases between these categories and it is for these reasons, they have been kept separate and not collapsed together.



Denial of emotion appeared to be relevant to almost all of the participants, but especially relevant to 4 participants. For these participants, it felt that even their own emotions were often denied by family and this caused a lot of confusion for the participants concerned. It was considered within the analysis to split the category between 'denial of emotion within family', and 'family denial of emotion within the self', but the overlap between the two constructs was too high and hence it was decided to keep them together.

This category really speaks for itself, in that, the family effectively denied that they were experiencing any emotions, even though they were clearly present. For example, participant 5 states very clearly how emotions were denied in the family.

*Participant 5: 'this is just my take on it, is that I was brought up in a family where, again it's so clichéd but it's so true, where you didn't have emotions, you didn't have feelings, and if you did, if they were happy emotions, that's quite acceptable, but if you had any er, obscure, feeling about anything that you aired, it would be ignored or dismissed, so there was cheerfulness, happiness, but it was all obviously unreal and superficial, but that's how the family dealt with everything'. This striking example taken from the interview transcription highlights how emotions were actively denied or 'covered up', this was especially true, when it is considered that there were difficult traumatic events going on within the family. For example, Participant 5 discusses: 'there was drink in the family, there was violence, there was sexual abuse, and lots of secrets about the older members of the family, my aunt lives next door, which I think she knew what went on because I've had close contact with my aunt and been able to*

*unravel some of the stuff, some of the family dynamics and why, I'm, I'm the way I am...'*

As highlighted above, participant 4 had two siblings that expressed a high level of anger, especially around mealtimes. For participant 4, however, her parents responded with anger to her brother, but this use of anger did not resolve the situation, as it appeared that it would continue. In the interview, it was discussed how the family did their best to limit the amount of emotion being expressed by negative means, such as ridicule or anger. For example:

Participant 4: *'there was one girl and one boy who were very angry and slammed doors, they'd express those sorts of emotions, erm, so yeah, that was expressed. Erm, but it never led anywhere, never got resolved, and basically it wasn't a good thing, because when I cried I would be laughed at and when the other two used to slam doors and shout, they'd be told off, so you knew that expressing emotions wasn't good, not worth the effort'*.

In other part of the interview, participant 4 shared that she learnt that emotions were bad and to be avoided by witnessing and experiencing her parent's reactions towards them. For example:

Participant 4: *'Well it's what I saw, if you express your anger that's bad, you're naughty. If you cry, you're a fool, you're silly, cos everybody else doesn't cry, it's wrong, and best is to be my like my parents, or you could be happy'*.

The vast array of experiences that seemed to lead to the same place is demonstrated quite clearly by the experiences of participant 8. She grew an overtly emotional environment where it was reported that her family expressed their emotions normally. However, in contrast to this environment, participant 8 described her upbringing as being 'cosseted' because of her physical health difficulties, especially her asthma. This can be seen in the next quote:

Participant 8: *Erm, I was cosseted a lot as well, erm, so I kind of say, I mean I would imagine that rest of them showed normal emotions, you know it weren't, I mean I'm not saying it were the Waltons, but it weren't abusive or, but as I say I tend to get cosseted cos there was always something up with me.*

However, this cossetting prevented participant 8 from learning about her own emotions and she was actively prevented from expressing any difficult emotion, such as anger. For example:

Participant 8: *I don't think I had the chance to really express myself properly, cos it were you know, you can't do this and you'll not be able to do that, and what have you, so, I suppose that's been part of me not being able to, know my own emotions really as well. Participant 8 went on to explain that she avoided situations that led to arguments, for example, 'I'm not one for confrontation or, so I can't, it takes a lot for me to lose me temper, you know fight. The interviewer then asked: *What do you think would have happened, as a child, if you would have become angry? Erm, more than likely I'd have had an asthma attack as a child.**

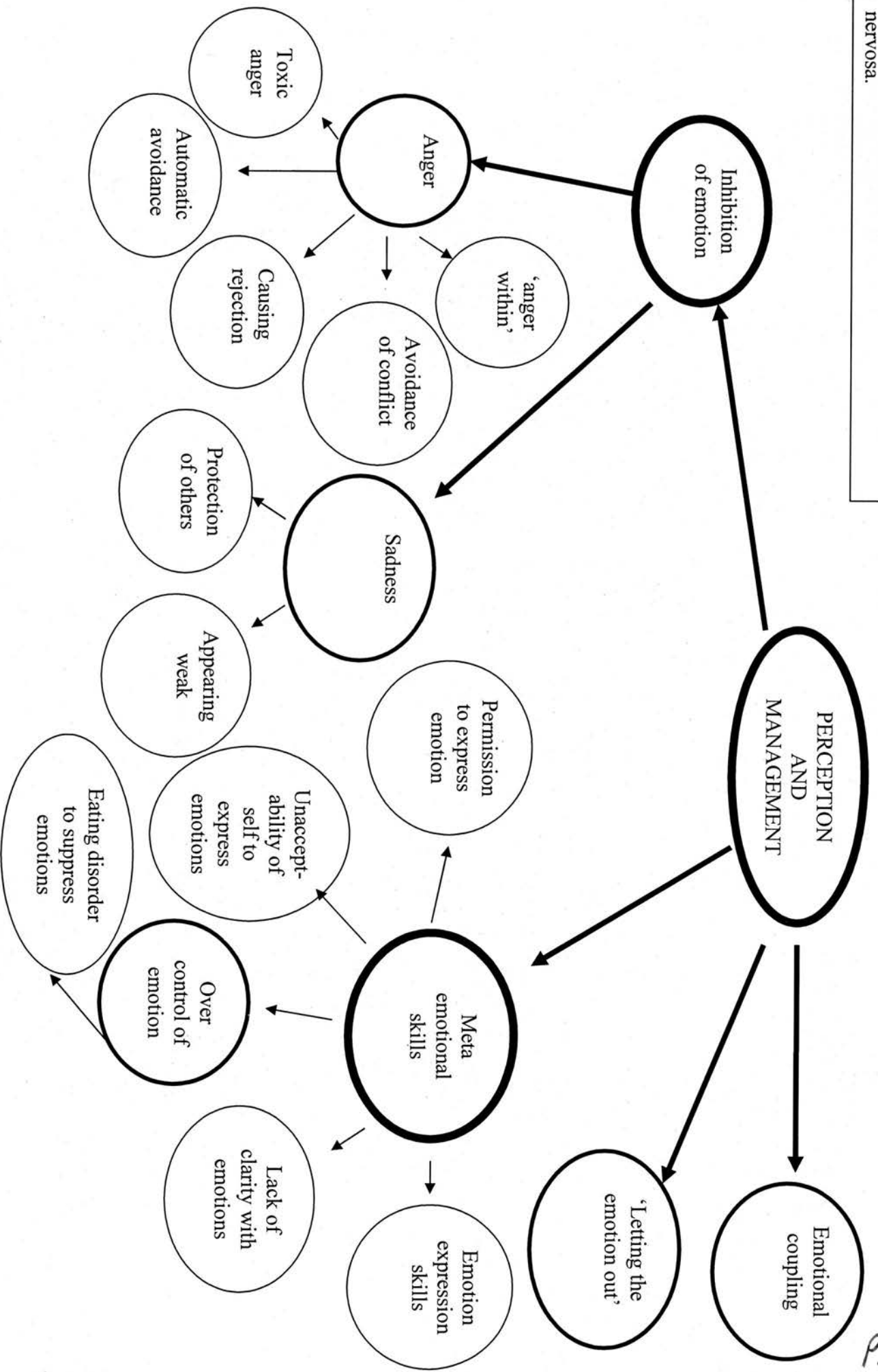
### **3.4.3      *Summary of Development of Poor Meta-Emotional Skills***

Across this part of the analysis it was apparent that the participants were often brought up in environments that were often a conflict between too much emotion and environments that were devoid of emotional expression. This represented an interesting challenge to the researchers as it left him with the question of how to validate these themes, as it would be difficult to find evidence to the contrary. In reflecting upon this issue, the researcher considered the issue of how responsive and appropriate the responses were in relation to the event that the participants discussed in the interview. It would be useful to undertake another study with questions pertaining to this issue of meta-emotional skills and to look for negative cases in order to promote theory development. A number of participants witnessed a high level of anger and this appeared to have a profound effect upon the participants. Whilst for others there were apparent difficulties for the caregivers to manage their own emotions. For some of the interviews there were some initial difficulty to find the language to express their emotions, but all the participants were able to engage in the interview after a little prompting. This is interesting, as at first sight, participants may have been labelled alexithymic, but with careful interviewing, they all were able to discuss their emotions. As shall be seen later in the results section, all of the participants had self-confessed difficulties in their experience, expression and beliefs about their emotions.

### **3.5 Perception and Management of Emotion**

As discussed at the end of the introduction, the second main aim of this study was to investigate the actual perceptions of emotional states and how the participants manage them within their life. The analysis revealed that the results for this section of the study revolved around four principal categories; namely, 'inhibition of emotion', 'meta-emotional skills', 'facilitation of emotion' and 'use of symptoms to suppress emotions'. In keeping with a grounded theory tradition, each of these categories was made up of sub-ordinate categories. As with the above analysis all aspects of the interview were used to facilitate the data analysis, including presentation in the interview and apparent emotion in the interview. Figure 2 shows the overarching the results for this part of the study.

**Figure 2:** shows the grounded theory of the perception and management of emotions in anorexia nervosa.



## **'Inhibition of Emotion'**

This category is made up of two principal emotions being inhibited within the participants, anger and sadness. All the participants discussed how they inhibit either or both anger and/ or sadness within their emotions. This can be seen in the following quote, which was a quite typical answer to the question about expressing emotions.

*Interviewer: how do you express emotions?*

*Participant 1: I find it hard to talk about them, erm, if I'm upset I do cry a lot (laugh), erm, again, I generally don't express my emotions very much, erm, I keep them to myself a lot.*

## **'Anger'**

This category is made up of 5 subordinate categories that highlight the views and beliefs participants held about the emotion of anger. With the exception of two subordinate categories, the participants discussed how their inhibition of anger was related to interpersonal factors, such as not being rejected by loved ones, or not engaging in conflict. These theoretical points will be considered in more detail at the end of the section. These will be now discussed in turn.

### *'Toxicity of anger'*

With the exception of two participants, everyone in this study discussed how the actual emotion seemed dangerous and almost toxic to them and people around them and it was to be avoided at all costs. In many ways this category was a core category



for the inhibition of anger, as the beliefs about anger appeared to fuel the overarching belief that anger was a toxic emotions. For example; participant 3 stated: *I don't like being angry at people, because it makes people feel bad, it feels if you are responsible. It's like it's transferred. Like it's kind of like you're if you feel bad (anger) then you're like spreading that to other people.* In a later part of the conversation, participant 3 shared how having a negative emotion was, as if, fundamentally wrong and she was a bad person for having something that could be spread to other people. Significantly, she then feels that she needs to punish herself for having that emotion, by not eating. This is clearly demonstrated in the following quote, Participant 3: *well you kind of pull yourself, keep it quiet, don't say anything, cos then you might affect people like, and like you kind of you keep it to yourself, like, you tell yourself off kind of thing, inside your head, and like you don't, I suppose like I don't eat comes into it, like you punish yourself, like if you've done something wrong.* As discussed in the above section, participant 2 witnessed her own mother struggle with depression and it seemed within the analysis that this did play a significant role in the development of the beliefs about the toxicity of sharing emotions, such as anger. A very similar discussion occurred with participant 2, when she stated that, *'I would never knowingly upset another person, because I'm, probably because I know how equally upset I am, I would avoid upsetting other people because when I'm upset (anger) I find it such a distressing way to be.'* Again, it is argued that this demonstrates how the emotion of anger appears to be dangerous and distressing and the participants have 'no right to share this emotion' with other people.

*'Causing Rejection'*

Four participants discussed how they believed that the expression of anger would ultimately lead to being rejected by those people closest to her. For example, participant 2 stated: *'part of the reason that I don't er, express anger very often at home with my husband is erm, and because I'm afraid that he would leave me'*.

As discussed earlier, participant 5 was angry at her parents after they split up and at one point she explained that she became angry and this had consequence for her, as it caused difficulties in her relationship with her father. Participant 5: *I felt quite angry towards my step mum at one point, but when I did actually express that once, but then it kind of, like had consequences, like so then I have always like felt a bit worried about doing that again.* This statement from participant 5 was interesting as it highlighted how her upbringing led her to feel angry (as discussed before), but when she attempted to express it, it caused more problems than it solved. This thereby led to further inhibition of this emotion.

#### *'Automatic Avoidance'*

Across the data there was repeated mention of an almost automatic avoidance of emotion, but in particular, anger. For example, participant 8 discusses how she has virtually no recollection of anger being avoided until it has already happened. For example: *'...Every time I feel angry or what have you, or life's not being fair to me, that I'm not going to eat, because then, it just clicks in so quick you know that, and then you go down again, and start all over again...'* This is an interesting example of how participant 8 automatically blocks her anger emotion and this is directly linked to restriction of food. This is a point that is covered later in this part of the results. When considering this theme within the data, the interviewed hypothesised how these processes seem to occur outside of conscious awareness, however, participant 9

discusses how she is aware of her emotion, but does not express it. Indeed, she reports how she appears to change the emotion into sadness. For example: Participant 9 states: *'I feel angry, like I like everyone to be on time and things like that, so I get angry if they were late or my mum said she was coming and she didn't come, but I wouldn't say anything, just like get a bit sad, and that would be it.'* This relation of sadness to anger was felt to be a significant theoretical point and it was reflected upon within the research memos. It was started to be considered whether this relation between sadness and anger could start to account for the high co-morbidity between eating disorders and depression. Likewise, the relation between anger and restriction could suggest that there are couplings occurring at an emotional level that fuel the eating disorder.

#### *Avoidance of Conflict*

Through the analysis there was repeated mention that participants would avoid conflict with other people. Some participants discussed how they did not have belief that their view or emotion was legitimate. For example: Participant 8 states: *I feel sometimes I have trouble er with my opinion being worthy, even though I know it is, but a lot of the time if simply won't because it's erm, it's like I don't want the confrontation, so I just pooh pooh it...* Whilst participant 2 discussed how she would avoid conflict at almost any cost, and indeed, suppress their own view/ need in order to prevent conflict, *'I would have, erm, I erm, avoid conflict almost at any cost with another person, even if I know that they have been in the wrong and I really don't want to'*.

#### *'The Anger Within'*

A significant feature of the analysis that arose from the data was how a proportion of the participants kept their anger within themselves and this caused a significant amount of difficulty for them. Not only was this anger apparently challenging to experience as it was perceived as being toxic (as discussed above), it was also directly related to eating disorder symptoms for a number of participants. This category felt to be another core category within anger category as it highlighted a direct emotional link between the experience of an emotion and the eating disorder symptoms. For example, participant 2 discussed how she used vomiting to release her anger.

Participant 2: *'but certainly if I'm upset or angry or both then it does affect my eating, erm, both because if I'm upset and angry I don't feel that I can eat, physically, but also erm, that yeah I can get my anger out by erm, by not eating but also particularly with inducing vomiting, I do that when I'm angry'*.

Whilst participant 6 discussed how her eating disorder was a way of managing her anger in a way that did not require it being expressed. For example,

Participant 6: *'the eating disorder was the way of coping with that anger, rather than expressing it.'*

Participant 8 discussed how 'toxic' her anger was to herself, and how it provoked and maintained her anorexic restricting. What was very interesting from participant 8's account was another potential dynamic between anger and the need for control over oneself. It was noted in the research memos that this dynamic appears to allude to how anger is seen as unpredictable and uncontrollable, which also adds to the perceived toxicity of this emotion. For example:

Participant 8: *if you're anorexic, eating disorder, it's, the longer you internalise it (anger) the more you starve, because you get your own power and control from starving yourself.*

Lastly, participant 11 discussed very succinctly that the experience of coming into hospital for her eating disorder was associated with high level of anger and then sadness. Again, in the interview memos it was reflected upon how coming to hospital removes the very powerful way an eating disorder suppresses emotions, and it seemed for participant 11 that this had led to her experience a markedly increased amount of emotion that was being experienced. For example:

Participant 11: *'...Well in my first admission, erm, I was just angry, erm, all the time, like and then a few weeks on I just got really upset because I felt like my college, like my A levels and everything were just like slipping away and I was, wasn't going to get anywhere, so I was just upset about that...'*

Difficulties with the emotion of anger were one of the most salient categories in the analysis. Participants spoke about how it was the most challenging emotion which was to be avoided at all costs. The interviewer was struck both by its apparent toxicity to the participants, how this was directly related to both restriction and vomiting and how it appeared it could be coupled with other emotions. Again, it was reflected upon in the memos that, although sadness was a challenging emotion, it was less challenging than anger. It was hypothesised that the dynamic of coupling may well be a process in eating disorders where toxic emotions are managed. This hypothesis was returned to throughout the analysis, and it will be discussed further in the results.

## **'Sadness'**

This category was the second inhibited emotion that emerged from the analysis. It was a much smaller category, but, nevertheless, it was still deemed to be a significant inhibited emotion for the majority of the participants. In terms of it being the principal emotion avoided, two participants spoke quite candidly about how sadness was the toughest emotion to feel and express, whilst others spoke about sadness being an ever present emotion, but not feeling comfortable to share this emotion with other people. The analysis of sadness would be incomplete if it did not include some discussion of depression. Almost all of the participants discussed how they had struggled with low mood, both prior to their eating disorder and also due to their eating disorder. For example, participant 11 stated that she felt like she had been depressed for a long time: *'I think, sadness was important for me because I'd realised that it's kind of like because I was being sad well probably depressed for so long and just by being like this and not being comfortable with myself that being what I feel crappy and sad...'* However, the majority of participants were well aware of how restriction played a role in the lowering of mood, although most participants were never really sure whether the low mood came first or prior to the eating disorder. For example, participant 6 discussed: *'...I was never sure whether it started like with being depressed and then, but I didn't, I think I got, I tend to get more depressed when I cut back on my eating because I think I actually lose more weight, you do, and I had to be on anti-depressant, whenever I come off them, I've kind of gone downhill again...'* It does appear that participant 6 was postulating that the anti-depressants kept her mood stable, which in turn, protected her against her eating disorder. This dynamic of

depression predating the anorexia certainly came through the data analysis, but it was a very 'cloudy' dynamic. In terms of expressing sadness, this category broke down into two more sub-categories, namely, 'protection of others' and 'appearing weak'.

### *Protection of Others*

This category related to the points raised by the participants about how they felt that sadness was difficult emotion for others, especially loved ones, to see. Participant 4 discussed how she felt shame and guilt for how her emotions would affect her own family. Participant 4: *'I'm frightened erm my husband, that he'll, well just sort of realises how sad I am, and it'll think I've made him sad as well. And the children seeing how sad I am, would ruin their childhood, cos you know...'* This theme carried over a number of participant's responses.

### *'Appearing Weak/ Shame at expressing sadness'*

This category was also felt to be tinged with shame. Participant 10 openly discussed how she viewed sadness and any expression of sadness as a sign of weakness. As was discussed previously, participant 10 grew up with a violent step father and she also cared for her mother whilst she was in the terminal stages of cancer. These seem to have a significant impact upon her beliefs about sadness being a sign of weakness. This can be seen in the following quote: *I just see it, if I start crying it's a sign of weakness and something that I don't like doing really.* Participant 9 appeared to share a behavioural sign of shame of expressing sadness, as she discussed how she would hide herself away if she cried, participant 9: *'Sadness, if it was really bad then I'd probably cry but, then I'd probably go away from people'*. This example of shame was also discussed by participant 1, *'...if I'm upset I'm crying, but I try and, I do that*



*on my own, I don't really show it very much, unless I'm really upset...'. Participant 8 did discuss how context was often very important in allowing her to become sad and cry. She discussed a an example of where crying is often regarded as the norm, for example: Participant 8: '...if I feel sad about something or if I'm watching a weepy film, or something daft like that, at least you know I can let the tears fall now...'.*

As with the inhibited anger section above, it was striking within the analysis that there was a large amount of sadness, under the guise of depression (although this was not confirmed by clinical diagnostic interview). But this sadness was a largely inhibited emotion, as it was regarded as an emotion of weakness and shame, and hence, it had a feeling of being a trapped emotion. This, however, it did not appear to be as severe as for anger, as participants often discussed ways (whether it was intentional or not) of letting their sadness out. They spoke of being tearful on their own, or finding situations where they could cry without feeling shame or weak.

### **3.5.2      *Meta Emotional Skills***

This overarching category relates to the participant's sense of their skill in managing their own emotional states. As been discussed already, anger and sadness were the most challenging emotions for the participants and they often struggled to know how to manage them skilfully. Related to this point was how a number of participants did not feel that they had permission to express certain emotional states, and this appeared to be related to the notion of whether the sense of self was acceptable as an emotional being. This permission to express their emotions was also related to whether they had somebody with whom they felt able to express their emotional states with them.

Another category that emerged from the analysis on meta-emotional skills was one on the actual skills to express emotions, as there was often confusion about the emotions they were feeling and apparent lack of knowledge in how would be the best way to share those emotions. Given the historical factors for the participants, it was felt not to be surprising that there was this lack of this meta-emotional knowledge and skill. The final category that comes under the meta-emotional skills was one of emotional coupling. This was briefly discussed above, and it became apparent in the interviews that two emotions appeared to be connected in some way. Some of this was stated very consciously by the participants, whilst other times it was inferred from the interview. This will be discussed more fully below.

### **Permission to Express Emotions**

The permission to express emotions appeared to be driven by two factors, one that centred upon the acceptability of the self as an emotional being, whilst another focussed on having a person with whom the participant could be emotional. Even in this situation, only a few participants felt that they had someone with whom they could discuss their feelings and, even this situation, it was still quite guarded, with a tendency to 'back fire' (as with participant 6). For participant 10, the issue of having a confident to speak to about one's feelings was highly significant. Within the interview, she spoke of only being able to speak to her mother about how she was feeling and, as discussed above, she then lost her mother which then triggered her eating disorder, for example:

Interviewer: *Did you feel comfortable being able to walk in and express how you were feeling to your mother?*

Participant 10: *Yeah, I must admit I were very, very close with my mum.*

Interviewer: *So if you sort of felt quite sad and upset ...?*

Participant 10: *Oh yeah, she was very approachable, yeah definitely.*

In terms of theory development, the importance of having a confident with whom they could express their emotions was in direct contrast to many other of the participants, as they often felt unable to speak to anyone about their emotions. Once participant 10's mother became very ill, she suppressed her emotions and this appeared to have a direct relation to the start of her eating disorder.

Other participants discussed how they needed other people to indicate that they had permission to express their emotions. Participant 3 discussed how she needs to be given permission to have emotions or to share how she feels. It was discussed in the after interview memos that it appeared that participant 3 was denying herself from being an emotional person and other people needed to give her permission to share her emotions. This can be seen quite clearly in the following quote:

Participant 3: *I suppose I'm kind of like, I have strong views sometimes of that I shouldn't be emotional, but there's times when I'm annoyed when I think oh I shouldn't say that, I shouldn't be expressing my opinion, and I suppose sometimes, but most, erm, I feel like I shouldn't be like telling people what I feel, cos they don't want to know and they have not given me permission to share my emotions with them....'*

## **Un-acceptability of self as an emotional being**

Participants both discussed and presented as individuals that were often without emotion, especially at the beginning of the interview. When this was explored further in the interviews, it was stated that they felt it was wrong to be an 'emotional person' and to share how they were feeling with other people. The most striking example of this was discussed by participant 5, and this can be seen in the following example:

Participant 5: *'...I suppose to a certain extent, and erm, this is about me, I am not acceptable, if I have any kind of emotion, let's not share it with anyone...'*

## **Emotion Expression Skills**

This category appeared to relate directly to the categories that discussed the difficulties in the emotional environments within which the participants grew up. The lack of emotion skills seemed to be related to the lack of modelling of good emotion skills whilst growing up. Furthermore, the denial of emotion whilst growing up also appeared to relate to the confusion that often surrounded the experience of their emotions. This overarching category was made up of three categories, which were; emotional confusion, over-control of emotions and the use of eating disorder to express emotions.

## Lack of Clarity in Knowing One's Own Emotions

In an interesting contradiction to the above often frank and illuminating discussion on why sadness and anger were inhibited, participants often discussed how, in the past, they lacked clarity in what emotions they were feeling. For example,

Participant 8: *'that you can't do this and you'll not be able to do that, and what have you, so, I suppose that's been part of me not being able to, know my own emotions really as well'.*

Participant 4, as discussed earlier, grew up within a loving, responsive family, but sadly she had two significant traumas in her teenage life. However, she discussed that she had to suppress her emotions because of physical health problems. At no time in the interview, did she give the impression that she was not able to identify her emotions and indeed, spoke of her anger and sorrow at certain events in her life. Through the analysis, the interviewer was left with a sense of how participants were often unsure about their emotional states, but this was not the same as not knowing their emotional states. Across the interview, the interviewer was careful in assisting the interviewee to feel safe in their discussion, and this seemed to assist in their discussion of their emotions.

Within the analysis, negative case comparison was used to promote theoretical development. One participant spoke of confusion with regards to her emotions and through the analysis, the process of gaining clarity of one's own emotions appeared to be on a continuum. As discussed earlier, participant 4 witnessed a high level of anger

whilst growing up and was often ridiculed when she expressed or showed emotion, and within the interviews she discussed a decreased clarity about her emotions. For example:

Participant 4: *'I don't know that I feel scared, or that I'm frightened sometimes, I just know I'm really stressed, or I'm really angry about something someone's done, but it doesn't occur to me at the time that behind all that is something really scared me...'*

The influences from growing up were hypothesised to have led to a lack of clarity about her emotions. However, even here, within the discussion, participant 4 was able to pinpoint emotions within her life, such as feeling anger at mealtimes about her brother's behaviour.

## **Over-Control of Emotions**

As has been discussed on a number of occasions, all the participants shared how they 'over controlled' or suppressed their emotions. Within the analysis, the participants revealed how they had a number of strategies that were used to suppress or control their emotions. The two principal strategies were the actual eating disorders and other, more behavioural, techniques that were used to control their emotions. These included strategies as 'masking', 'hiding away' and 'using other situations to facilitate emotional expression'.

A number of participants discussed how they would mask their emotions to stop them from being expressed/ shown. Again, it was interesting how, upon reflection,

participants' spoke of how they did not have emotions, but then came to realise that they did have emotions, but just did not express them. For example, participant 11 stated:

*'I suppose I was just sort of didn't have any emotions about, well I did, but I never showed them, never, I kind of masked it all and brushed it under the carpet...'*

Another common used technique was to hide away from other people when feeling negative emotions. This isolation technique was discussed by participant 1:

*'if I'm upset I'm crying, but I try and, I do that on my own, I don't really show it very much, unless I'm really upset, erm, but I don't talk about my emotions very much, I find that very difficult to do.'*

Likewise, participant 9 discussed how she would hide herself away when upset.

Participant 9: *'If I was upset, then I'd just go up to my room and just be in my room on my own, I wouldn't talk to anybody.'*

As further evidence of participants acknowledging their emotions and trying to find ways of expressing them was revealed by participant 8. She discussed how she was aware of her own emotional state, but was not able to share it with anyone. Therefore she chose to use a more 'acceptable' means of expressing her emotions.



Participant 8: *'if I feel sad about something I'll watch a weepy film, or something daft like that, at least you know I can let the tears fall now'*.

## **Eating Disorder Symptoms used to Suppress Emotions**

The most striking example of the over control of emotions came when the relationship between emotions and eating disorder symptoms were discussed. As has already been touched on already in the discussion of the results, participants were aware of this relationship to varying degrees, and were especially aware of how weight loss appeared to rob them of emotional experience. Within the memos, this feature of the results was reflected upon and it was considered that this participant group were in a prime location to reflect upon these processes. They were still very close or in the midst of struggling with their eating disorder, but were sufficiently nourished not to have the blanket suppression effect of restricting food intake. It was the opinion of the researcher that this gave an important insight into the relationship between the symptoms and emotional regulation. It was very difficult for the researcher to disentangle his clinical experience from his analysis. Throughout the analysis, the researcher used memos to aid self reflection in order to try and keep the influence to a minimum. In saying this, it is likely that the researcher's clinical experience did have an influence and it is hoped that this allowed for a more detailed analysis and theoretical development.

This total suppression of emotion was discussed by a number of the participants. For example,

Participant 9: *I feel really kind of like felt numb like some of the time, erm, like you're just focused on like food so nothing else really matters so it just feels you're like ....?? So I didn't really feel anything.*

Also, participant 11 discussed how she was aware that all of her emotions became suppressed when at her lowest weight. For example:

Participant 11: *'Erm, when I was at my illest, you kind of don't have any....'*

It was reflected that these types of emotional suppression/ over control was very much associated with restricting sub-type of anorexia, and it appeared to play as a primary avoider of emotion. The interviewer was aware of the literature that discussed how restriction plays this role of a primary emotional avoider and this seemed to fit with the data being discussed by the participants. However, unlike the previous literature, the participants helped to develop a new narrative about this primary avoidance of emotion, in that; it appeared to be driven by a desire to inhibit anger and/ or sadness (as discussed previously). For example, participant 2 discussed how restriction was induced by anger, but if there was any further anger, this was 'removed' by vomiting.

Participant 2: *'...I'm upset or angry or both then it does affect my eating, erm, both because if I'm angry and upset, I don't feel that I can eat, physically, but also erm, that yeah I can get my anger out by erm, by not eating but also with inducing vomiting, I do that when I'm angry...'*

This participant shared how, when there was too much anger, she was able to remove it by vomiting. This 'secondary avoidance' of anger was echoed by many of the participants and it appeared to be a common emotion regulation/ suppression strategy, for people who vomited, when there was 'too much emotion'. As discussed above, it was evident from the analysis that people who vomited often came from backgrounds that often fluctuated between episodes of anger and a lack of emotion.

The distinction between the primary and secondary avoidance of emotion can be clearly seen by the following quote from participant 8. This participant was able to reflect upon the different narratives about emotion avoidance that often occurred for herself and her fellow clients in the group therapies at the eating disorders unit.

Participant 8: *'...it's like someone who's in the group who's bulimic, you know when she gets annoyed or frustrated she wants to binge and it works the same if you're anorexic, eating disorder, it's, the longer you internalise it the more you starve, because you get your own power from bulimia, it's a case of the same thing but the opposite so that they binge and not starve...'*

With regards to the other emotions, sadness, under the guise of depression, was also an emotion that was 'managed' by eating disorder symptoms. Almost all of the participants discussed how depression and disordered eating were linked in a both cause and effect way. However, the analysis also revealed how the participants often used restriction to feel better about themselves and this appeared to be associated to a lack of disgust towards the body (to be explored later) and pride at the low body weight. Therefore, it seemed that restriction appeared to be related both to a search for

feeling better about one's body and having pride in their 'successful' weight loss. This is shown in the following quote.

Participant 11: '... all you can think about is food, so, yeah, sadness is like the big thing, when I was sad it's got to be restriction ....' Whilst participant 4 discussed how she used restriction to feel better about herself, '*...It's more hopeless, more depressed. I used to get very high, well when I was dieting, eating on a diet, I used to feel a bit positive about life....*'

## **Emotional Coupling**

Although the title of this category was a researcher constructed title, the participants often discussed and alluded to how they managed their emotional states by using other, more acceptable, emotions to suppress or inhibit their emotions. This category, as much as possible, was grounded in the data but it was inevitable that some inference was taken from the data and how people presented in the actual research interviews. This process will be as transparent as possible so that the reader will be able to follow and understand the analysis for this section. As discussed above, the researcher may have been influenced by previous clinical experience prior to the research interview. However, the notion of coupling of emotions was a new topic for the researchers who only explored this within the literature once the analysis has been completed.

As has been discussed above, anger and sadness appeared to be directly related to the use of eating disorder symptoms to either avoid and/or suppress the particular

emotion. Related across these discussions, either at the time or later in the interview were how they disliked their body and they had a strong desire to loose weight. It became apparent in the interviews that this process almost seemed to happen in an automatic way, where the participant was becoming angry and then would resort to restriction and/ or bingeing/ purging. It is difficult to give quotes to support this process, but participant 9 appeared to demonstrate this automatic coupling within the dynamic of the interview. This can be seen in the following quote:

Interviewer 1: If something makes you angry for example, was that something you could express?

Participant 9: *Erm, I could on somethings, yeah, erm, yeah I could get angry but erm, not about like, I don't know, I could get angry at anything but then any time anyone commented on like my appearance or something, I was just a bit upset and I suppose I was, not angry, but annoyed that I looked like I did in a way, and I wished I could just change how I looked completely.*

The context for this question was discussing anger in general and it was not related to her physical appearance. As can be seen in the above quote, it was striking that participant 9 quickly turned the conversation to her physical appearance, how angry she felt about herself and how this seemed to be linked pathologically high body dissatisfaction. Within the memos, it was felt that this participant was alluding to how anger may well be coupled with disgust, and this would explain in vivo coupling that was apparent in the interview.

Other examples of emotional coupling seem to be between the anger and sadness. A number of participants discussed how, when they felt angry, this was turned into sadness so that she could cry. Within the memos, the notion of where this anger was left was discussed, but this was not answered within the data for this study.

Participant 9 discussed

‘...If get angry I wouldn’t say anything, just like get sad, and that would be it....’

Also, participant 1 discussed: ‘.....*Anger, I don’t show that at all. I show that by being upset or crying or ..., being moody.....*’

It is hoped that this category gives a feel of the interviews, where participants gave evidence, both in their answers to questions and in the dynamic of the interview, that they were coupling emotions.

### **‘Letting the Emotions out’**

Over the interviews and through the analysis, it became apparent that certain emotions were regarded as being acceptable to be ‘let out’ or not suppressed. Within the spirit of this study questions were asked about all the basic emotions, including disgust and fear. When asking participants about their perception and experience of disgust, it became apparent that there was some confusion in the use of the term disgust, as its term is often used in a colloquial way to state anger at an object or person (e.g. ‘I am disgusted that s/he acted in that way’). Therefore, within this study, the interviewer defined the emotion disgust within the interview by asking about disgust/ repulsion as

an emotion. This did seem to clarify the discussion in the interviews. Within this section of the results, the principal emotion that participants were able to express was disgust, especially towards themselves and their bodies. Participants discussed how they 'hated their bodies' and this often made them feel disgusted. For example:

Participant 11: *'...I suppose, that's part of it like, I'm just disgusted with my body before, you know, before I started losing weight, like hated my bum, my legs were just like horrible, I hated em, and like if I could have like chopped them off and had someone else's I would have done, and erm, I hated how, I hated my face, I hated how, I just hated how I looked all around, I just you know, I just, yep, just hated myself, there was nothing that I really liked, the only thing I had any confliction like my arms and the top, and from like there to there, that was the only part of my body that I liked, the rest of me I just hated...'*

Whilst participant 2 stated: *'...when I weighed 10 stone, when I didn't like how I looked, I suppose I was perhaps disgusted really because I never had weighed so much, it wasn't erm, wasn't just how my body shape looked, but that I had allowed myself in the first place to get to that way. I wasn't fearful of it at all, and I wasn't angry about it, and I wasn't sad about it, but yeah I suppose having said that I was very disgusted towards my body....'*

Within the analysis, this proved to be very interesting as participant 2 was able to go through the emotions and be very sure that she was feeling very disgusted with her body and this was acceptable. Within the analysis and the associated memos, it was reflected upon this elevated emotion of disgust towards the body, and how this fits



with the functional view of the emotion of disgust. According to the literature (e.g. Oatley, 1987), disgust is regarded as the emotion that creates a psychological (and physical) distance between the self and the object of disgust. It became apparent in the interviews that the emotion of disgust was often an important driver for avoiding food and for dieting (as with participant 2 and participant 11). It was hypothesised that this was the actual process of creating distance from the object(s) of disgust. Participant 9 discussed how she felt 'weak' when this distance was traversed (i.e. she ate some food). For example,

Interviewer: What about the emotion of disgust/ repulsion?

Participant 9: *'I felt it with myself sometimes....'*

Interviewer: How do you mean?

Participant 9: *'....Just like if I'd eaten something that I didn't intend to eat or something, felt like I was weak and disgusting....'*

In the interview, the emotion of fear of specifically asked about as it has been regarded as such an important emotion for the eating disorders. All of the participants discussed having fear in their lives, and for some participants that was a clear developmental pathway for the having increased fear in their lives. For example, participant 4 discussed how her past with a violent ex-husband had left feeling very fearful.

Participant 4: *'....my husband broke my nose and put me in hospital and I think from there it really just went downhill. I was already frightened of him anyway because he beat me, but now I was petrified...'*

However, most of the participants discussed how fear had developed in their lives *because* of the eating disorder. They discussed how they had a fear of becoming fat or of food because it makes them fat. It was reflected upon in the memos, conversations with colleagues and in the interviews that the participants were actually fearful of having disgust towards their bodies. This process can be seen in the following quotes.

Participant 1: '*...fear, yeah, I feel that a lot, yeah. Especially this illness, there's a lot of fear with it.*'

Participant 6: '*... like say like fear and anxiety towards food, it kind of comes with it; I wouldn't say that I was like before....*'

Participant 9: '*... Yeah, probably, a lot of it's to do with food. If I wasn't scared of eating and things then I wouldn't have started like fearing gaining weight and ...*'.

### **3.5.3 Summary of Perception and Management of Emotions within Anorexia Nervosa**

Across this section of the results, participants shared how they had a number of marked difficulties with certain emotional states, namely anger and sadness. There were a number of beliefs that led to these difficulties and they appeared to result in the interviewees being very guarded in their expression of these emotions. Indeed, the analysis revealed that this avoidance of emotions almost happened on an automatic basis with the person realising that the emotion had been experienced and then

avoided once the eating disorder behaviour had 'kicked in'. As discussed above, participant 8 discusses how she has virtually no recollection of anger being avoided until it has already happened. For example: '*...Every time I feel angry or what have you, or life's not being fair to me, that I'm not going to eat, because then, it just clicks in so quick you know that, and then you go down again, and start all over again...*'

This felt like an important observation and it made the researcher reflect upon this process of channelling anger onto either the body or onto food. Through this interview with participant 8, the researcher did not continue with questioning about this topic as it did not click until after the interview the significance of the statement. The analysis also revealed a whole host of poor meta-emotional skills that prevented a healthy relationship with their own emotions.

### **3.6 Discussion**

As discussed in the results section, the data from this study on the perception and management of emotions appears to offer significant insights into the understanding of the eating disorders. One of the most significant factors that came out of the analysis was the fact that the participants were able to talk, discuss and reflect on their own relationship with their emotions. Given the research that has demonstrated alexithymic tendencies in people with eating disorders, this study appears to challenge the notion of monolithic alexithymic difficulties in this client group. Related to this point is how there has been a lack of a basic emotions perspective in the research, and in particular, the theoretical understanding of anorexia nervosa. This study's findings demonstrated evidence of different relationships with each of the basic emotions within anorexia nervosa. Again this finding is in keeping with Waller et al. (2003) and Geller et al. (2000), but this study's data highlights some of the particular difficulties

attached to certain emotional states. The emotions of anger and, to a lesser degree, sadness were discussed as being toxic, shaming and were inhibited for the participants. Anger seemed to be particularly toxic, and it did appear to play a key role in the use of eating disorder symptoms to suppress anger and sadness. However, there were differences in the beliefs about these emotions and why they should not be expressed. For anger, it was regarded as being 'toxic' and 'dangerous', and it would harm both the participant and other people, if it was allowed to be expressed. For sadness, the predominant belief was one of 'weakness'. Across the analysis, it was highlighted how people with anorexia did not regard themselves as being entitled to be a human being with emotions, or that being emotional would lead to rejection from significant others. This finding fits with the perspective of Geller (2000) who argued that people with anorexia suppressed anger to protect interpersonal relationships. The analysis also revealed how certain emotions were almost automatically suppressed by the eating disorder and is perhaps evidence that there was link between certain emotional states and eating disorder symptoms that works outside conscious cognition. An interesting aspect of the analysis was category of coupled emotions. It seemed that for some of participants there was a relation between anger and disgust, especially body disgust. Although this data was collected and initially analysed before any significant related readings and involvement in any other similar research, this finding is in keeping with the predictions from the SPAARS-ED model. Within this model, it is argued that disgust towards the self is a much less toxic emotion, and therefore, it was used to suppress the more ego-dystonic emotion of anger. Furthermore, this study highlighted how there appeared to a significant amount of anger within the participants, and this was related to their own developmental histories. Again, this was in keeping with the SPAARS-ED model and this study's

findings suggest that this 'anger within' may well be present for anorexia nervosa. Indeed, many of the participants discussed how they would engage in their eating disorder behaviour when they felt anger.

The notion of certain emotions feeling toxic, dangerous and being egodystonic is very much in keeping with the model proposed in the introduction. The SPAARS-ED model also discusses how each of the basic emotions develop in a modularised manner (akin to many other cognitive constructs), and this development occurs in relation to environmental influences. According to the theory, when children experience events and interactions that lead them to view their emotions as being wrong, they split off and become ego-dystonic. Through this process, their emotions become alien and very frightening. This theory seems to have been supported by this study, as participants were able to identify their emotions, but were scared of expressing anger and sadness (for the reasons identified above). It is also noteworthy that the data strongly revealed how the eating disorder was used to suppress emotions, and it became apparent in the analysis that the difficulties with feeling and identifying emotion were often experienced when people were at low weight. This finding led to the hypothesis that alexithymia maybe more due to compromised cognitive functioning than an implicit difficulty with identifying emotions in anorexia nervosa. This finding is in keeping with the innovative study by Serpell and colleagues (Serpell et al. 1999) where she analysed 'friend or foe letters' from people with anorexia nervosa. One of the findings that came out of this study was how restriction could suppress painful emotions (a positive of anorexia nervosa), but it also went too far as it suppressed everything and left the person without any feeling (a con of the anorexia nervosa). In reflecting upon the SPAARS-ED model and the issue of overwhelming

emotions, it is important to note that there are times when emotions may not necessarily split off and become ego-dystonic. A key factor within this process would be the types of attachment that the child may have with their care giver and also the type of experiences as the child grows up. These experiences may actually be corrective for the person concerned and it may allow the integration of emotion into their sense of self. In fact, this could be regarded as a core task of therapy (e.g. Greeberg 1989; Power and Dalgleish, 1999).

When the emotion of disgust was investigated across the analysis, the data suggested that it was very salient for this group of participants. The ferocity of their disgust was startling, and participants were able to express this emotion quite freely in the actual interviews. The emotion of disgust was linked to body dissatisfaction for the participants, with fear coming in as a secondary emotion. The emotion of fear was discussed very clearly as a product of the eating disorder and this did seem to be related to the fear of being disgusted about themselves, their bodies and of food. Again this finding is very much at odds with the perspective of Pallister and Waller (2008) who argues that eating disorders should be regarded as an extension of anxiety disorders. However, findings from Davey, Bickerstaffe and MacDonald (2006) found evidence for a facilitatory relationship between disgust and fear/ anxiety, using an experimental methodology. They found that induced disgust led to an increase in negative interpretational bias which maintained levels of anxiety in their participants, and these authors argued that this provides evidence for the causal role of disgust in anxiety psychopathologies. This confusion between fear/ anxiety and disgust has the potential to be an important theoretical point in the understanding of eating disorders, because the long reported 'fear of food' or the 'fear of becoming fat' may actually be



disgust reactions, and hence, may account for the high co-morbidity between anxiety and eating disorders, and this perspective would certainly fit with this study's data. Continuing within a co-morbidity perspective, Overton et al. (2008) and Power and Tarsia (2007) found that disgust, in particular, self-disgust, played a significant role in depression. In light of this study's data, it may well be that disgust may play a significant role in the co-morbidity between eating disorders, in particular, body dissatisfaction, and depression.

In the first section of the results, the analysis revealed that participants felt that they were often brought up in an environment (home and/or school) that produced overwhelming emotion. For the participants that grew up where anger was the most reported salient emotion, there appeared to be much more difficulty with emotions, in particular, anger. These participants tended to binge and vomit much more than the other participants (as was the case with participant 6). Theoretically it is significant that participant 3 witnessed 2 angry confrontations in her family, but spoke much more of a non-emotional environment at home while she was growing up. This gave the researcher the sense that there was almost a dose effect, in that, as overt levels of anger increase so does the need for more extreme measures to cope with their emotions (which were postulated to be anger). Participant 10's apparent utility of anger to facilitate care on the unit was also interesting as she seemed to be a very angry young woman (a view echoed by staff on the unit). In many ways, this anger seemed to be her way to protect against feelings of sadness and fear. However, in saying this, it was striking that she appeared to 'contain' a lot of anger about her step father and, it was hypothesised that she was also angry about the loss of her mum. Her mother was her main confidant and she spoke of her being the only person with whom



she could share her emotions. Again, with this much suppressed emotion, it is highly significant that she started her bingeing-vomiting restriction shortly after her mother died. These theoretical points do appear to allow for the further development of the model proposed by Waller and colleagues (e.g. Waller et al, 2007), where they discuss how restrictive eating is a primary avoider of emotion, whilst bingeing and vomiting was a secondary avoider of emotion. According to this study's data, the key emotion appears to be anger that moves people between these two strategies.

The other mainstay of overwhelming emotion was how events seemed to generate a significant amount of emotion for participants which was not expressed or managed at the time. The key feature of this part of the analysis was how this emotion was 'too much' and perhaps, developmentally inappropriate, as it was hypothesised within the memos that the participants were young when faced with challenging emotions. The most striking example of this was shared by participants 1 and 5 who were moved around a number of times as a young child and felt 'resentful'. As discussed above, it was felt to be significant in reflecting throughout the analysis, that this anger was maintained in the participants once they had reached adulthood, and it was wondered if the anorexia also acted as a 'guardian for the this high level of anger within' (for the reasons identified above).

The other main theoretical point that came out of the data was how the early environment seemed to be largely devoid of emotions. Even within the families where there was a high level of anger, the emotional backdrop was often emotionless. A majority of participants discussed how they had family members had poor meta-emotional skills and it was hypothesised that these influences would have had a

profound impact upon the development of these skills in the participants as children. Likewise, the use of active strategies to deny the experience of an emotion appears to have been particularly toxic for the developing child as their emotions have not been validated. Therefore, it seemed that for the participants whilst they were young had a vast array of difficult and challenging experiences that left them with too much emotion (particularly anger and sadness), but were not taught the skills to manage and express these emotions. This study's findings on poor level of meta-emotional skill adds further evidence to the literature that has discussed how caregiver's empathy appears to be related to early attunement to emotional states in the self and others (e.g. Valiente, Eisenberg, et al, 2004; Eisenberg et al. 1998; 2001) and how emotional inhibition in childhood mediates the relationship between childhood emotional invalidation (as per Linehan, 1993) and acute psychological distress in adulthood (Krause et al. 2003). This development of emotional awareness through interactions with caregivers has been discussed fully in a number of classical theories, ranging from psychodynamic (e.g. Klein, 1952), modelling (e.g. Kugiumutzakis et al, 2005) and attachment theory (e.g. Bowlby, 1969) and it is beyond the current scope of this thesis to consider these large theories in detail. However, this study's findings are consistent with dialectical behavioural therapy's perspective on invalidating environments (Linehan, 2003) and the SPAARS idea of ego-dystonic emotion (Power and Dalgleish, 2008).

There are a number of criticisms of this study that need to be highlighted. The main one concerns the participants in this study. The participants were recruited from one site and this may have lead to a bias in the type of data collected. However, this site was deliberately chosen as it was the region's eating disorder unit and, hence,

accepted people with severe eating disorders. It was felt that the findings from such a group of participants would have *theoretical* significance for the consideration of anorexia nervosa in general. As can be seen in the participant's section, there were a number of women who took part in this study who were quite a bit older than the expected age of the participants (e.g. in their 40s). This may have had a bearing on the results, but it was felt in the design of this study that having an everyday AN group was important. Also, having a variety of participants at different stages of their 'illness' allowed for a fuller investigation of emotions in anorexia nervosa. Likewise, it could also be argued that recruiting only 11 participants would have comprised this study's ability to achieve data saturation. This may be the case, and the recruitment of a few more participants may have extended the findings a little further. However, in keeping with Dey's point (Dey, 1999), qualitative studies rarely use exhaustive coding, and categories are *suggested* by data, rather than saturated. Dey proposes that qualitative studies should seek to have theoretical sufficiency, and this study certainly felt like it had sufficient data to allow for the development of a grounded theory. Finally, it could be argued that the researcher's clinical experience may have unduly influenced the analysis of the data. It is true that the researcher used his knowledge within the analysis process, but the analysis was well grounded in the data. Also, it is the contention of the researcher that this experience allowed for a much fuller analysis that otherwise could not have been achieved. This point was also discussed by Glaser and Strauss (1967), who argue that the researcher must have a perspective to analyse the data.

In conclusion, this study has examined the perception of the basic emotions within participants with anorexia nervosa. This study has also looked at the socio-emotional

environments within which the participants grew up. Anger, and to a lesser degree, sadness were identified as being problematic for the participants, with them both being connected to the actual eating disorder symptoms. Anger seemed to be a key emotion that appeared to act in a dose like manner, in that, higher the levels of anger more likely there would be bingeing and vomiting. Disgust was identified as another key emotion and participants discussed a high level of disgust towards their bodies. Interestingly, fear was put as secondary to the eating disorder, and participants felt that fear and anxiety were a consequence of the eating disorder. Early history was marked with a poverty of emotion, whilst some participants experienced episodes of overwhelming emotion.

## **Chapter 4: The Relation of Anger to Disgust: The Potential Role of Coupled Emotions within Eating Pathology**

### **4.1 Introduction**

The results from the last chapter identified that certain emotions were perceived to be particularly challenging for people with anorexia nervosa. Anger and sadness were found to be the most 'toxic' emotions for participants, and anger seemed to be the crucial emotion that appeared to move participants between the two symptom clusters, such as restriction and binge-vomiting. Furthermore, there was some data from the qualitative study that suggested that the emotion of disgust was important for these populations, and indeed, it was reflected upon in the results that the level of self-disgust was quite striking in the accounts and transcripts from the interviews.

However, unlike the emotions of anger and sadness, disgust did not appear to be ego dystonic, as the participants were able to discuss and reflect upon this emotion for them. Another potentially important finding from this study suggested that the emotions of anger and disgust were acting in a coupled way, and this finding offers some evidence for the SPAARS-ED model proposed in the introduction.

This finding of the toxicity of anger fits with the findings from Waller, Babbs, Milligan, Meyer, Ohanian and Leung (2003) who reported that women diagnosed with a DSM-IV (APA, 1994) eating disorder had higher levels of state anger and anger suppression compared to a control group. Higher trait anger scores were associated with bingeing and vomiting and anger suppression was associated with laxative use. Geller, Cocknell, Hewitt, Goldner and Flett (2000) reported that women

with a DSM-IV diagnosis of anorexia had higher levels of silencing the self schemas and suppressed anger compared to controls. These results were interpreted as evidence that negative emotions are suppressed in order to protect interpersonal relationships around the person with anorexia nervosa. Geller *et al* also found evidence for the complexity in the expression of emotions, as they found inhibited expression of emotions was related to body dissatisfaction. Related to Geller *et al*'s results, Hayaki, Friedman and Brownell (2002) found that limited emotional expression predicted body dissatisfaction in an analogue sample (when BMI, non-assertiveness and depressive symptoms were controlled for in their analysis). In emotional terms, it is a significant drawback that neither of these authors considered the emotional underpinning to body dissatisfaction. Miller (1997) discussed how the emotion of disgust is associated with the rejection of foodstuffs or undesirable personal characteristics. It would seem that the most fitting emotion behind body dissatisfaction would be disgust. In keeping with this point, Troop, Treasure and Serpell (2002) found that people who were symptomatic of an eating disorder were more sensitive to disgust than the controls (comparing ill, remitted and control participants within their methodology). Interestingly, this disgust sensitivity was particularly pertinent for the human body and of certain food stuffs.

This growing evidence that the emotions of anger and disgust may be valenced within people with eating disorders has not, so far, been considered within the eating disorder research literature. On the back of this current and previous research it is argued that the emotions of anger and disgust may act in a 'coupled' way within females with bulimic symptoms (F-BN). It would appear that considering the salience of anger and disgust in isolation for individuals with eating disorders, particularly

bulimia nervosa, has been too simplistic, and it has neglected the theoretical advancements in understanding emotions and their regulation. Furthermore, the lack of considering co-morbid difficulties (especially anxiety and depression), within a covariate analysis, in the research on emotions in eating disorders has prevented the investigation of whether certain basic emotions (e.g. disgust) potentially underpin eating disorders and other co-morbid disorders (e.g. depression). These points form the research questions for this study and test one of the main predictions of the SPAARS-ED model as proposed in the introduction.

## **4.2 Aims/ Hypotheses**

This study has four aims.

- Exploratory Aim - 1: To investigate the profile of the state and trait emotions that are experienced by a group of females with probable bulimic style eating pathology (as measured by the Basic Emotions Scale, Power, 2006).
- Exploratory aim – 2: To investigate, in more detail, the levels of trait anger present in the F-BN group, using the trait anger measure from the STAXI (Spielberger, 1996).

## **Hypotheses**

- First Hypothesis: Participants within the F-BN group will have significantly higher levels of state anger (as measured by the State anger scale from the STAXI; Spielberger, 1996) in comparison to matched controls.
- Second Hypothesis: Participants within the F-BN group will significantly higher levels of anger (again measured by the State anger scale from the STAXI) when compared to matched controls following an anger induction



exercise, whilst co-varying for anxiety and depression (as measured by the Hospital Anxiety and Depression Scale; Zigmond & Snaith, 1983).

- Third hypotheses: Participants within the F-BN group will have a significant increase in the emotion of disgust (as measured by the Disgust Sensitivity Scale; Haidt, McCauley and Rozin, 1994) when compared to matched controls following an anger induction, whilst co-varying for anxiety and depression (as measured by the Hospital Anxiety and Depression Scale; Zigmond & Snaith, 1983).
- Fourth Hypothesis: Participants within the F-BN group will have significantly lower expression of anger (as measured on the STAXI), when compared to the matched controls.

## **4.3 Method**

### **4.3.1 Participants**

#### Screening Stage

Participants were recruited from the school of psychological sciences at the University of Manchester. In total, 321 female participants consented to take part in this study. The data collection was undertaken by an undergraduate student (AH). Participants were recruited via 1<sup>st</sup> year research methodology lectures where 112 students consented to filling out the first stage questionnaires. These students received course credits for participating in this research project. The remaining students were registered to study other courses (N=209) and these were invited to participate via an email sent out to all students at the university. At the time of the research, 26,160 undergraduate students registered with the University of Manchester and there was a system at the university where researchers could send an invitatory email to them to participate in the research. The university is multi-cultural and has students from a

variety of social-cultural backgrounds. The initial email provided a brief introduction to the study and explained the researchers were looking at emotions in people with difficulties with their eating. It explained that the study was in two stages, with the first stage being 3 questionnaires, and the second stage being a mood induction study. Finally, the email also gave information about with the incentive of a prize draw for a 256MB MP3 player USB data stick for everyone who took part in the first stage of the study. Although participant expectations for this study were not recorded, it was envisaged that they may have spent time reflecting on what type of mood induction this study was going to use (this was not detailed in the participant information sheet).

The email gave a link to a website that contained the screening questionnaires and a consent form to take part in the second stage of the research. These questionnaires were the EAT-26 (Garner and Garfinkel, 1979) and a brief screening questionnaire for bulimic symptoms (For a fuller discussion on the EAT-26, please see below). These questions asked whether the participant had ever gone on eating binges where they felt that they may not be able to stop, or if they had ever been sick (vomited) to control their weight or shape, or if they had ever used laxatives, diet pills or diuretics (water pills) to control their weight or shape and, finally, if the study participants had ever been treated for an eating disorder? Previous research has demonstrated that scores above 20 on the EAT-26 tend to suggest that there is a significant likelihood of eating pathology, especially if this presented with significant eating disorders symptoms (e.g. Garner and Garfinkel, 1979). Within the Screening stage, 321 students from the University of Manchester responded to the e-mail and filled out the above questionnaires. The mean age was 20.35 (SD=3.13). Also, as this was a study that recruited a sub-clinical participant group, diagnoses were not relevant.

### Experimental Stage

For the experimental stage, 25 female participants with eating pathology (F-BN) were selected for this study. As detailed above, the F-BN group all scored above 20 on the EAT-26 (Garner and Garfinkel, 1979) and they all indicated that they had symptoms of either bingeing, vomiting or abusing laxatives. A control group of 25 participants was formed from participants scoring below four with bulimic behaviours absent. This cut off was chosen as it ensured that females recruited in the control arm of this study would have very little eating disorder cognitions or behaviours. It has been noted by many authors that a significant proportion of young females demonstrate some problematic eating behaviours or cognitions (e.g. body dissatisfaction; Grogan, 1999) and it was decided that allowing some score on the EAT-26 would prevent an over exclusion of potential participants. The descriptive data from these two participant groups is shown below in table 1.

|  | Mean (SD)<br>F-BN<br>N = 25 | Mean (SD)<br>Control Group<br>n = 25 | Probability |
|--|-----------------------------|--------------------------------------|-------------|
| Age  | 20.28<br>(2.71)             | 21.24<br>(5.40)                      | .431        |
| EAT-26   | 29.52<br>(8.59)             | 1.88<br>(1.39)                       | .001        |
| Body Mass Index  | 21.94<br>(5.56)             | 21.09<br>(2.15)                      | .476        |
| HADS-A (anxiety)   | 6.92<br>(2.37)              | 4.60<br>(1.52)                       | .001        |
| HADS- D (depression)   | 3.44<br>(1.4)               | 2.04<br>(1.01)                       | .001        |
| Number of participants that reported bingeing in the last 6 months | 22                          | 0                                    |             |
| Number of participants that reported vomiting in the last 6 months | 17                          | 0                                    |             |
| Number of participants that  | 9                           | 0                                    |             |

|   |   |   |
|---|---|---|
| reported using laxatives in the last 6 months   |   |   |
| Number of participants that reported ever seeking help from a healthcare provider for their eating disorder | 5 | 0 |

**Table 1:** Shows the demographic data for the participants in this study

#### 4.3.2. Questionnaires and Other Instructions

##### *Eating Attitudes Test (EAT-26) (Garner and Garfinkel, 1982)*

The EAT-26 is a self-report measure designed to assess symptoms and attitudes that have been shown to be present in individuals with eating disorders. It is an extensively used and standardised measure. EAT-26 is not a scale that can diagnose an eating disorder by itself, but it is an excellent screening tool that has been shown to detect probable cases of eating disorders, especially when used with a brief symptom checklist. As discussed above, this type of symptom checklist was incorporated into this study (i.e. binge, purge or the use of laxatives). This scale has good test-retest reliability over a two-three week period of 0.84 (Carter and Moss, 1984) and a strong internal consistency, with an alpha of 0.94 (Garner et al, 1982).

##### *State-Trait Anger Expression Inventory-2 (STAXI) (Spielberger, 1996)*

The STAXI is a 44 item self-report questionnaire used as a tool for measuring five different types of anger or anger related behaviours. As with the EAT-26, this is a widely used scale and it has been extensively used in published research. The state anger scale assesses the 'here and now' intensity of anger, whilst the trait anger scale measures how often a person generally feels angry. The state and trait anger scales have demonstrated good psychometric qualities with the state anger scale having a .93 alpha co-efficient and the trait anger scale having a .87 alpha co-efficient (Speilberger, 1996).

The anger expression and anger control scales assess four different anger-related traits which are: the expression of anger towards other people and objects (anger expression-out); holding in or suppressing angry feelings (anger expression-in), controlling angry feelings by preventing the expression of anger towards other persons or objects in the environment (anger control-out) and controlling suppressed angry feelings by calming down or cooling off (anger control-in). The fifth subscale is the anger expression index which provides a measure of anger based on the anger expression and anger control scales. The anger expression subscale have demonstrated good psychometric qualities with alpha co-efficients of .80 (males) and .77 (females).

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

This HADS questionnaire consists of seven items relating to anxiety symptoms and seven pertaining to depressive symptoms. It is a widely used and validated measure of depression and anxiety. This measure has been widely used in clinical research and a relatively recent review cited that it has been used in 747 studies by May 2000 (Bjelland, Dahl, Haug and Neckleman, 2002). It has good internal consistency on both of scales, such as 0.83 on the HADS-D and 0.82 on the HADS-A (Bjelland et al, 2002). The same review by Bjelland et al, 2002 also noted that it had good correlations with other widely used measures, such as the Beck Depression Inventory, which ranged from 0.49 and 0.83.

*Basic Emotions Scale (BES, Power, 2006)*

The Basic Emotions Scale (BES) (2006) was originally constructed from 30 emotional terms, which were made of 6 terms related to each of Oatley's (1987) 5 basic emotions of anger, sadness, disgust, fear and happiness. These 30 terms were reduced to 21 (4 per emotion, with anger having 5 items) following factor analysis on data from a student sample of 219 participants. After the redundant terms were excluded, the subscale showed a high degree of internal consistency, with Cronbach's alpha ranging from 0.79, on the happiness subscale, to 0.84 on the sadness subscale between the remaining four items (Power, 2006).

Participants are asked to rate each of the terms on a Likert scale depending on how they have been feeling over the last week, with 1 indicating that they have not felt like this at all and 7 indicating that they have felt like this all the time, enabling a measure of each emotional state. This is repeated in subsequent sections of the questionnaires, with subjects responding how often they feel like that in general, which is indicative of trait-like levels of each emotion. Therefore, this enables an objective measure of state and trait emotion experience.

*Disgust Sensitivity Scale (Haidt, McCauley and Rozin, 1994)*

This is a 32-item scale designed to assess sensitivity to items of potential disgust. Participants are presented with statements about potential disgust-eliciting items, such as 'It would bother me to be in a science class and see a human hand preserved in a jar.' The questionnaire is split into two parts. In the first 16 questions, the participant indicates true or false responses. The second set of questions asks how disgusting specific situations, actions, etc, are to the respondent (e.g. A friend offers you a piece of chocolate shaped like dog poo). There are also eight sub-scales within the



questionnaire, each containing four items. The sub-scales are animals, body products, death, envelope violations, hygiene, food, magical thinking and sex. Haidt, McCauley and Rozin (1994) report good psychometric data for this scale, with a combined alpha co-efficients of 0.84 (across 4 different samples).

*Modified Velten Mood Induction Technique (Velten, 1968)*

The Velten technique was developed to induce a specific mood using 60 statements written in the first person. The participant reads the statements and is asked to feel a mood similar to the one they have just read in the statement. Based on this methodology, participants were asked to recall an event that happened to them recently that made them feel angry. For each participant, they were asked to think about what happened, the people involved, what it was that made them feel angry and to remember how angry they felt at the time of the event. This took place in silence over the space of 3 minutes. After the anger induction, it was checked that all the participants had managed to recall a recent example of being angry and that it had induced anger within them.

This methodology was preferred to the original Velten mood induction technique, as it has a significant benefit of enabling participants to have ecologically valid emotions that are similar to their naturally occurring emotions. The main drawback from this methodology is that it lacks the internal reliability and validity of knowing the stimuli and hence ensuring that the emotions are accurate and valid. However, all the students were recruited from the same school in the University and all had similar pressures and expectations for their work, and were all approximately the same age. Consequently, it was felt that there were no a priori reasons why either group should



have encountered more angry eliciting situations than the other group (this point is considered further in the discussion).

### *Interference Task*

This was formed from 10 lists, each containing seven items. The participant is asked to indicate which item does not belong in the list. The correct response is the item that does not fit into the same category as the other 6 items. For example, 'cushion' would be the item which does not fit in a list containing 6 other items which are colours. This task was used to allow participants to complete a non-emotive, low-difficulty task which would prevent them from remembering their questionnaires responses. Interference tasks have been shown to significantly impact upon levels of forgetting (e.g. Lustig and Hasher, 2001).

### **4.3.3. Procedure**

The data was collected with the assistance of an undergraduate student (AH). For the experimental stage, participants undertook the study in groups of 5. They were asked to sit at a distance from one other to avoid distractions. At time 1, participants completed the 22-item STAXI, BES, Disgust Sensitivity Scale and the HADS. Participants were then asked to complete the interference task, followed by the modified Velten Technique. Once in an angry mood, participants were readministered the STAXI and the Disgust Sensitivity Scale.

## **4.4 Results**

### **4.4.1 Statistical Strategy**

All statistical analyses were conducted using SPSS version 15 for Windows. Preliminary analysis was undertaken on the data to ascertain whether it met parametric assumptions, with the main variables being checked by conducting Kolmogorov-Smirnov tests (K-S tests). As is the way with a significant amount of clinical research, it was anticipated that the data was not going to be normally distributed, and this instance parametric tests would be undertaken, providing that the other two tests of parametric assumptions were met. As has been discussed elsewhere (e.g. Field, 2005), parametric assumptions are much more powerful tests and therefore, able to withstand one violation. Furthermore, the use of parametric tests would allow co-variate analyses to be undertaken, which would not be possible with non-parametric tests. The outcome of the K-S tests can be seen in appendix 4, and almost all of the variables were shown not to be normally distributed. The non-normal distribution of the scores did not change after transformations were applied to the variables. Therefore, it was decided to use the raw data scores. Furthermore, with the exception of two variables (i.e. BES disgust subscale and state anger), all the variables were shown to be homogeneous after the data was tested with a Levene's test of variance. Furthermore, all the groups were the same size, so there was no need to be concerned about the size of difference between the groups affecting the statistical analysis. As discussed above, it was decided to use parametric tests on the data from this study, with the use of one non-parametric test to confirm the analysis on the BES disgust sub scale and state anger (please see appendix 4). However, it is

acknowledged that by using parametric tests a certain amount of caution must be applied to the results, and the reader needs to consider this issue.

The analyses for the Basic Emotions Scale was undertaken by using t-tests (confirmed by Mann-Whitney U tests) and as 10 tests were taken, a correction was applied to the alpha levels to ensure that type 1 or type 2 errors were not committed. A bonferoni correction was considered, but it was felt that it would suppress the alpha level too much and thereby increase the likelihood of a type 2 error (i.e. potentially missing out on significant results); therefore the alpha level was set at 0.02. For the remainder of the analysis, the principal analyses undertaken were mixed-design ANCOVAs (due to the mixed design), with anxiety and depression scores entered into the analysis as co-variates. As there were not any comparable studies in the literature, it was designed to ascertain the power of this study retrospectively.

#### 4.4.2 *Exploratory analysis on the Basic Emotions Data*

Table 2 displays the mean and standard deviations (SD) for BES state emotion data. As detailed above, the BES measures each of the five basic emotions (i.e. anger, disgust, fear, sadness, happiness).

**Table 2**

|                                | Participant type - control or eating disordered | N  | Mean (SD)    | Probability P=0.02 |
|--------------------------------|---|----|--------------|--------------------|
| BES 1 During last week Anger   | Control Group                                   | 25 | 12.04 (3.65) | 0.065              |
|                                | Eating Disordered Group                         | 25 | 14.25 (4.50) |                    |
| BES 1 During last week Sadness | Control Group                                   | 25 | 7.88 (4.18)  | 0.045              |
|                                | Eating Disordered Group                         | 25 | 10.80 (5.17) |                    |
| BES 1 During last week Fear    | Control Group                                   | 25 | 13.16 (4.90) | 0.086              |

|  |                         |          |                 |                     |
|--|-------------------------|----------|-----------------|---------------------|
|  | Eating Disordered Group | 25       | 15.44<br>(4.26) |                     |
| <b>BES 1 During last week Happiness</b>                | Control Group           | 25       | 20.80<br>(3.31) | 0.030               |
|  | Eating Disordered Group | 25       | 18.44<br>(4.10) |                     |
| <b>BES 1 During last week Disgust</b>                  | Control Group           | 25       | 8.12<br>(3.43)  | 0.003*              |
|  | Eating Disordered Group | 25       | 12.24<br>(5.62) |                     |
| <b>BES 1 During last week Disgust (non-parametric)</b> | Mann-Whitney U test     | As above | As above        | 0.005* <sup>1</sup> |

**Table 2:** Shows the mean and standard deviation for each of the basic emotions within the last week. A higher score denotes that more of that emotion was experienced over the last seven days. \*denotes significance at 0.02. \*<sup>1</sup>. This test was undertaken as there was heterogeneity of variance within the data (Levene's test).

Table 2 demonstrates that for all the emotions, there was an overall increase in negative emotion, with a corresponding reduction in positive emotion. Although all the emotions neared significance levels, it was only levels of state disgust that showed a significant difference between the control and the F-BN group.

Table 3 shows the means and standard deviations for the five basic emotions on the trait measures.

**Table 3**

|                                | Participant type - control or eating disordered | N  | Mean (SD)       | Probability P=0.02 |
|--------------------------------|---|----|-----------------|--------------------|
| <b>BES 1 General Anger</b>     | Control Group                                   | 25 | 11.40<br>(3.20) | 0.084              |
|                                | Eating Disordered Group                         | 25 | 13.28<br>(4.24) |                    |
| <b>BES 1 General Sadness</b>   | Control Group                                   | 25 | 7.28<br>(3.43)  | 0.014*             |
|                                | Eating Disordered Group                         | 25 | 9.88<br>(3.80)  |                    |
| <b>BES 1 General Fear</b>      | Control Group                                   | 25 | 13.44<br>(4.78) | 0.057              |
|                                | Eating Disordered Group                         | 25 | 16.28<br>(5.50) |                    |
| <b>BES 1 General Happiness</b> | Control Group                                   | 25 | 23.04<br>(4.09) | 0.010*             |
|                                | Eating Disordered Group                         | 25 | 19.88<br>(4.21) |                    |
| <b>BES 1 General disgust</b>   | Control Group                                   | 25 | 9.12<br>(3.53)  | 0.001*             |

|   |                         |          |                 |        |
|---|-------------------------|----------|-----------------|--------|
|   | Eating Disordered Group | 25       | 14.28<br>(6.50) |        |
|   |                         | As above | As above        |        |
| <b>BES 1 General disgust<br/>(non-parametric)</b> | Mann-Whitney U Test     |          |                 | 0.002* |

Table 3: the mean and standard deviation for each of the basic emotions for how often these emotions are felt (trait measure). A higher score denotes that more of that emotion was experienced more generally. \*denotes significance at 0.02. \*<sup>1</sup> This test was undertaken as there was heterogeneity of variance within the data (Levene’s test).

According to these results, it can be seen that the F-BN group generally experienced more negative emotion, and this was near or at significance levels for all the negative emotions. Whilst, the F-BN group experienced significantly less positive emotion generally than controls. However, it was only sadness and disgust that showed significantly higher levels of trait sadness and disgust within the F-BN group.

**4.4.2 Results from the STAXI – Main Hypothesis Testing**

Before the principal analyses for the hypotheses are undertaken, the exploratory analysis was undertaken on the trait measure from the STAXI. The results from this analysis can be seen in table 4.

**Table 4**

|                   | Participant type - control or eating disordered | N  | Mean (SD)       | Probability 0.05 |
|-------------------|---|----|-----------------|------------------|
| Trait anger scale | Control Group                                   | 25 | 17.60<br>(4.85) | P=0.013*         |
|                   | Eating Disordered Group                         | 25 | 21.48<br>(5.70) |                  |

**Table 4:** Shows the mean and standard deviation for trait anger scale from the STAXI measure. A higher score denotes that more anger was experienced more generally. \*Denotes significance.

As can be seen in table 4, the F-BN group experienced anger much more often than the control group. This result confirms that the F-BN were generally more angry than the control group.

*STAXI – State Anger*

The principal hypothesis was whether females with bulimic symptoms (F-BN) have significantly higher levels of anger, following the induction of anger, when compared to individuals without any eating disorder symptoms. The means and standard deviations for the State anger scores are presented in table 5.

**Table 5**

|   | <b>Control Group<br/>(SD)</b> | <b>F-BN<br/>(SD)</b> | <b>Probability<br/>(t-test)</b> |
|---|-------------------------------|----------------------|---------------------------------|
| <b>Time 1<br/>(Prior to manipulation)</b> | 16.80<br>(4.04)               | 17.88<br>(3.14)      | .297                            |
| <b>Time 2<br/>(post manipulation)</b>     | 19.40<br>(5.90)               | 27.64<br>(13.19)     | .007*                           |

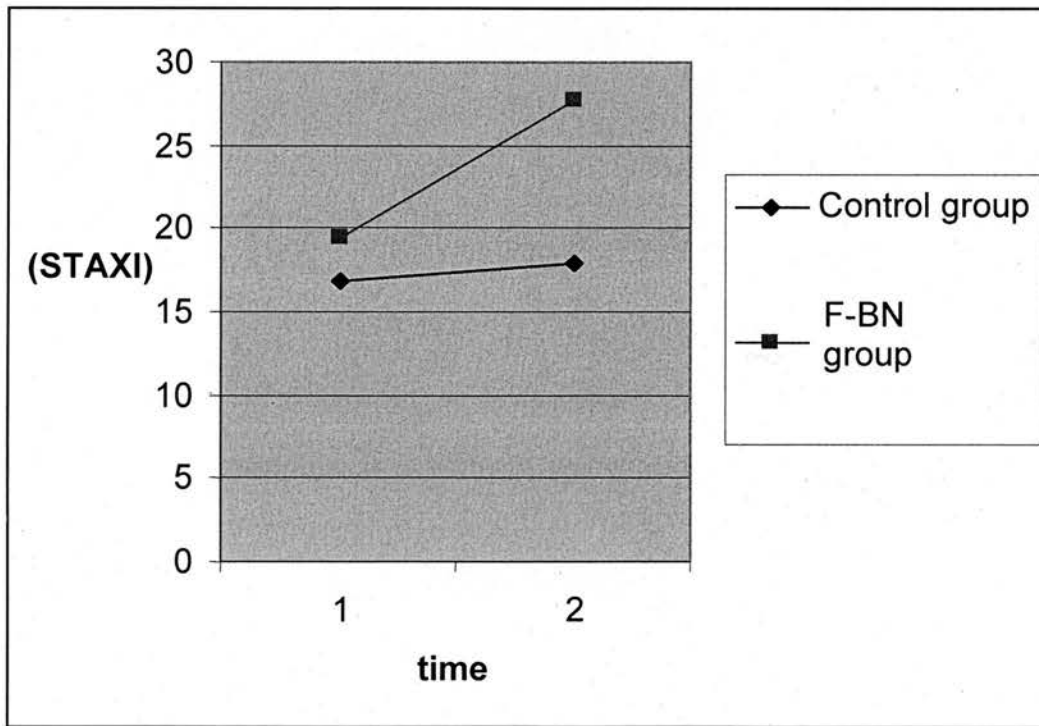
**Table 5:** Means and standard deviations for the State anger scores for both conditions across the participant groups. \*Denotes significance.

State anger scores were evaluated according to a two factorial model (group x condition), and this data was analysed by a mixed model Analysis of Covariance (ANCOVA), as the analysis co-varied anxiety and depression scores (taken from the HADS). Effect sizes were calculated using the formula for  $\eta^2$  (eta-squared) from Clark-Carter (2004). These  $\eta^2$  values were interpreted as per protocol from Cohen (1988) who proposed that  $\eta^2$  values of 0.01 is a small effect, 0.059 is a medium effect, whilst a  $\eta^2$  value of 0.138 can be regarded as a large effect. As detailed earlier, each group (F-BN & Control) undertook the Anger induction task, and each group was assessed at time 1 (prior to the Induction) and at time 2 (post induction). This part of the design represented the repeated measures aspect of this study. Where appropriate, further univariate analyses were undertaken to locate the statistical effect within the analyses. Analyses indicated a significant main effect for group,  $F = 6.87$  ( $df = 1, 48$ ),  $p = .012$ , as well as a significant group x time interaction effect,  $F = 8.29$  ( $df = 1, 48$ ),  $p = .006$ . The effect size for this interaction between group and anger was



large ( $\eta^2 = .173$ ), and with  $n=25$  per group, the power of this analysis was also higher than 0.8 (power  $>.80$ ), as shown by the tables presented by Clark-Carter (2004). The co-variate analyses indicated that HADS anxiety (HADS-A) scores did not have a significant statistical effect on the anger results,  $F = 2.195$  ( $df = 1,46$ );  $p = .145$ , whilst HADS depression (HADS-D) scores did have a significant statistical effect upon the anger results,  $F = 10.743$  ( $df = 1,46$ );  $p = .002$ . The effect size from the co-variate analysis was large ( $\eta^2 = .24$ ). Due to the heterogeneity in the multi-variate analyses, these results were confirmed by univariate analyses. The group x time interaction is illustrated in Graph 1.

**Graph 1**



**Graph 1:** Shows the mean scores for the State anger scales for each participant group before and after the anger induction.

The results from both the uni-variate and multi-variate analyses allow for the acceptance of the first hypothesis, in that, the participants in the F-BN group showed



significantly higher state anger, following the anger induction, than the control group. The significant effect of depression scores in this analysis will be considered in the discussion below.

### *Disgust Sensitivity Scale*

The second principal hypothesis was whether the F-BN group have significantly higher levels of disgust sensitivity, following the manipulation of anger, when compared to individuals without any eating disorder symptom. The means and standard deviations for the Disgust Sensitivity scale scores are presented in table 3.

**Table 6**

|                                   | Control Group<br>(SD) | F-BN<br>(SD)    | Probability<br>(t-test) |
|-----------------------------------|-----------------------|-----------------|-------------------------|
| Time 1<br>(Prior to manipulation) | 14.38<br>(5.13)       | 17.90<br>(4.68) | .015*                   |
| Time 2<br>(post manipulation)     | 14.96<br>(5.29)       | 19.88<br>(5.46) | .002*                   |

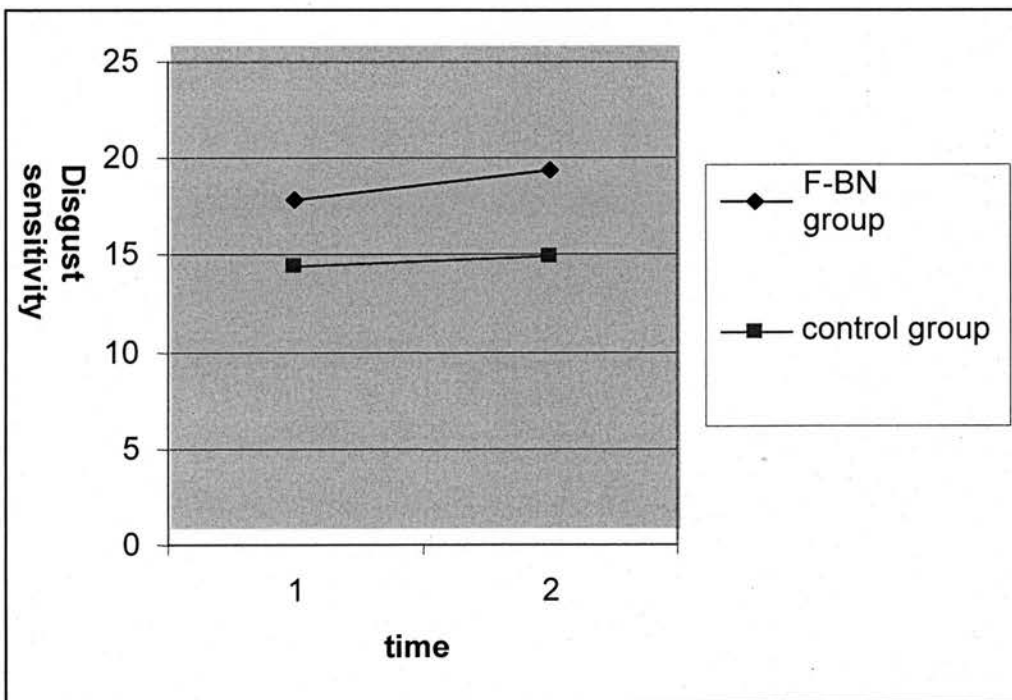
**Table 6:** Means and standard deviations for the disgust sensitivity scale scores for both conditions across the participant groups. \*denotes significance.

As has been shown in the above table, the F-BN group scored significantly higher than the control group on the disgust sensitivity scale. This result highlights that the F-BN group were significantly more sensitive to the emotion of disgust than the control group prior to any anger induction.

Disgust sensitivity scores were evaluated according to a two factorial model (group x condition), and this data was analysed by a mixed model Analysis of Co-Variance (ANCOVA). Analyses indicated a significant main effect for group,  $F = 8.57$  ( $df = 1, 48$ ),  $p = .001$ , as well as a significant group x time interaction effect,  $F = 10.49$  ( $df = 1, 48$ ),  $p = .002$ . The effect size for this interaction was large ( $\eta^2 = .21$ ) and with

n=25 per group, the power of this analysis was also higher than 0.8 (power >.80), as shown by the tables presented by Clark-Carter (2004). The co-variate analyses indicated that HADS – A scores did not have a significant statistical effect on the disgust results,  $F = .250, (df = 1,46); p = .619$ , whilst HADS-D depression scores did have a significant statistical effect upon the disgust results,  $F = 4.423, (df = 1,46); p = .041$ . The effect size for the co-variate analysis was large ( $\eta^2 = .32$ ). Analyses revealed that there was homogeneity of variance between the groups, which confirmed that the multi-variate analyses were reliable. The group x time interaction is illustrated in Graph 2.

**Graph 2**



**Graph 2:** Shows the mean scores for the disgust sensitivity scale for each participant group before and after the anger induction.

The results from the ANCOVA analyses allow for the acceptance of the second hypothesis, in that, the participants in the F-BN group showed significantly higher

disgust sensitivity scores, following the anger induction, than the control group. The significant effect of the depression scores in this analysis will be considered in the discussion below.

### *STAXI - Expression of Anger*

As detailed in the hypotheses section, exploratory uni-variate analyses were undertaken on the data at time 1. It was felt that this was sufficient to undertake simple uni-variate analyses, as the expression of anger sub-scales measure behavioural responses to anger that are unlikely to be affected in such a short-term experimental study. It was felt that these analyses would be able to suggest which type of behavioural manifestations of anger is relevant for each group of participants. This was regarded as an important exploratory analysis, as the first multi-variate analysis confirmed that the F-BN group were experiencing significantly higher levels of state anger following the anger induction.

**Table 7**

|                                   | <b>Control group<br/>(SD)<br/>N=25</b> | <b>FEP group<br/>(SD)<br/>N=25</b> | <b>Prob.<br/>(t-test)</b> |
|-----------------------------------|--|------------------------------------|---------------------------|
| <b>Anger Expression<br/>out</b>   | 16.12<br>(3.82)                        | 17.08<br>(3.67)                    | .370                      |
| <b>Anger Expression<br/>in</b>    | 16.90<br>(4.66)                        | 22.76<br>(4.45)                    | .001*                     |
| <b>Anger Control<br/>out</b>      | 22.04<br>(5.86)                        | 21.24<br>(4.60)                    | .536                      |
| <b>Anger Control<br/>In</b>       | 22.52<br>(7.88)                        | 18.72<br>(4.19)                    | .040*                     |
| <b>Anger Expression<br/>index</b> | 37.92<br>(14.37)                       | 47.08<br>(10.40)                   | .013*                     |

**Table 7:** Shows the means and standard deviations for the four anger expression scale scores and the Anger Expression Index score for the participant groups prior to the experimental manipulation of the emotion of anger. \*denotes significance at .05.

As can be seen in table 7, significant differences were observed between the participant groups on the anger expression-in scale, where the F-BN group reported significantly higher scores on the anger expression in scale. As detailed in the STAXI manual, this scale is associated with intense angry feelings, which are suppressed by the individual. Significant differences were also found on the anger control-in scale, where the control group reported significantly higher scores on this scale. Again, within the STAXI manual, it is discussed that this scale is associated with an ability to 'cool off' or reduce their anger as soon as possible. Finally, the F-BN group reported a significantly higher Anger Expression index score, which confirms the emerging picture from the above findings, as it suggests that the participants in the F-BN group are experiencing more intense anger feelings, but, as shown above, have a tendency to suppress their angry feelings.

#### **4.5 Discussion**

As has been detailed in the results section, the exploratory analysis revealed that the females with bulimic symptoms tended to have, at state and trait levels, higher levels of negative affect when compared to controls. However, it was very interesting that the levels of disgust were significantly higher for the bulimic group, when compared to the controls. This result is very much in keeping with the previous research looking at the role of disgust in eating disorders (e.g. Troop et al., 2002).

Within the principal analysis of the hypotheses of this study, all of them have been confirmed. Firstly, the F-BN group showed significantly higher levels of state anger following the emotional induction, than the control group. For the second hypothesis, the F-BN group demonstrated significantly higher levels of disgust sensitivity than the

control group at time 1, and disgust sensitivity was also shown to increase significantly, compared to the control group, after the anger induction. Finally, the F-BN group demonstrated a pattern of anger expression on the STAXI that showed that F-BN reported a tendency to experience intense angry feelings, but suppress these emotions. This result is in keeping with the findings from previous research, such as Waller *et al* (2003) and Geller *et al* (2000).

These results are very interesting as they do provide experimental evidence that the F-BN group exhibit significantly higher levels of state anger than matched controls. In fact a closer look at the results highlights the size of the difference. The F-BN group demonstrated a mean increase in the STAXI state anger score of 8.24. Equally the significance of the HADS-D co-variate results in the anger analysis highlights the role of depression in the elevated anger scores and the theoretical underpinnings of this finding will be considered below.

For the emotion of disgust, there was a significant difference between the control groups and the F-BN group at time 1. This result is in keeping with the previous findings of Troop and colleagues (Troop *et al*, 2002), and it suggests that females with bulimic symptoms have a significant sensitivity to the emotion of disgust. The finding that disgust showed a significant increase at time 2, in comparison with the control group is a potentially important finding, as the results suggest that there are different emotional processes occurring in the F-BN group, where the emotion of anger is valenced with the emotion of disgust. These results are even more striking when it is considered that the Disgust Sensitivity Scale was designed as a trait measure of disgust, and therefore, it could have been predicted that would be no difference

between time 1 and time 2 for each group. Indeed, the size of difference between the scores on the Disgust sensitivity scale for the control group is extremely small. This result offers direct support for the SPAARS-ED proposed at the beginning of this thesis, as the emotion of anger appeared to be coupled with the emotion of disgust. Furthermore the analysis of the trait anger scores highlights how individuals with bulimic symptoms have a higher propensity to experience anger, which again, is in keeping with the predictions of the SPAARS-ED model. It does seem, according to the results of this study, that F-BN have a higher baseline of the anger emotion, which, when triggered, results in a significant increase in the level of anger for this clinical population. The significant effect, highlighted via the co-variate analysis, of the depression scores on the disgust effect in this study is a very interesting finding and this will be discussed more fully below.

The other main finding from this study shows that females with eating pathology have a tendency not to express their anger, but they experience it as quite an intense emotion. Given that this study's other results highlight how F-BN experience significantly higher levels of anger, it is perhaps not surprising that they report intense angry feelings when they become angry. This result does offer some confirmatory evidence for the findings of other studies, such as Waller *et al* (2003) and Geller *et al* (2000). The combined effect of these results suggests that people with bulimic symptoms experience significantly higher levels of anger, when induced, but have greater difficulty in expressing this anger.

These findings fit with an emerging picture of the differences in the way that people with eating disorders experience and manage their emotions. As discussed in the



introduction, previous research has found evidence that anger is often suppressed and that the limited expression of emotion is related to poor body satisfaction (e.g. Geller *et al*, 2000; Hayaki *et al*, 2002). When these results are considered in light of this study's results, the emotion of disgust may well be a more 'acceptable' or a less 'toxic' emotion than anger for people with eating disorders. This then translates to disgust towards the body and food, which is in keeping with the predictions from the SPAARS-ED model proposed in the introduction.

This study has found some evidence that depression was significantly contributing to the effects found in both analyses (i.e. anger and disgust). This finding raises some potential important theoretical points about the relation of depression, anger and disgust. Freud (1917/1963) argued that depression originated from a mixture of anger and sadness at the loss of a significant other, whilst in their review of the relationship between depression and anger, DiGiuseppe and Tafrate (2007) argued that there is some evidence that suggests that depression can be a product of an inability to express anger (e.g. Mook *et al*, 1990). In light of the results of this study, it is proposed that anger is perceived as a toxic emotion which is inhibited by the coupled emotion of disgust. It is argued that the augmentation of disgust and the inhibition of anger lead not only to the development of eating disorder symptoms, but may also play a role in the development of co-morbid depression. As discussed in the introduction, a SPAARS-ED perspective would argue that depression is constituted of the basic emotions of sadness and disgust (self), and self disgust has been shown in this study and others (e.g. Troop *et al*, 2002) to be an important emotion in eating disorders symptoms. The other co-variate analyses undertaken within the study highlighted that anxiety did not exert a significant effect in the analysis. This is an interesting finding,



as many authors are arguing that the role of disgust can be accounted for by anxiety (e.g. Davey and Chapman, in press), and this study challenges this idea for a near AN group of females with bulimic symptomatology.

There are a few criticisms of this study, with the main one concerning the modified Velten technique. As was discussed in the methodology section, the use of autobiographical memories has a number of potential confounds that need to be considered. The main potential problem centres upon the lack of control of the actual anger stimuli, and as such, we do not know whether the levels of anger inducing stimuli were comparable in each group. Although this is a significant point, it is important to say that the groups were well matched on demographics, and there is no apparent *a priori* reason why there should be a difference between the groups in their experience of anger eliciting situations. In future research, it would be important to control for this confound variable, by actually recording the content of the anger eliciting autobiographical memory.

Another potential confound in this study concerns the actual participants. Although the people enlisted into the F-BN group are highly likely to have a diagnosis of bulimia nervosa (please see table 1), a diagnosis was not confirmed by either interview or specialist service. Likewise, the numbers for the groups are relatively small. In retrospect, it was an omission not to have included a scale on body perceptions, so that the relationship between disgust and the perceptions of one's body could have been investigated. This is now part of an ongoing project.

In conclusion, this study has found some evidence that the emotions of anger and disgust are valenced for females with eating pathology. Within the recent research and clinical literature, it has been theoretically proposed that people use certain eating disorder symptoms (esp. bingeing) to manage overwhelming negative affect. The results of this study do suggest that females with eating pathology experience much higher levels of anger than people without bulimia. Furthermore, disgust may well be used to manage the 'toxic' emotion of anger and this may represent the coupling of the anger and disgust. Naturally these results need to be confirmed by further research. However, the application of the SPAARS model (Power and Dalglish, 1997; 1999) looks promising in helping to theoretically understand these emotional mechanisms.

## **Chapter 5: Eating Disorders: A Basic Emotion Perspective**

### **5.1. Introduction**

The last two chapters have identified that anger, disgust and sadness are of key importance in the understanding of anorexia nervosa and bulimia nervosa. In particular, they have suggested that there is both a developmental perspective to these difficulties with emotion, and that they may be coupled together in the psychopathology of eating disorders. Although these studies have found some interesting data, it is argued that there is a need to consider all the emotions in eating disorders. This will allow for a much more detailed examination of the contribution of each emotion for disordered eating patterns. In considering the need to understand the relation between the experience of normal emotions and psychopathology, Power and Tarsia (2007) pointed out that this relationship has only recently started to be explored within the literature and most models and theories of normal emotion functioning occur without any mention of emotional disorders. Within the field of eating disorders, there is often conceptual confusion where diagnostic labels, such as anxiety and depression are used as emotions in their own right. For example, Power and Tarsia (2007) undertook a study that looked at emotions in depression and anxiety. They used four groups in their study, where they compared depressed, anxious, depressed and anxious, and controls. They found that, using the Basic Emotions Scale (BES; Power, 2006), the Beck Depression Scores (BDI-II; Beck et al, 1996) were predicted by sadness, disgust, fear and happiness (entered in the regression model in this order), whilst state anxiety scores were predicted by fear and then sadness. Overton et al. (2008) supported these results and found that self-disgust was a key emotion in depression. According to the SPAARS-ED model and the previous

research already discussed in this thesis, anger and sadness are key emotions that are suppressed in the eating disorders, but this suppression is coupled with disgust that demonstrates itself via revulsion to food and/ or marked body dissatisfaction.

The other main branch of the SPAARS-ED model is that it argues that the early emotional environment for people with disordered eating patterns is of importance in understanding the difficulties people with eating disorders have with their emotions. This is not a new concept within the literature, as dialectical behavioural therapy argues that 'invalidating experience' (e.g. Linehan, 1993; Corstorphine, 2006) within the early environment is crucial in understanding how the individual appraises their own emotional status and their own sense of self. The results from the grounded theory study reported in chapter 3 indicated that participants with anorexia nervosa reported a marked difficulty in acknowledging their own emotionality and a number reported that their emotions were dangerous towards other people. For these people, their eating disorder was used as a powerful strategy to suppress their emotions. Although this study and others have given clues about the actual nature of invalidating environments key empirical questions remain about the process of this invalidating environment, such as the specific nature of interactions around the emotional expression from the child. It is important to note that the actual responses to emotions can be varied and it remains an empirical question whether these different styles lead to disordered eating patterns. In a more general study of psychopathology, Krause, Mendelson and Lynch (2003), using a structural equation modelling approach, found that emotional inhibition mediated the relationship between childhood emotional invalidation (as per Linehan, 1993) and acute psychological distress in adulthood. Within their analysis, they used Coping with Children's Negative Emotions Scale

(CCNES; Fabes, Eisenberg, & Bernzweig, 1990), which was amended to record the responses of participants as they remember their parents/ carers responses to emotion eliciting situations (e.g. If I had lost some prized possession and reacted with tears, my parents would have....). This measure used various domains of parental responses to the hypothetical situations to see what their relation was to adult psychological distress (e.g. parental minimisation, parental distress, emotion focused strategies, problem focused strategies and punitive responses). Krause et al. (2003) found that perceived parental distress was the most significant contributor to emotional inhibition and it was argued that the complex emotion of guilt within the child (e.g. feeling guilty for 'hurting' the parent in some way with their emotion) that helped to explain the significant effect of parental distress. Coggins and Fox (2009) within a qualitative study on the role of emotional inhibition and psychopathology found further support for this idea of parental distress (which they coded as responsibility as a child) and for traumatic events as a child that appeared to be theoretically linked to emotional inhibition as an adult. As described in the introduction and in chapter three and four, emotional inhibition is an important construct in understanding eating disorders (e.g. Waller et al. 2007; Cooper et al., 2004) and this study was designed to repeat the Krause et al study using the adapted CCNES (Fabes, Eisenberg, & Bernzweig, 1990). This measure was deemed to be fit for purpose as it measures the actual responses to the emotions by the parent/ carer. This formed the second main aim of this chapter.

## **5.2 Aims/ Hypotheses**

### **Aim 1**

Given the lack of research that has examined the potential role of individual emotions

within disordered eating; the aim of this current study was to replicate the study by Power and Tarsia (2007) but for participants with clinically significant eating disorders. This would be undertaken with state and trait measures of emotion, and how well they coped with each individual emotion.

**Hypothesis 1:** It was hypothesised that, in line with the previous research (both within this thesis and in the general research literature) that disordered eating would significantly correlate with anger and sadness, whilst controlling for depression and anxiety within the analysis, for both state and trait measures of emotion.

**Hypothesis 1a:** Depending upon sample size, the variables that demonstrates a significant correlation between disordered eating (as measured by the EAT-26) and the four negative state-emotion variables (i.e. anger, disgust, sadness, and fear) would be entered into a multiple regression analysis to determine what significantly contributes to disordered eating patterns.

**Hypothesis 1b:** Depending upon the sample size, the variables that demonstrate a significant correlation between disordered eating (as measured by the EAT-26) and the four negative trait-emotions variables (i.e. anger, disgust, sadness and fear) would be entered into a multiple regression analysis to determine what significantly contributes to disordered eating patterns.

**Hypothesis 1c:** To examine the relationships between the participant's ability to cope with the four negative emotions (coping measure on the Basic Emotions Scale) and disordered eating patterns (as measured by the EAT-26).

## **Aim 2**

As detailed above, the second aim of this study was to replicate the Krause et al. (2003) study for people with disordered eating. In order to achieve this aim, an

examination of different parental response styles to emotion eliciting situations was undertaken. This was done by looking individual response patterns, such as parental minimisation, punitive reactions and emotional responses to the situation. As with the preceding aim, the relation of parental responses to emotions was analysed, whilst controlling for depression and anxiety.

### **Hypothesis 2a**

Depending upon sample size, the variables that demonstrate a significant correlation between disordered eating (as measured by the EAT-26) and the 6 carer response style to participants as children would be entered into a multiple regression analysis to determine what significantly contributes to disordered eating patterns.

### **Exploratory Aim**

Depending upon sample size, outcome of both the above analyses, and a feasibility analysis, a mediator-moderator analysis will be carried out to see if there are any predictive mediator-moderator relationships between the carer's responses to an emotion, levels of state-emotion and disordered eating patterns.

## **5.3 Methodology**

### **Design**

The study utilised a cross-sectional design that utilised two analytical strategies, correlational (with associated partialling out of variables) and regression analyses.

These two strategies were chosen so that the contributory effects can be clearly seen in the results.



## Participants

The participant group was recruited from B-EAT, a non-statutory organisation providing support to people with an eating disorder in the U.K. B-EAT is an organisation that provides support, advice and information for people with eating disorders. It also offers advice and support to carer's of people with eating disorders. One of their key aims is 'to improve the way services and treatment are provided' (B-EAT, 2007) and one of the most important ways that B-EAT works to this aim is by supporting research in this area. One of the ways that they assist with research is by maintaining a database of people who are willing to take part in research. Within this database, it is possible to select people who have indicated upon an opt-in questionnaire that 'they are a person who has an eating disorder' meaning that it is possible to exclude people who classify themselves as recovered and people who are carer's of people with eating disorders. Anecdotal evidence suggested that the database was a heterogeneous group of people with eating disorders. A significant proportion of the participants were reported to be people with long, chronic histories of eating disorders. As will be seen below, the mean age of the participants was high, which suggested that this may have been the case with participants in this study. At the time of the research, there were 150 people on the database who were eligible to take part in this study. Out of these potential participants, 79 responded to the initial invitation to take part and out of these participants, 10 had not completed the questionnaires properly and 16 were excluded because they did not score over 20 on EAT-26 questionnaire. This left 53 people who were entered into the analysis. No incentive was offered in this study.

Only females were included in the analysis, as exploring gender differences in emotional experience was beyond the scope of the current study and there is some research which suggests eating disorders in males may be dependent on different psychological processes (Fernandez-Aranda, Aitken, Badia, Gimenez, Solano, Collier *et al.* 2004). Respondents were only included in the analysis if EAT-26 scores were greater than 20 and this figure strongly suggests that those in the ED group were experiencing symptoms of a clinically relevant disorder. Although it was possible to ensure probable caseness, it was impossible to distinguish between different diagnostic groups of eating disorders (e.g. bulimia nervosa versus anorexia nervosa). Included in the analysis were 53 participants (mean age = 31.74, SD = 10.6). In terms of psychopathology, the mean EAT score for the participants was 41.3 (SD = 13.8), the mean HADS-D was 15.45 (SD = 3.9), the mean HADS-A was 11.30 (SD = 3.8) and the mean BMI was 18.8 (SD = 3.9). As can be seen from this data, all the participants had clinically elevated scores on the EAT-26 and on both of the subscales of the HADS. In order to check whether any of the variables of interest were related to age, correlation analyses were undertaken and these found that only the punitive subscale (positive correlation) and the emotion focused subscale (negative correlation) significantly correlated with age (see appendix 6 for the complete correlations table). Although it is not possible to establish the diagnosis of the participants in this study, the BMI data and the scores from the EAT-26 would suggest that the majority of participants fell into an eating disorder not otherwise specified (EDNOS) diagnosis.

## **Measures**

### **Eating Attitudes Test – 26 (EAT-26; Garner et al. 1982)**

The EAT-26 is a well-established measure, made up of 26 statements which respondents are asked to rate on a 6 point Likert Scale and covers ‘symptoms and concerns, characteristic of eating disorders’ (p.175; Garner, 1997). A score is derived between 0 and 78, with higher scores representing more disordered eating. The authors present research which suggests that a cut-off score of 20 differentiates between individuals with eating disordered attitudes and behaviours and those who have not, and is used to confirm whether participants in the ED group are displaying clinically significant symptoms. The measure includes items around current height and weight, which enables calculation of body mass index (BMI). As detailed in chapter 4, this measure has very good psychometrics.

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

This questionnaire consists of 7 items relating to anxiety symptoms, and 7 pertaining to depressive symptoms. A score of 8 or above out of a possible 21 on both the depression and anxiety subscales detects 80% of cases (Bjelland et al. 2002). As detailed in chapter 4, this measure has very good psychometrics.

### **Basic Emotions Scale (BES; Power, 2006)**

This is a 3-part scale constructed from 21 emotional terms which relate to the five basic emotions of anger, disgust, fear, happiness and sadness.

The BES consists of three sub-scales, these are detailed below:

**State-Emotion Scale:** Participants were asked to rate each of the items on a Likert scale depending on how they had been feeling over the last week, with 1 indicating that they had not felt like this at all and 7 indicating that they had felt like this all the time, enabling a measure of each emotional state.

**Trait-Emotion Scale:** Participants were asked to rate each of the items on a Likert scale depending on how often they generally feel an emotion, with 1 indicating that they had not felt like this at all and 7 indicating that they generally felt like this all the time, enabling a measure of each emotional state.

**Coping Emotion Scale:** Participants were asked to rate each of the items on a Likert scale depending on how they coped with different emotions, with 1 indicating that they feel that they cope with the emotion item and 7 indicating that they cannot cope at all with that emotion.

**Parent Attitude/Behaviour Questionnaire (PAB)/ Coping With Children's Negative Emotions Scale (CCNES); Fabes, Eisenberg, & Bernzweig (1990).**

This scale was adapted from the Coping with Children's Negative Emotions Scale (CCNES), and it was adapted in a similar way as by Krause et al (2003). This scale was originally developed to be used by parents/ carers to evaluate how they responded to their children's emotions. This scale has 6 sub-scales which are different styles of responding to the child's emotion, these are punitive, expressive encouragement, emotion focused reaction, problem focused reaction, minimization reaction and a distress reaction. Its psychometrics was satisfactory both for reliability, factor structures and validity (Fabes, Poulin, Eisenberg, Madden-Derdich, 2002). In a similar vein as Krause et al, (2003), this scale was adapted so that adults could rate their

memory of their parents/ carers response to their emotions. As much as possible, the original questions were used within this adapted questionnaire. Two independent raters were asked to give their opinion on whether the scale had face validity. Both raters agreed that it was face valid. Also, in order to investigate whether this scale still had reliability, a Cronbach's reliability analysis was carried out on the scale as a whole and on the 6 individual sub-scales. Data were collected from students at Manchester University over the autumn of 2006. The adapted questionnaire was placed upon a website and an invitation to take part was sent to all undergraduate and postgraduate students. Within this email there was a link to the online questionnaire. One hundred and three students responded to the questionnaire and their mean BMI was 23.12 (SD=5.08) and their mean age was 20.92 (SD = 4.40). The Cronbach reliability analysis results are presented below:

**Table 1**

|                                 | <b>Cronbach's Alpha</b> |
|---------------------------------|-------------------------|
| <b>Whole scale</b>              | 0.79                    |
| <b>Distress reaction</b>        | 0.71                    |
| <b>Punitive Reaction</b>        | 0.74                    |
| <b>Expressive Encouragement</b> | 0.88                    |
| <b>Emotion Focused Reaction</b> | 0.88                    |
| <b>Problem Focused Reaction</b> | 0.80                    |
| <b>Minimization reaction</b>    | 0.83                    |

**Table 1:** Shows the Cronbach alpha co-efficients for both the whole scale and for the six subscales for the adapted Parent/Attitude Questionnaire.

As presented above, the Cronbach Alpha co-efficients were all higher than 0.7 and with the results of the face validity analysis, it was decided that the scale was reliable and valid for its use in this study.

## **Procedure**

Data was collected with the assistance of a trainee clinical psychologist (KF). The participant packs containing all the above questionnaires and the participant information sheets were forwarded to the administrators at B-EAT. B-EAT placed a note in the pack explaining that they supported the research and sent them all the eligible participants identified on the database. The participant information letter from the researcher explained the purpose of the study was included in the pack, as was a stamped addressed envelope in which to return the measures. The letter to participants discussed how the aim of the study was to understand how early experiences impact upon our understanding and management of emotions in adulthood. It also explained that the study involved filling out questionnaires in the privacy of their own home.

## **5.4. Results**

### **Statistical Strategy**

In line with the research aims of this study, the analyses were conducted in three stages. Firstly, the descriptive data was gathered on all the variables used within this study. Secondly, the emotion variables (state, trait and cope emotions data) were correlated with the total score for the EAT-26. This was followed by a further correlational analysis of the relation between the EAT-26 and the four negative emotions, where depression and anxiety were partialled out respectively. Thirdly,



depending upon the results of the correlation analysis, the respective variables were entered into a regression analysis, to see which state and trait emotions would predict disordered eating, as measured by the EAT-26.

**Table 2**

| BES Data        | N  | Mean  | SD   | BES Data            | N  | Mean  | SD   | PAB Data                | N  | Mean  | SD    |
|-----------------|----|-------|------|---------------------|----|-------|------|-------------------------|----|-------|-------|
| State Anger     | 53 | 15.01 | 5.19 | Anger<br>Coping     | 53 | 19.54 | 5.43 | EXPRESSIVE<br>ENCOURAGE | 47 | 16.70 | 9.32  |
| State Sad       | 53 | 17.45 | 5.90 | Sadness<br>Coping   | 52 | 19.61 | 5.39 | EMOTION<br>FOCUSED      | 51 | 29.19 | 13.02 |
| State Disgust   | 53 | 17.45 | 5.69 | Disgust<br>Coping   | 53 | 22.62 | 5.13 | PROBLEM<br>FOCUSED      | 47 | 33.78 | 12.21 |
| State Fear      | 53 | 21.69 | 5.39 | Fear<br>Coping      | 53 | 20.58 | 5.67 | MINIMIZATION            | 51 | 37.13 | 12.77 |
| State Happiness | 52 | 10.76 | 4.00 | Happiness<br>Coping | 51 | 12.11 | 4.36 | DISTRESS                | 50 | 30.70 | 12.45 |
| Trait Anger     | 53 | 15.37 | 5.60 |                     |    |       |      | PUNITIVE                | 38 | 31.50 | 13.87 |
| Trait Sadness   | 52 | 18.03 | 5.68 |                     |    |       |      |                         |    |       |       |
| Trait Disgust   | 53 | 19.20 | 5.59 |                     |    |       |      |                         |    |       |       |
| Trait Fear      | 52 | 22.57 | 5.21 |                     |    |       |      |                         |    |       |       |
| Trait Happiness | 53 | 12.28 | 3.59 |                     |    |       |      |                         |    |       |       |

**Table 2:** shows the mean score and its standard deviation for each of the variables used within this study's analysis.

The descriptive statistics show an interesting pattern of results in that the mean scores for the basic emotions scales showed an increase from the mean state emotions to the mean trait emotion scores, to the mean coping with emotions scores. The cope with emotions scores show that participants tended to cope badly with all the emotions, as the mean score for the items for each scale was five out of seven.



## Results for Hypothesis 1a

Prior to the hypothesis analysis being undertaken, the variables were tested for their normal distribution using Kolmogorov-Smirnov test (Please see appendix 5). The results highlighted that most of the variables were normally distributed, with the state fear, the anger coping scale, sadness coping scale, the disgust coping sub scale were not normally distributed. This analysis still used parametric analysis as these analyses have more power and enable partial correlation analyses. However, the initial correlation analyses, as detailed in table 1, were also carried out using non-parametric statistics (i.e. Spearman’s Rho). These statistics were identified to be almost identical correlations to those stated below. Therefore, it was decided that the parametric analyses would be reliable despite the non-normal distribution. However, the reader still needs to apply caution to the results reported below.

### Correlation analysis – Basic Emotions scale (BES) and the Eating Attitudes Test – 26 (EAT-26).

**Table 3**

| N=52               | State Anger | State Sad | State Disgust | State Fear | State Happy |
|--------------------|-------------|-----------|---------------|------------|-------------|
| Total EAT-26 score | .480**      | .587**    | .599**        | .460**     | -.421**     |

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Table 3:** shows the correlation analysis without Depression or anxiety being partialled out of the equation.

As can be seen in table 1, the four negative emotions (as measured by the BES) correlated significantly with the EAT-26. However, the largest correlations were found between state disgust and EAT-26, and state sadness and EAT-26.

**Table 4****Partial Correlation Analysis (Co-variate – Depression)**

| N= 52               | State Anger | State Sad | State Disgust | State Fear | State Happiness |
|---------------------|-------------|-----------|---------------|------------|-----------------|
| Total EAT-26 scores | .378**      | .398**    | .438**        | .210       | -.242           |

Co-variate: HADS-D

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Table 4:** Shows the correlations between the five emotions and disordered eating, with depression partialled out of the analysis.

As can be seen within this table, with the exception of state fear, all the subscales remained significantly correlated with EAT-26 scores, although the size of the correlation was much reduced. Disgust still came out with the largest correlation with the EAT-26

**Table 5****Partial Correlation Analysis (Co-Variate – Anxiety)**

| N = 52              | State Anger | State Sad | State Disgust | State Fear | State Happiness |
|---------------------|-------------|-----------|---------------|------------|-----------------|
| Total EAT-26 Scores | .361**      | .445**    | .464**        | .340**     | -.064           |

Co-variate: HADS-A

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Table 5:** Shows the correlations between the five emotions and disordered eating, with anxiety partialled out of the analysis.

As can be seen in table 3, the HADS-A scores had a small impact upon the size of the correlation between EAT-26 scores and the four negative basic emotions. The results from this analysis continued with the pattern of results from the above two correlation analyses, in that, disgust was the largest correlation, but there was not much between the size of the correlation between EAT-26 and anger, sadness and disgust.

Interestingly, it was fear that showed a smaller correlation with EAT-26 scores, and this finding is very much in keeping with the above results.

### ***Regression Analysis***

The second part of the analysis was a multiple hierarchical regression. A hierarchical regression analysis was chosen so that the experimenter could decide the order of the variables being entered in the regression analysis (as opposed to a stepwise regression analysis). This decision process was governed by sample limitations, the above correlation analysis and background literature. Due to the small sample size, consideration was given to the issue of statistical power for this analysis. With statistical power being set at 0.8 (Cohen, 1988) and alpha was set at 0.1 (due to the conservative nature of the analysis, Tabachnick and Fidell, 2007), a sample size of 40 to 45 was felt to be sufficient (predicting a large effect), using guidelines from Miles and Shelvin (2005). Furthermore, it was decided that only four variables would be entered into the regression model to ensure stability and to prevent the ratio of participants to variables not dropping below 10:1. As neither depression nor anxiety appeared to have a large effect upon the correlations between the EAT-26 and the four negative emotions, they were not included in the regression model. Also, because the correlation between EAT-26 and happiness reduced to a non-significant level after depression and anxiety were partialled out of the correlation, it was not included in the regression analysis. The remaining four negative emotions were entered into the equation in a step-wise fashion. The order of entry into the model was based upon the literature review and the results of the correlation analyses.

*Assumptions of regression analyses*

As detailed by Field (2005) there are a number of assumptions regarding the regression model need to be considered, which focus upon how well the regression model fits with the observed data and the generalisation of the model to the wider population. To test how well the regression model fits with the observed data, consideration needs to be given to both the residuals within the regression model, and the number of outliers potentially exerting undue influence in the regression model. According to Field (2005) these can be tested by a number of statistics, such as the standardised residuals and the Cook's distance (i.e. the influence of one case upon the overall model). For the standardised residuals, 5% of cases should not be higher than 2, and for this regression model, there was only one case with a standardised residual greater than 2. Furthermore, the Cook distance should not be greater than 1 and this analysis highlighted that not one case was greater than 1 (range = 0.001 – 0.117).

In order to test for the generalisability of the regression model for the population as a whole, certain assumptions need to be met. One of the main criteria is that there should not be perfect multi-collinearity, and as such, the predictor variables should not correlate too highly. Field (2005) suggests that correlations between the predictor variables above 0.8-0.9 should be of concern. Within the analysis, the correlations between the predictor variables range from 0.45-0.56. Therefore, it was decided that there was no cause for concern about multi-collinearity within this analysis. Finally, as pointed out by Field (2005) the outcome variable is the only variable that needs to be normally distributed, and the K-S tests discussed above highlighted that this was the case. It is not necessary for the predictor variables to be normally distributed, and state fear was shown not to be normally distributed.

**Table 6**

| Variable<br>N = 52   | R <sup>2</sup> | Adjusted R <sup>2</sup> | Significance               |
|--|----------------|-------------------------|----------------------------|
| <b>Step 1</b><br>State Disgust   | .36            | .35                     | .01*                       |
| <b>Step 2</b><br>State Disgust<br>State sadness                              | .45            | .43                     | .01*<br>.01*               |
| <b>Step 3</b><br>State Disgust<br>State Sadness<br>State Anger               | .50            | .46                     | .06*<br>.01*<br>.05*       |
| <b>Step 4</b><br>State Disgust<br>State Sadness<br>State Anger<br>State Fear | .50            | .47                     | .18<br>.01*<br>.01*<br>.11 |
| <b>Step 5</b><br>State Sadness<br>State Anger                                | .45            | .43                     | .01*<br>.03*               |

**Table 6:** Shows both the R<sup>2</sup> and the adjusted R<sup>2</sup> for each stage of the regression analysis, where the outcome variable was EAT-26 scores. Also, it provides the significance of each variable entered into the regression equation, at each stage of the analysis. \*denotes significance at 0.1

Within the regression analyses, the variables were entered into the regression analyses according to the size of both the bi-variate and the partial correlations. These meant that disgust was entered first, sadness second, anger third and fear fourth. Initially, disgust demonstrated a significant effect and this was maintained when sadness was entered into the model. Within the analysis, a decision was taken to keep the variables in the equation at  $p < 0.1$  because of the conservative nature of the procedure (Tabachnick & Fidell, 2007). On entering fear into the equation, both state disgust and state fear were reduced to a non-significant effect and were removed from the regression equation. The final model of state sadness and state anger accounted for nearly 44% of the variance within the model (adj. R<sup>2</sup> = .43).

**Results for Hypothesis 1b**

The preliminary analysis highlighted that trait emotions were normally distributed and therefore it was decided that the parametric analyses would be reliable. Table 5 shows the results of the initial correlations between the total EAT-26 score and the individual trait emotions (in keeping with hypothesis 1b).

**Table 7**

| N=52               | Trait Anger | Trait Sad | Trait Disgust | Trait Fear | Trait Happy |
|--------------------|-------------|-----------|---------------|------------|-------------|
| Total EAT-26 score | .311*       | .445**    | .454**        | .323*      | -.361**     |

\*\* Correlation is significant at the 0.01 level (2-tailed).  
 \* Correlation is significant at the 0.05 level (2-tailed).

**Table 7:** shows the correlation analysis without depression or anxiety being partialled out of the equation.

As can be seen in table 7, all the trait emotions (as measured by the BES) correlated significantly with the EAT-26. However, the largest correlations were found between trait disgust and EAT-26, and trait sadness and EAT-26. This pattern of results is the same pattern of results that occurred for the state emotion data.

**Table 8**

**Partial Correlation Analysis (Co-variate – Depression)**

| N= 52               | Trait Anger | Trait Sad | Trait Disgust | Trait Fear | Trait Happiness |
|---------------------|-------------|-----------|---------------|------------|-----------------|
| Total EAT-26 scores | .190        | .180      | .239          | .050       | -.252           |

Co-variate: HADS-D

**Table 8:** Shows the correlations between the five trait emotions and disordered eating, with depression partialled out of the analysis.

As can be seen within this table, all the subscales no longer significantly correlated with EAT-26 scores. The largest correlation was between the negative correlation between state happiness scores and the EAT-26. Whilst trait disgust also



demonstrated a near significant correlation with EAT-26 (.239,  $p=.09$ ). It is likely that these two correlations would become a significant if the sample size was bigger.

**Table 9**

**Partial Correlation Analysis (Co-variate – Anxiety)**

| N= 52                  | Trait<br>Anger | Trait<br>Sad | Trait<br>Disgust | Trait<br>Fear | Trait<br>Happiness |
|------------------------|----------------|--------------|------------------|---------------|--------------------|
| Total EAT-26<br>scores | .187           | .249         | .285*            | .188          | -.067              |

Co-variate: HADS-A

\* Correlation is significant at the 0.05 level (2-tailed).

**Table 9:** Shows the correlations between the five trait emotions and disordered eating, with anxiety partialled out of the analysis.

As can be seen within this table, only trait disgust remained significant once anxiety had been removed from the analysis. Trait sadness neared significance (.249  $p=0.08$ ). The remaining subscales were no longer significantly correlated with EAT-26 scores. Although it was evident throughout the correlation analysis for the trait emotions that the size of relationship between the emotions and disordered eating was quite small, it was decided to continue with the regression analyses to see if any of the trait emotion variables were able to predict disordered eating (as measured by the EAT-26).

### ***Regression Analysis***

The second part of the analysis was a multiple hierarchical regression. A hierarchical regression analysis was chosen so that the experimenter could decide the order of the variables being entered in the regression analysis (as opposed to a stepwise regression analysis). This decision process was governed by sample limitations, the above correlation analysis and background literature. Due to the small sample size, consideration was given to the issue of statistical power for this analysis. With statistical power being set at 0.8 (Cohen, 1988) and alpha was set at 0.1 (due to the



conservative nature of the analysis, Tabachnick and Fidell, 2007), a sample size of 40 to 45 was felt to be sufficient (predicting a large effect), using guidelines from Miles and Shelvin (2005). Furthermore, it was decided that five variables would be entered into the regression model to ensure stability and to prevent the ratio of participants to variables not dropping below 10:1. As depression appeared to be exerting a significant effect within the partial correlations, depression was included in the regression analysis. In order to keep the ratio between sample size and number of predictors low, it was decided that happiness would not be included in the regression analyses. The remaining four negative emotions and depression were entered into the equation in a step-wise fashion. The order of entry into the model was based upon the literature review and the results of the correlation analyses. Given that the correlation analysis suggested that regression analysis would not find a strong model, it was decided that all variables would be included in the model (entered in a hierarchical manner), in order to see investigate the overall significance of each predictor within the model.

### *Assumptions of regression analyses*

As detailed above, there are a number of assumptions that needed to be addressed before a regression analyses can be interpreted. For this analysis, the standardised residuals should not have 5% of cases higher than 2, and for this regression model, there was only one case with a standardised residual greater than 2. Furthermore, the Cook distance should not be greater than 1 and this analysis highlighted that not one case was greater than 1 (mean = .017, range = 0.001 – 0.79).

The correlations between the predictor variables range from .127-.647 and, therefore, it was decided that there was no cause for concern about multi-collinearity within this analysis.

**Table 10**

| Variable<br>N = 52   | R <sup>2</sup> | Adjusted R <sup>2</sup> | Significance                     |
|--|----------------|-------------------------|----------------------------------|
| <b>Step 1</b><br>HADS-D  | .29            | .27                     | .01*                             |
| <b>Step 2</b><br>HADS-D<br>Trait Disgust   | .33            | .30                     | .01*<br>.09*                     |
| <b>Step 3</b><br>HADS-D<br>Trait Disgust<br>Trait Sadness                              | .34            | .29                     | .01*<br>.23<br>.68               |
| <b>Step 4</b><br>HADS-D<br>Trait Disgust<br>Trait Sadness<br>Trait Anger               | .34            | .29                     | .02*<br>.40<br>.59<br>.44        |
| <b>Step 5</b><br>HADS-D<br>Trait Disgust<br>Trait Sadness<br>Trait Anger<br>Trait Fear | .34            | .27                     | .03*<br>.41<br>.60<br>.44<br>.91 |

**Table 10:** Shows both the R<sup>2</sup> and the adjusted R<sup>2</sup> for each stage of the regression analysis with the outcome variable being the EAT-26. Also, it provides the significance of each variable entered into the regression equation, at each stage of the analysis. \*denotes significance at 0.1

As can be seen in table 8, only trait disgust showed significance at step 2 of the regression analysis. This effect become insignificant when the other trait emotion variables were entered into the regression equation. No other trait emotion variable showed a significant predictor effect at any stage of the regression analysis. Only depression consistently showed a significant effect across the analysis.

The predominance of depression in the above regression model led the researcher to hypothesise that the trait emotions may play a role in developing depression, which in

turn would lead to the disordered eating patterns (as measured by the EAT-26). The analysis of choice for this type of research question is a path analysis. However, given that the sample size was already small for the regression analysis, it was decided not to pursue this analysis in this study. This point will be explored further in the discussion.

### Results for Hypothesis 1c

The preliminary analysis highlighted that coping with anger, disgust, fear and happiness were not normally distributed (tested by the K-S test, full statistics in appendix 5). This analysis still used parametric analysis as these analyses have more power and enable partial correlation analyses. However, the initial correlation analyses, as detailed in table 8, were also carried out using non-parametric statistics (i.e. Spearman's Rho). Unlike the previous two hypotheses already discussed, the Spearman's correlations showed a reduction in size to the Pearson correlations. However, when the Spearman Rho correlations and the Pearson Correlations were compared there was no change in overall significance. Therefore, it was decided that the parametric analyses would be reliable despite the non-normal distribution. However, the reader still needs to apply caution to the results reported below.

**Table 11**

| N= 52               | Cope Anger | Cope Sad | Cope Disgust | Cope Fear | Cope Happiness |
|---------------------|------------|----------|--------------|-----------|----------------|
| Total EAT-26 scores | .214       | .318*    | .387**       | .437**    | .245           |

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Table 11:** shows the correlation analysis without depression or anxiety being partialled out of the equation.

As can be seen in table 11, difficulties with coping with sadness, disgust and fear (as measured by the BES) all positively correlated significantly with the EAT-26.

However, the largest correlations were found between problems with coping with disgust and EAT-26, and coping with fear and EAT-26.

**Table 12**

**Partial Correlation Analysis (Co-variate – Depression)**

| N= 52               | Cope Anger | Cope Sad | Cope Disgust | Cope Fear | Cope Happiness |
|---------------------|------------|----------|--------------|-----------|----------------|
| Total EAT-26 scores | .066       | .164     | .139         | .221      | .071           |

Co-variate: HADS-D

**Table 12:** Shows the correlations between the cope with emotions subscales and disordered eating, with depression partialled out of the analysis.

As shown in table 12, all the subscales no longer significantly correlated with EAT-26 scores, when depression was partialled out of the correlation analysis.

**Table 13**

**Partial Correlation Analysis (Co-variate – Anxiety)**

| N= 52               | Cope Anger | Cope Sad | Cope Disgust | Cope Fear | Cope Happiness |
|---------------------|------------|----------|--------------|-----------|----------------|
| Total EAT-26 scores | .103       | .329*    | .348*        | .371**    | .100           |

Co-variate: HADS-A

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Table 13:** Shows the correlations between the cope with emotions subscales and disordered eating, with anxiety partialled out of the analysis.

As can be seen within this table, difficulties with coping with sadness, disgust and fear remained significant with anxiety partialled out of the analysis. Indeed many of the correlations in table 13 were virtually the same as table 11, and this tends to suggest that the influence of anxiety upon the difficulties with coping with particular emotions was negligible.

Although it was evident throughout the correlation analysis for the trait emotions that the size of relationship between coping with the emotions scales and disordered eating

were quite small, it was decided to continue with the regression analyses to see if any of the coping with emotion variables were able to predict disordered eating (as measured by the EAT-26).

### ***Regression Analysis***

The second part of the analysis was a multiple hierarchical regression. A hierarchical regression analysis was chosen so that the experimenter could decide the order of the variables being entered in the regression analysis (as opposed to a stepwise regression analysis). This decision process was governed by sample limitations, the above correlation analysis and background literature. Due to the small sample size, consideration was given to the issue of statistical power for this analysis. With statistical power being set at 0.8 (Cohen, 1988) and alpha was set at 0.1 (due to the conservative nature of the analysis, Tabachnick and Fidell, 2007), a sample size of 40 to 45 was felt to be sufficient (predicting a large effect), using guidelines from Miles and Shelvin (2005). Furthermore, it was decided that five variables would be entered into the regression model to ensure stability and to prevent the ratio of participants to variables not dropping below 10:1. As depression appeared to be exerting a significant effect within the partial correlations, depression was included in the regression analysis. In order to keep the ratio between sample size and number of predictors low, it was decided that happiness would not be included in the regression analyses. The remaining four negative emotions and depression were entered into the equation in a step-wise fashion. The order of entry into the model was based upon the literature review and the results of the correlation analyses. Given that the correlation analysis suggested that regression analysis would not find a strong model, it was decided that all variables would be included in the model (entered in a

hierarchical manner), in order to see investigate the overall significance of each predictor within the model.

### *Assumptions of regression analyses*

As detailed above, there are a number of assumptions that needed to be addressed before a regression analyses can be interpreted. For this analysis, the standardised residuals should not have 5% of cases higher than 2, and for this regression model, there were only two cases that had standardised residuals greater than 2. Furthermore, the Cook distance should not be greater than 1 and this analysis highlighted that not one case was greater than 1 (mean = .016, range = 0.001 – 0.114). Within the analysis, the correlations between the predictor variables range from .236-.599. Therefore, it was decided that there was no cause for concern about multi-collinearity within this analysis.

**Table 14**

| Variable<br>N = 52   | R <sup>2</sup> | Adjusted R <sup>2</sup> | Significance                     |
|--|----------------|-------------------------|----------------------------------|
| <b>Step 1</b><br>HADS-D  | .28            | .27                     | .01*                             |
| <b>Step 2</b><br>HADS-D<br>Cope with Fear  | .33            | .30                     | .01*<br>.09*                     |
| <b>Step 3</b><br>HADS-D<br>Cope with fear<br>Cope with disgust   | .34            | .28                     | .01*<br>.21<br>.47               |
| <b>Step 4</b><br>HADS-D<br>Cope with fear<br>Cope with disgust<br>Cope with sadness                    | .34            | .29                     | .01*<br>.24<br>.95<br>.49        |
| <b>Step 5</b><br>HADS-D<br>Cope with fear<br>Cope with disgust<br>Cope with sadness<br>Cope with anger | .35            | .27                     | .01*<br>.20<br>.77<br>.48<br>.51 |



**Table 14:** Shows both the  $R^2$  and the adjusted  $R^2$  for each stage of the regression analysis with the outcome variable being the EAT-26. Also, it provides the significance of each variable entered into the regression equation, at each stage of the analysis. \*denotes significance at 0.1.

As can be seen in table 10, only fear showed a significant effect at step 2 of the analysis. None of the other coping with emotion variables showed a significant predictor effect at any stage of the regression analysis. Only depression consistently showed a significant effect across the analysis.

### Results for Hypothesis 2

Prior to the hypothesis testing was undertaken, the variables were tested for their normal distribution using Kolmogorov-Smirnov test (Please see appendix 5). The results highlighted all of the PAB sub-scales and the EAT-26 were normally distributed. Interestingly, there was a sizeable amount of data that was missing from the completed PABs, and this was especially true of the punitive reaction to emotions scale where the only 38 participants responded to this item. This was felt to be highly significant and this will be reflected upon within the discussion section of this chapter. Given the amount of data missing, it is highly likely that this would have an impact upon the results of these analyses.

**Table 15**

|        | <b>Distress</b> | <b>Punitive</b> | <b>Expressive encouragement</b> | <b>Emotion Focused</b> | <b>Problem focused</b> | <b>minimization</b> |
|--------|-----------------|-----------------|---------------------------------|------------------------|------------------------|---------------------|
| EAT-26 | .222            | .131            | -.120                           | -.180                  | -.155                  | .004                |
|        | N=50            | N=38            | N=47                            | N=51                   | N=47                   | N=51                |



**Table 15:** Shows the correlation co-efficients between the EAT-26 and six subscales of the Parent/ Attitude Behaviour Questionnaire (adapted from the CCNES).

As can be seen from table 15 none of the six sub scales significantly correlated with the EAT-26, although distress reaction to emotion neared significance ( $p=.125$ ).

Given that results were non-significant, no further analyses were undertaken on the parent/ child questionnaire data.

## **5.5 Discussion**

This study sought to investigate the relation of state, trait and coping with emotions to disordered eating patterns.

### **5.5.1 Hypothesis 1a Findings**

The first finding was that eating disorder symptoms correlated strongly with the four 'negative emotions', with disgust and sadness demonstrating very large correlations. These correlations were maintained, even when depression and anxiety were partialled out of the analysis. Depression did have some impact on the size of the correlations between disordered eating and the four emotions, but only fear reduced to a non-significant level. Indeed, as discussed by Cohen (1988) a correlation can also be regarded as an effect size; with correlations less than .3 can be interpreted as a small effect, between .3 and .5 as a medium effect, and over .5 as a large effect. Therefore, according to Cohen (1988), with the exception of fear, all of the partial correlations (with depression) would be regarded as a medium effect. Interestingly, given the predominance of anxiety in the current theoretical models (e.g. Pallister and Waller, 2008), both anxiety and the emotion of fear seemed to be of lesser significance in the

correlation analysis, and removal of depression in the first set of partial correlations reduced the correlation between disordered eating and fear to a non-significant level. In considering the correlation between anger and EAT-26 scores, it was interesting that the relationship was a positive relationship, when there is some evidence that anger is suppressed for people with eating disorders (e.g. Waller et al, 2003), and therefore, it may have been expected that anger would negatively correlate with eating disorder scores. However, this finding of increased anger for people with eating disorders fits with the findings from chapter 4 where there were increased levels of the actual emotion of anger in people with bulimia nervosa, but the same participants also demonstrated an increase in anger suppression scores.

The regression analyses examined the contributory effect of each of the emotions on disordered eating. The results were broadly as predicted, with anger and sadness uniquely predicting nearly 50% of the variance in the analysis. For the emotion of anger, this finding is very much in keeping with the previous research by Waller et al (2003), Geller et al. (2000) and the results from chapter 4 and 5. The finding that sadness also contributed significantly to disordered eating also provides some further supportive findings for the results from chapter 3. It was interesting that the emotions of disgust and fear did not contribute significantly to the overall model.

### **5.5.2 Hypothesis 1b Findings**

In terms of trait emotions, the initial correlation results showed a very similar pattern as the state-emotion data. Trait disgust and sadness showed large correlations, but all the trait emotions significantly correlated with disordered eating patterns (EAT-26). Interestingly, all of these correlations disappeared when the depression scores were partialled out of the correlation analyses. However, for the trait disgust, the results

were nearly significant and could be regarded as a small to medium effect (as defined by Cohen, 1988). In many ways, disgust appears to be the consistent theme across both state and trait emotions. Interestingly, the partialling out of anxiety had more of an effect upon the size and significance of the correlations between trait emotions and disordered eating, than the equivalent analyses for state emotions. However, even here, disgust maintained its significance and it still represented a small to medium effect. For trait sadness, the correlation, like trait disgust, was very close to significance and it also represented a small to medium effect, as discussed by Cohen (1988). Throughout the analyses of the trait emotion's correlation to disordered eating, depression and anxiety exerted a significant effect. Only disgust appeared to be a fairly consistent variable to maintain its effect with disordered eating.

### **5.5.3. *Hypothesis 1c Findings***

The analyses from the coping with emotions scale (from the BES) demonstrated a significant correlation between the coping scale and disordered eating for the emotions of sadness, disgust and fear. Indeed, all of these significant correlations were in the medium effect range (Cohen, 1988). However, once depression was partialled out of the correlation analyses, the significance of these correlations disappeared, although the correlation between disordered eating and difficulties with coping with fear was only marginally non-significant, and it still maintained a small to medium effect (Cohen, 1988). When anxiety was partialled out of the correlation, the correlations had the same significance pattern as the original correlations without any partialling out of variables.

### **5.5.4. *Hypothesis 2 Findings***

The final aim of this study was to examine the contributory role of parental responses to emotions onto disordered eating patterns, whilst controlling for depression and anxiety. Moreover, depending upon the results of this analysis and sample size, an exploratory mediator/ moderator analysis was to be conducted that looked at the relationship between parental responses to emotions, state emotions and disordered eating patterns. However, the results from this study showed that none of the parental response styles correlated with disordered eating patterns. These results led to the decision that no further analysis would be undertaken with the data from the PAB questionnaire.

#### **5.5.5. *Emotions and Disordered Eating***

Although limited by the size of the sample, the data pertaining to state emotions (hypothesis 1a) supported the SPAARS-ED model as discussed in Chapter 2. This study's data and the previous literature suggest that people with eating disorders experience both higher levels of anger and sadness, and also experience these emotions as being overwhelming. Given that it is likely that the participants in this study were more bulimic in nature, current theory would suggest that emotions are suppressed once they enter consciousness. This point is discussed by Waller et al. (2007), who proposed that the emotion is suppressed once it enters consciousness, and is often related to more bulimic symptom patterns. Within chapter 3, it was found that individuals with eating disorders had experienced a high level of anger whilst they were growing up and it was argued that this increased anger appeared to be associated with an increased propensity to binge and vomit. In other words, the experience of increased anger led the individual to use strategies to 'manage' or 'suppress' the emotions from the sense of self. However, the results from PAB

(hypothesis 2) did not support the hypothesis that parental responses to emotions were related to disordered eating patterns. This finding will be explored in more detail below.

The results from the initial correlation analysis and the regression analysis highlighted how disgust initially appeared to be an important emotion for eating disorders, but once sadness and anger were entered into the model, the unique effect of disgust disappeared. This suggests that while the experience of disgust may be heightened in individuals with eating disorders, it may be linked to other relevant emotions such as anger or sadness rather than being an independent risk factor for symptoms. This finding fits with the results from chapter 4 on how anger and disgust may be 'coupled' within people with disordered eating, in particular, people with bulimic symptomatology. This study's findings on the potential role of disgust in eating disorders may help to some explain of the inconsistencies of the research on disgust.

The finding that sadness predicted disordered eating patterns was an interesting finding, as this is the first time that this emotion has been found to be significant for people with eating disorders. Within the SPAARS-ED model it is discussed that sadness was a key emotion for eating disorders, and within chapter 3 it is discussed how participants with a diagnosis of anorexia nervosa often felt that experiencing and expressing the emotion of sadness was a sign of 'weakness' and 'damaging to close family or friends'. Some of the participants in this study discussed how they had developed strategies that allowed them to express their emotions in a more 'appropriate manner', for example, choosing a 'weepy film'. The limited expression of sadness was felt to be related to the actual eating disorder, and this study offers further evidence supporting this relationship. As discussed by Power and Tarsia

(2007), sadness was the strongest predictor of depression, shortly followed by disgust. Given this study's data, it may well be that sadness and disgust are important emotions in understanding the high levels of co-morbidity of disordered eating symptoms and depression (as predicted by the SPAARS-ED model). The final finding from the regression analysis for state emotions was that fear becomes a significant predictor of disordered eating, but its effect was tiny. The overall variance change following the introduction of the emotion of fear was very small, and therefore, it is likely to only play a small role in the overall predictive model for disordered eating. In the qualitative study, it is of note that some of the participants discussed the secondary aspect of fear, in that, eating disorders almost brought upon the emotion of fear, rather than it played an aetiological role in the disorder. This study's results offer some tentative evidence to this hypothesis.

The picture presented for the trait emotions data was a rather complex picture that demonstrated how depression often exerted a significant influence in the relationship between disordered eating patterns and trait emotions. Indeed, even in the regression analysis, only depression consistently predicted disordered eating. As discussed above, the SPAARS-ED model proposes that disordered eating patterns and depression share similar underlying emotions, namely sadness and disgust (and to a lesser degree, anger). The pattern of the results suggests there is an interaction between depression, disordered eating and all of the trait emotions. These findings not only fit with the SPAARS-ED predictions, but also with the work of Eric Stice and colleagues. Stice et al (2001) highlighted that thin body internalisation was an important construct in understanding both levels of depression and marked body dissatisfaction and it may be that the emotion of disgust underpins both of these difficulties. If the sample size was bigger these hypotheses could have been tested via



a path analysis, where it could be seen if trait disgust and trait sadness lead to depression, which in turn, would lead to disordered eating patterns. The discussion in the introduction chapter on emotional warmth and affiliation may offer some pointers to this discussion, as Jenkins and Oatley's model discusses how a lack of affiliation and warmth is related to the emotion of sadness. This, if operationalised properly, could form a part of a path analysis to test this theory. This remains a hypothesis, as the results of this study cannot confirm the specificity of disgust given the effect on all the trait emotions.

According to the SPAARS-ED model and the findings from chapter 3 and chapter 4, it would have been predicted that trait anger would have had a strong correlation with disordered eating patterns. However, this was not the case for this study. This finding is at odds with the findings of chapter 4, where trait anger was found to higher in the participants with bulimic symptomatology. Likewise, it could have predicted that trait sadness would have had a stronger correlation, given the results of the state emotions analyses and the previous research in this thesis. There are a couple of potential explanations for this study's findings. Firstly, the other study's findings were unreliable, and given the relative size of this study's sample size it maybe that depression is the key emotional experience that contributes to disordered eating (as discussed by Crisp, 1980). However, given the findings of the state emotions data, this appears to be unlikely, as it remains unclear why depression would only exert an influence on trait level emotion. One possible explanation lies within the self's interpretation of their own emotionality, in that, people with eating disorders may not want to acknowledge their own emotionality even to themselves. According to this view, recent emotions are still clear in the person's mind and they are able to reflect and answer questions upon them (as with the BES state emotions questionnaire).



However, as time goes by, the tendency to deny the emotional experience grows and the true nature of the experience is minimalised. This effect could be heightened by the probable presence of alexithymia in this sample. It may be that alexithymia, brought on by low mood, affects the ability to recall emotional experiences, which would hamper the answering of the trait emotion questions on the BES. This study's participants exhibited a very high level of depression (HADS-D = 15.45), and the findings of Bydlowski et al. (2005) and Kessler et al. (2006) showed that there is a close link between measures of anxiety and depression, and alexithymia. Whilst, Eisguirrea et al. (2004) found that the relationship between eating pathology and alexithymia was moderated by levels of depression. In hindsight, it was a mistake not to include a measure of alexithymia in this study. Despite this limiting factor, it was interesting that the coping with emotions showed consistent high means for all the negative emotions, which would indicate that the participants had difficulty with coping with all the emotions. This theoretical perspective would also help to explain the findings for hypothesis 2, in that, the non-significant findings between the emotional histories questionnaires and disordered eating. This will be explored more fully below. In sum, although there may be many reasons why the trait emotions did not follow the same pattern of findings as the state emotion findings, it is still interesting that it appears that it is state emotions that are linked to disordered eating, and sadness and anger are the emotions that predominantly predicted disordered eating in this study.

For the coping with emotions findings, it was interesting that the emotions of sadness, fear and disgust were the emotions that correlated with disordered eating patterns. These findings fit with the theoretical ideas raised by the SPAARS-ED model and also some of the 2<sup>nd</sup> generation CBT models that postulate the affect regulation

function of eating disorders (e.g. Cooper et al, 2004; Waller et al, 2007). As with the trait emotion data, these correlations reduced to non-significance levels when depression was partialled out of the equation. It is likely that depression plays both a cause and effect of these difficulties with depression. The SPAARS model and the meta-cognitive model of emotional disorders (Wells, 1997) both discuss how negative appraisals of emotion states and the wish to not engage with them is often pivotal in the maintenance of the emotional disorder, such as depression. Likewise, the actual depression would also play a role in leading the individuals concerned to negatively appraise their ability to cope with their emotions. In other words, the more depressed someone is, the more likely they are to report that they are not able to cope with their emotions, especially negative emotions. Equally, as discussed above, the more depressed the participants become, the more alexithymic they are likely to become. This would leave them with an overall difficulty with coping with all their emotions. This would also help to explain why depression was the only predictor variable to predict disordered eating in the regression analysis.

There is one final point to make about findings from the analyses from the three parts of hypothesis 1 and this concerns the role of fear and anxiety. In many contemporary theories, anxiety has been regarded as a cornerstone of eating disorders (e.g. Pallister and Waller, 2008). Waller (2008) has even argued that eating disorders should be regarded as an anxiety disorder and it should be classified as one within the new classification system from the American Psychiatric Association (DSM V). The results of this study have highlighted that fear appears to play a minor role in disordered eating and the partialling out of anxiety in all of the correlation analyses all showed a small effect. Interesting, the only time fear showed a reasonable correlation was between coping with fear and disordered eating. It may be that fear is a very

visual emotion in terms of difficulty with coping, but also, as discussed in the introduction, fear and disgust play similar functions and it may be that the role of disgust may account for what is actually perceived as anxiety within eating disorders.

### *Early Responses to Emotions*

The other main aim of this study was to investigate the relation of different responses to emotions whilst the participants were still young. The results were stark, as they did not demonstrate any significant correlations between the carer responses to emotional styles and disordered eating patterns. This result is a direct contrast to the results of chapter 3, where all of the participants discussed different parental responses to their emotions and these had the effect of reducing the expression of those emotions. It is not clear why there were not any clear significant correlations, as it could be due to either or both methodological and theoretical reasons. The findings from the punitive scale which showed that there were a high number of participants who did not complete the punitive subscale were felt to be highly significant by the researchers. One hypothesis was that the participants who had experienced this form of parental interaction around their own emotions avoided these answers to the questions as it was too difficult to answer. Related to this, was the above theoretical hypothesis that alexithymia may have played a role in the trait and coping with emotions subscales results. It would seem likely that if alexithymia has exerted an influence across the trait emotions and coping with emotions data, then it is likely that it would interface with the memories of how parents/ carers responded to their emotions.

An alternative explanation could have been that the adapted questionnaire in this study may not be sensitive enough to detect the nuances in the interactions between care givers and the participants (as children). The interactions discussed in chapter 3 were often subtle and, perhaps, not easily accessible by a quantitative measure. Despite this, distress reaction neared significance (although this was not marginal) and this type of reaction would fit theoretically within the SPAARS-ED model and the results of chapter 3, as well as previous research (e.g. Krause et al, 2003; Coggins and Fox, 2009). Indeed a correlation of .22 would represent a small to medium effect as detailed by Cohen (1988).

### ***Limitations and critique of this study***

As with all research, this study is not without its drawbacks. The participants in this study did not undertake a formal assessment of their eating disorder (e.g. Eating Disorders Examination; Cooper, Cooper and Fairburn, 1989), so it is impossible to conclude that all the participants in this study met diagnostic criteria for an eating disorder. Despite this lack of formal interview assessment, all the participants reported high levels of eating pathology on the EAT-26 and felt able to place themselves on a research volunteer list via a national eating disorders charity, B-EAT. The second point to reflect upon within this study is how the data is of cross-sectional nature. In other words, causality cannot be inferred from this study's findings. It may well be that the actual eating disorder creates these emotions within the sufferer, and this was what was picked upon within the results.

However, an alternative interpretation of hypothesis 1a could be that the effect of disgust on disordered eating disappeared because of the low sample size. Given the strong correlations between disgust and eating disorders, it is quite possible that the

predictive value of disgust would increase with a larger sample size. In saying this, it is noteworthy that disgust has been shown to be an emotion that is quite complex in the study of eating disorders, and other authors have shown that it often has a relation to other emotions (e.g. Davey, in press). This is an area that certainly would benefit from further studies with larger sample sizes.

As detailed above, it was an omission not to have included a measure of alexithymia in this study. Although the participants appeared to be able to reflect and fill out measures on emotions, it would have been prudent to have investigated alexithymia in a study of emotions and eating disorders. Likewise, the B-EAT dataset was much larger than the numbers recruited for this study and it would be interesting to understand why people refused to take part in this study. The actual participant group for this study was much older than was expected and it is likely that a more complex, chronic group of participants took part in this study. This may have an effect upon how representative this sample is of people with disordered eating.

# **Chapter 6: An Investigation into Emotional Regulation, Core Beliefs and Emotional Coupling in Anorexia Nervosa**

## **6.1. Introduction**

Over the last few chapters, this thesis has argued that problems with emotions and their regulation lay at the heart of eating disorders. In particular, anger and sadness has been shown to predict disordered eating, and the qualitative study demonstrated key difficulties with sadness and anger. Furthermore, the grounded theory study also demonstrated some interesting developmental factors that have the potential to help understand the pathway that leads to the development of eating disorders. So far, with the exception of the parent/ carer's response to emotions data presented in the last chapter, the findings have been broadly supportive of the SPAARS-ED model presented in chapter 2. Although these studies have produced some very interesting data, there are still key theoretical points from the model that need to be tested. With the exception of the qualitative data presented in chapter 3, the clinical caseness of the participants has not been ideal, and it is imperative that any model needs to be tested on a clearly defined clinical group. Furthermore, there is a need to investigate the more cognitive aspects of the model by exploring core beliefs and their emotional associates within the eating disorders. So far, within the research literature, the linkage between the basic emotions and core beliefs has not been investigated and it is argued that a clearer understanding of these cognitive-affective relationships will help to further develop the theoretical account of the eating disorders.

As presented in chapter 4, there are some data that suggests that anger and disgust may be acting in a coupled way in individuals with bulimic symptoms. However, it was not clear whether this increase in disgust was associated with changes in perception of how people with eating disorders view their own bodies, or their view of what they would ideally like their bodies to look like. The untested hypothesis from chapter 4 is that the increase in levels of disgust following the anger induction would lead to an increase in perceived body shape. This would fit with the findings of Hayaki et al (2002) and Geller et al. (2000) who found that suppressed emotion led to an increase in body dissatisfaction.

Finally, there has been no objective test of emotional regulation strategies within this thesis so far. Both implicitly and explicitly within the SPAARS-ED model, it is predicted that people with eating disorders will have markedly internal and dysfunctional emotional regulation strategies. Furthermore, it is also predicted that people with eating disorders will have a tendency to suppress emotions and the associated thoughts. To date, research has only suggested that these strategies are in place, but it has not been tested explicitly.

## **6.2 Aims/ Hypotheses**

This Chapter consists of two sister studies that both examine two principal aims: emotional regulation and core beliefs; and emotional coupling, with associated body image estimations in participants with a diagnosis of anorexia nervosa.

### **Aim 1**

Given the lack of research that has explicitly examined emotional regulation strategies within anorexia nervosa, the aim of this current study was to examine both the types



of emotional regulation across four domains (internal-external/ functional-dysfunctional) and emotional/ thought suppression. Within this section of the study, an investigation of the type of core beliefs and their relation to the five basic emotions was investigated.

**Hypothesis 1a:** It was hypothesised that, in line with the previous research (both within this thesis and in the general research literature) that the anorexia nervosa participants would score significantly higher on the internal-dysfunctional subscales of the emotional regulation questionnaire than the control group participants, when co-varying for depression and anxiety.

**Hypothesis 1b:** It was hypothesised that, in line with the previous research (both within this thesis and in the general research literature) that the anorexia nervosa participants would score significantly higher on the white bear suppression inventory (WBSI) than the control group participants, when co-varying for depression and anxiety.

**Hypothesis 1c:** It was hypothesised that, in line with the previous research that the anorexia nervosa participants would score significantly higher on the negative self and others scales of the Core Beliefs Scale than the control group participants, when co-varying for depression and anxiety.

**Exploratory Hypothesis:** To undertake an exploratory analysis of the relationships between basic emotions (as measured by the Basic Emotions Scale) and the Core Beliefs (as measured by the Core Beliefs Scale) for the anorexia nervosa group.

## **Aim 2**

The second aim of this study was to replicate and enhance the study reported in chapter 3, by both enhancing the methodology and using a bona fide AN group of participants.

**Hypothesis 2a:** It was hypothesised that participants with anorexia nervosa would report higher levels of state anger (as measured by the State anger scale from the STAXI; Spielberger, 1996) in comparison to matched controls following an anger induction.

**Hypothesis 2b:** It was hypothesised that an anger induction would lead to a significant increase in the emotion of disgust (as measured by the Disgust Sensitivity Scale; Haidt, McCauley and Rozin, 1994 ) in participants with anorexia nervosa, when compared to matched controls. In keeping with chapter 3, there would be a secondary co-variance analysis, which was designed to investigate the potential impact of depression and anxiety on the above anger and disgust hypotheses (as measured by the Hospital Anxiety and Depression Scale; Zigmond & Snaith, 1983).

**Hypothesis 2c:** It was hypothesised that a rise in the emotion of anger (measured by the state anger scale from the STAXI) would lead to a significant increase in the estimation of body size (as measured by a body shape silhouette scale) and a significant increase in the desire to be thinner (as measured by a body shape silhouette scale) in participants with anorexia nervosa, when compared to matched controls. In keeping with chapter 3, there would be a secondary co-variance analysis, which was designed to investigate the potential impact of depression and anxiety on these hypotheses (as measured by the Hospital Anxiety and Depression Scale; Zigmond & Snaith, 1983).

**Exploratory Hypothesis:** To undertake an exploratory analysis of the relationships between state disgust (as measured by the Basic Emotions Scale, the shape concern measure, weight concern measure (from the EDE-Q) and the estimation of body size (as measured by the body shape silhouettes) for the anorexia nervosa group.

## 6.3 Methodology

### Design of this Study

The study utilised a cross-sectional design that utilised two analytical strategies, a between subjects design and a mixed design that incorporated both between and within subjects design. For the sake of clarity, the results will be presented in two stages, with the between subjects design being presented first, with the mixed design being presented second.

### Participants

For the anorexia nervosa group (AN), participants were recruited from three clinical services in a major city in the North of England (one inpatient/day service; and an outpatient service) and a major city in Scotland (outpatient service), whilst control participants were recruited from University students. Only females were included in the analysis, as exploring gender differences in emotional experience was beyond the scope of this current research and there is some research which suggests eating disorders in males may be dependent on different psychological processes (e.g. Fernandez-Aranda, Aitken, Badia, Giminez, Solano, Collier *et al.* 2004). Data collection lasted 9 months. As will be detailed below, this study was undertaken in two parts. A number of participants only undertook the 1<sup>st</sup> part of the study, however, the majority of participants undertook both parts of the study. For the AN group, 33 females took part in the first part of the study, with 23 of this group taking part in the second part of the study. For the control group, 22 females took part in the first part of the study, with 19 females taking part in the second part of the study.

*Service I – Inpatient Unit*

The inpatient unit in Manchester was split into two sections; intensive care (ITU) and acute. The ITU's patients were typically very low weight and were often on a non-solid diet and used nasal gastric tubes for refeeding, whilst the acute patients were much more physically stable. There are 15 beds on the ITU and 13 beds on the acute. There are approximately 30 places at the day service. This service was the same service that was used for recruitment in the study presented in chapter 3. The vast majority of patients on this unit suffer from anorexia nervosa and they are often admitted because their anorexia nervosa has put their physical health in danger. People are referred to the service from around the whole of the North of England. Within this service, all the patients were invited to take part in this study and, in practice, this meant that 72 patients were approached. Out of these 72 people, 26 people consented to part in the study. Out of these 26 people from the inpatient unit, 7 only took part in the first part of the study (questionnaires) and 19 took part in both the first and second part of the study (mood induction part of the study).

*Service II and III – Outpatient Service*

The two outpatient services used in this study were the principal NHS outpatient services for their respective cities. These services offered a variety of psychological therapies, including CBT and CAT. Both of these services see people with a variety of eating disorders, including anorexia nervosa (down to BMI's of 14) and bulimia nervosa. Patients in receipt of services at these services tended to be a heterogeneous group, with a mixture of length of time with their anorexia nervosa and varying degrees of severity. Recruitment from the outpatient services was slow, and staff feedback that patients did not want to be involved in the project as it concerned

emotions. Although it is not clear how many patients were approached as the actual clinicians approached the patients, an approximate was given as 30-35 people approached to take part in the study. The diagnosis of anorexia nervosa was confirmed by the responsible clinician involved in their care. Out of these participants, 5 agreed to take part in both the first and second stages of the research.

As can be seen below, table 1 shows the demographic data for both participant groups. This data includes mean age, mean BMI and mean HADS scores for both groups in this study.

**Table 1**

|        | <b>Anorexia<br/>Participants<br/>(SD)</b> | <b>Control<br/>Participants<br/>(SD)</b> | <b>Prob.</b> |
|--------|---|--|--------------|
| Age    | 23.70<br>(4.20)                           | 23.38<br>(3.03)                          | .27          |
| BMI    | 15.49<br>(2.55)                           | 22.81<br>(4.37)                          | .01*         |
| HADS-A | 14.77<br>(3.89)                           | 11.86<br>(4.37)                          | .01*         |
| HADS-D | 10.74<br>(4.29)                           | 15.32<br>(1.72)                          | .01*         |

**Table 1:** Shows the mean scores and standard deviations for age, BMI, HADS-A and HADS-D for both the clinical and control groups. \*denotes significance at 0.05

As can be seen from table 1, there was not a significant difference between the participant groups on age. However, there was a significant difference between the participant groups on BMI, anxiety and depression. Interestingly, the difference for the depression scale was contrary to expectation, as the control group was significantly more depressed than the AN group. In saying this, both groups reached probable clinical caseness for both anxiety and depression (scores greater than 8).

For the AN group, a diagnosis of anorexia nervosa was confirmed with the lead clinician for that person. As detailed above, recruitment occurred in dedicated eating disorders services where access could only be achieved with a specific eating disorder diagnosis. However, to ensure clinical caseness within this study, caseness was confirmed with the Eating Disorders Examination Questionnaire (EDE-Q). Clinical participants were only included in the analysis if their EDE-Q scores were in the clinical range. Mond et al. (2004) found that a score of 3.09 on the global scale on the EDE-Q indicated clinical caseness. On the basis of these data, a cut off of 3.0 was used to ensure clinical caseness for the AN group. The majority of participants were recruited from an inpatient facility which meant that many of the behavioural indicators of eating disorders were not possible (e.g. avoiding food). Therefore, it is highly likely that the levels of eating pathology were significantly under reported by the EDE-Q. However, there are a paucity of scales that directly measure eating disorder symptoms within specialist/ eating disorder inpatient units.

For the control group, Mond et al. (2004) reported a mean EDE-Q score of 1.19, however, participants were recruited if their scores were below 3.0 on the global scale of the EDE-Q. As detailed below, the scores on this sub-scale were, in practice, much lower than this cut off with the mean score not being greater than 1 (.937, SD=.66). This mean score is comparable to the data reported by Mond et al (2004).



**Table 2**

| EDE-Q subscale                   | Participant Group | N  | Mond et al (2004) Mean clinical data (SD) | Present Study Means (SD) |
|----------------------------------|-------------------|----|---|--------------------------|
| eating disorders restraint score | AN group          | 30 | 2.65 (1.48)                               | 4.23 (1.31)              |
|                                  | control group     | 22 | 1.19 (1.21)                               | .87 (.96)                |
| eating disorders concern score   | AN group          | 31 | 2.02 (0.95)                               | 3.71 (1.41)              |
|                                  | control group     | 22 | 0.49 (0.74)                               | .39 (.43)                |
| shape concern                    | AN group          | 31 | 4.01 (0.98)                               | 4.96 (.95)               |
|                                  | control group     | 22 | 2.03 (1.38)                               | 1.42 (0.87)              |
| weight concern                   | AN group          | 31 | 3.68 (1.08)                               | 4.50 (1.26)              |
|                                  | control group     | 22 | 1.49 (1.20)                               | 1.12 (.91)               |
| Global eating score              | AN group          | 30 | 3.09 (0.83)                               | 4.33 (.82)               |
|                                  | control group     | 22 | 1.19 (1.21)                               | .94 (.66)                |

**Table 2:** Shows the results of the EDE-Q scores for all its subscales for both the AN group and control group. Table 2 also shows the mean scores from the Mond et al (2004) study for both clinical cases and non-clinical participants.

### *Control Participants*

Control participants were recruited from Lancaster University students. The University of Lancaster is a big campus university which has over 15,000 students. It is multi-cultural university with students from a variety of different social economic backgrounds. Once ethics had been granted to this study, an administrator emailed a short invitation to take part in this study to all the students on campus. This short invitation gave a brief summary of what the study was about by saying that it was a study that was designed to look at emotions and emotional processing in people with anorexia nervosa. It explained that the study was in two parts, with the first part being undertaken on the website at Stellar Survey and the second part would be undertaken at a venue at the University in small groups of 4-5 participants. The EDE-Q was used to ensure that the participants did not have an identifiable eating disorder, and the data for this analysis is presented in table 2. 135 students undertook the first part of the



study, but 113 were found to have elevated scores on the EDE-Q and were therefore unable to take part in the study. This left 22 participants, 3 took part in just the first part of the study and 19 took part in both the first and second part of the study. Each student participant was paid £5 for taking part in both parts of the study.

## **Measures and Stimuli**

### **Eating Disorders Examination-Questionnaire (EDE-Q) – Fairburn and Beglin, 1994)**

In the development of this research study, consideration was given to deciding upon a measure that could be used to ensure clinical caseness or non-caseness for both the clinical and control participant groups. According to Garner (2002) the EDE is the ‘gold standard’ for assessing eating disorders. However, as it is an interview based measure, it is time consuming and, as participants were being recruited via clinical service, it was decided that a measure was needed that either confirmed diagnosis or ensured non-caseness (for control participants). On the basis of this decision, the EDE-Q was used within this study. The EDE-Q is a self-report measure that is based upon the EDE, and its subscales map directly onto the EDE. These subscales are eating disorders restraint scale, eating disorders concern scale, body shape concern, body weight concern and an overall global eating scale. Across these subscales, there are 36 items, and a number of studies have shown a high level of agreement between the EDE-Q and the EDE (e.g. Fairburn and Beglin, 1994, Mond et al, 2004). In keeping with the EDE, scores on each item of 4 or over are regarded as reaching clinical levels. As discussed above, the majority of the data was collected from participants who were currently inpatients on an eating disorders unit in South Manchester. On reflection, it was felt that the score of 4 on each item to denote clinical caseness would be too conservative, as the refeeding regime would prevent the uptake of some

behaviours whilst on the unit (e.g. bingeing, limiting the amount of food, etc).

Therefore, data from the Mond et al. (2004) study was used as an indication of clinical caseness, as these data were based upon clinical cases but is not as strict in describing caseness. As will be seen below, the EDE-Q findings from this study showed that the means for the each of the subscales were either above or just below 4. Given the constraints present on the EDU, it is argued that these scores would under represent the eating psychopathology in the clinical participant group. Peterson et al. (2007) reported satisfactory psychometrics for the EDE-Q with alpha co-efficients ranging from .70 to .90.

**Brief Core Schema Scales (BCSS; Fowler, Freeman, Smith, Kuipers, Bebbington, Bashforth, Coker, Hodgekins, Gracie, Dunn and Garety, 2006)**

The BCSS has 24 items concerning beliefs about the self and others that are assessed on a five-point rating scale (0–4). Four scores are obtained: negative-self (six items), positive self (six items), negative-others (six items) and positive-others (six items).

Individuals were asked to indicate in a dichotomous No/Yes format whether they held each belief. Then, if they answered in the affirmative, they were then asked to indicate their degree of belief conviction by circling a number from 1 to 4 (believe it slightly, believe it moderately, believe it very much, believe it totally). Good psychometric properties for the four subscales were reported by Fowler et al (2006), with alpha co-efficients ranging from .78 to .88 for both clinical and non-clinical subscales.

**State-Trait Anger Expression Inventory-2 (STAXI; Spielberger, 1996)**

The STAXI is a 44 item self-report questionnaire used as a tool for measuring five different types of anger or anger related behaviours. The state anger scale assesses the

'here and now' intensity of anger, whilst the trait anger scale measures how often a person generally feels angry. The anger expression and anger control scales assess four different anger-related traits which are: the expression of anger towards other people and objects (anger expression-out); holding in or suppressing angry feelings (anger expression-in), controlling angry feelings by preventing the expression of anger towards other persons or objects in the environment (anger control-out) and controlling suppressed angry feelings by calming down or cooling off (anger control-in). As detailed in chapter 4, this measure has very good psychometric properties.

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

This questionnaire consists of 7 items relating to anxiety symptoms, and 7 pertaining to depressive symptoms. A score of 8 or above out of a possible 21 on both the depression and anxiety subscales detects 80% of cases (Bjelland et al. 2002). As detailed in chapter 4, this measure has very good psychometric properties.

### **Basic Emotions Scale (BES; Power, 2006)**

This is a 3-part scale constructed from 21 emotional terms which relate to the five basic emotions of anger, disgust, fear, happiness and sadness. As detailed in chapter 4, this measure has very good psychometric properties. However, for this study, only the state emotion measure was used. As reported in previous chapters, this scale has good psychometric qualities.

**The White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994)** is a 15-item self-report measure of tendency to suppress thoughts. Each item is scored on a five-point Likert scale consisting of: "strongly agree" (5), "agree" (4), "neutral or do not know" (3), "disagree" (2), "strongly disagree" (1). Total scores can range from 15

to 85. Higher scores indicate a greater tendency to suppress thoughts. Muris and Merckelbach (1997) reported good psychometric properties for this scale with an alpha coefficient of .86.

### **Regulation of Emotion Questionnaire (REQ; Phillips and Power, 2007)**

The REQ has 21 items that measure across four domains of emotion regulation; namely, internal-functional, internal-dysfunctional, external-functional and external-dysfunctional. Each item is measured on a five point Likert scale ('never' to 'always') where participants indicate how often they use the corresponding method of emotion regulation. Each subscale gives a score for analysis. Phillips and Power (2007) report satisfactory alpha co-efficients for the four subscales, ranging from .66 to .76.

**The Disgust Scale (DS-R; Olatunji, Tolin, Sawchuck, Williams, Abramowitz, Lohr and Elwood, 2007)** The DS is a 25 item scale that measures across three domains of disgust, namely core disgust (a sense of offensiveness and threat of contamination), animal reminder disgust (an aversion of stimuli that serves as a reminder of the origins of humans) and contamination disgust (contamination based disgust sensitivity). The scale is broken down into 2 sections, with the first section being a 'true' and 'false' section, where participants indicated they either agreed or disagreed with a disgust eliciting situation. The second section utilises a 5 point Likert scale which runs from 'not at all disgusting' to 'extremely disgusting'. This scale was developed from the Disgust Scale devised by Haidt, McCauley and Rozin (1994). The revised scale was initially redeveloped in line with the Rozin et al. (2000) 2 factor model of disgust, which consisted of two forms of disgust, namely, core and animal reminder. However, Olatunji et al. (2007) conducted a factor analysis on their data

from the DS-R scale, and uncovered a third factor that related to contamination fear. For the purposes of this study, the total score from the scale was used in the analysis. Olatunji et al. (2007) reported good internal consistency for the DS-R, with alpha coefficient of .84.

**Body Shape Silhouettes (BSS; Romieu, I., Avenel, B., Leynaert, F., Kauffmann, F. and Clavel-Chapelon, F. (2003).** The BSS has two parts, which asks participants to choose a body shape that maps directly onto how they currently feel about their body size. The second part relates to how they would ideally like their body to look. This scale was developed to show incremental larger body shapes from very thin to very large body shapes on both measures. The participant had to circle which body silhouette they feel represents them at that time.

### **Initial Mood Induction I**

**Video Clips (Hewig et al (2005)** Hewig and colleagues produced a set of standardised video clips that have been shown to elicit individual basic emotions. Hewig et al (2005) produced a number of standardised film clips in the language of German. Therefore, a question remained about the translation of one set of stimuli that had been standardised in one language to another language. Therefore, a pilot study was undertaken that used the same methodology as Hewig et al (2005) but within the UK and in English (please see appendix 10 for a report of this pilot study). It was found anger was the hardest emotion to elicit out of the five basic emotions and the proposed anger inducing clip taken from the film of Witness did not significantly differ from the emotion of disgust. This seemed, in part, due to the ambiguous use of the word of disgust in the English language. In asking the participants after the study,

there was a clear distinction between the emotions of anger and disgust, but when disgust was renamed, repulsion. It was therefore decided to use the film clip from Witness as an induction task which would then be followed up by an adapted Velten technique. This clip was shown on a laptop computer. Once this task had been completed, participants were asked to undertake the second stage of mood induction.

## **Mood Induction II**

**Modified Velten Mood Induction Technique (Velten, 1968)** The Velten technique was developed for the study reported in chapter 4 and it was repeated for this study. However, the main drawback from this methodology was that it lacked the internal reliability and validity of knowing the stimuli and hence ensuring that the emotions were accurate and valid. In order to address this potential limitation, each participant was asked to write down their anger provoking situation and these were then independently rated for their potential anger inducing qualities. These were rated by an independent raters and are reported below (please see appendix 13 for examples of the scenarios, as reported by the participants). Each participant was asked to report their written account to rehearse and elicit the emotion of anger.

**Interference Task (Weschler, 1999)** In order to provide a distraction and prevent rehearsal of answers at time 1 of the study, an interference task was included in the design of this study. Interference tasks have been shown to significantly impact upon levels of forgetting (e.g. Lustig and Hasher, 2001). The Coding-Digit Symbol task (taken from the Weschler Adult Intelligence Scale-3<sup>rd</sup> edition (WAIS III)) was used in this study. Within this test, Numbers 1 - 7 are paired with symbols on a key presented



to the participants. The participant has 120 seconds to go through a grid of 90 numbers and place the correct symbol above each number.

## **Procedure**

This research study was given a favourable ethical decision by Scotland A ethics committee and Division of Health Research Ethics Committee, Lancaster University.

## Recruitment

Within the inpatient unit, each participant from the two eating disorders units were written to and invited to take part in the study. This letter contained all the questionnaires in a sealed envelope. The participant information sheet and consent form were attached to this sealed envelope containing the questionnaires and participants were instructed to only open the letter if they agreed to take part in the study. The participant information sheet explained to the potential participants that this study was designed to look at the experiences of emotions in people with an eating disorder and that there were two main questions being investigated in this study. The first one involved questionnaires on how the participants experience their own emotions and beliefs that they may hold about themselves. The second research question asked how people with an eating disorder manage and experience real life thoughts and feelings. These research packs were left with the potential participants and a week later a research assistant made contact with each of the patients and collected the completed (or non-completed) questionnaires and asked if they would like to consent to take part in the second study (i.e. mood induction).

Participants from the two outpatient clinics: Potential participants from the outpatient services were given a Participant Information Sheet by their appointed Clinician. As



detailed above, the Participant Information Sheet, information was given about the Study and a link was also be given to the stellar survey web site where participants filled out a consent form and completed the questionnaires. The same web site also gave further information about the 2<sup>nd</sup> stage of this study (e.g. the mood induction research) and asked if they would like to consent to taking part. The research interviews either took part in Edinburgh University or in nominated rooms in the respective clinical services.

#### Control participants:

At Lancaster University, once ethics had been given for the running of this study, Undergraduate students were emailed a short invitation to take part in this study (as detailed above). Students were required to log onto the website to fill out the questionnaires for the first part of the study. Prior to the participant accessing the questionnaires, participants were given information sheets and consent forms. As with above, participants were then asked to complete questionnaires online and asked whether would like to consent to take part in the experimental part of this study. The study was conducted in two stages.

**Stage 1** In this stage, each participant was required to complete the EDE-Q, REQ, HADS, BES, BCSS and the WBSI.

**Stage 2** In order to keep the HADS scores as close to the experiment as possible, the second stage data was collected within a week of the stage 1 measures being completed. For the second part of the study, at time 1, participants completed the STAXI, DS-R, DPSS-R, and BSS. Participants were then asked to complete the Coding-Digit Symbol task. Once this was completed each participant was required to watch the nominated Witness film clip which was then followed by the modified

Velten Technique (as detailed above). Once in an angry mood, participants were readministered the STAXI, DPSS-R, DS-R and BSS. Once these were completed the participants were debriefed and thanked for their time. Appendix 11 shows the instruction sheet used by all the participants to ensure standardised instructions were given to each participant.

## **6.4. Results**

### **6.4.1 Statistical Strategy**

All statistical analyses were conducted using SPSS version 15 for Windows. Preliminary analysis was undertaken on the data to ascertain whether it met parametric assumptions, with the main variables being checked by conducting Kolmogorov-Smirnov tests (K-S tests). As is the way with a significant amount of clinical research, it was anticipated that the data was not going to be normally distributed, and this instance parametric tests would be undertaken, providing that the other two tests of parametric assumptions were met. As has been discussed elsewhere (e.g. Field, 2005), parametric assumptions are much more powerful tests and therefore, able to withstand one violation of these assumptions. Furthermore, the use of parametric tests would allow co-variate analyses to be undertaken, which would not be possible with non-parametric tests. The outcome of the K-S tests can be seen in appendix 7 which showed that almost all of the variables were shown to be normally distributed. Only state fear, external dysfunction and external function on the REQ, and the positive self-scale on the BCSS were non-normally distributed.

The analyses for the hypothesis 1 were carried out using ANCOVAs, so that the co-variate analyses could be conducted upon the data. For hypothesis 2, the principal

analyses undertaken were mixed-design ANCOVAs (due to the mixed design), with anxiety and depression scores entered into the analysis as co-variates.

#### **6.4.4. Power Analysis for Hypothesis 1**

It was decided in the construction of this chapter's hypotheses that hypothesis 2 would be the principal hypothesis for the power analysis. In considering the issue of statistical power, it was felt that the two hypotheses in this study would have quite different levels of power in their analyses (field vs. experimental methodologies) and this could cause type 1 or type 2 errors in either of the hypotheses, if one power analysis was undertaken to give sample size for both hypotheses. Furthermore, the data for chapter 4 would provide good pilot data for the power analysis for hypothesis 2, whilst no such comparable data exists for the measures used in hypothesis 1. Given these issues, it was decided to complete a retrospective power analysis for hypothesis 1, which would enable a clearer view of the effect size and the levels of statistical power, which would enable a careful consideration of alpha levels to prevent type II errors.

Given that hypothesis 1 consisted of two sub-hypotheses, a power analysis was conducted for each one. The power analysis was conducted as per protocol and the tables presented in Clark-Carter (2004).

On the internal-dysfunction subscale of the Regulation of Emotion Questionnaire (REQ) an effect size was calculated to be  $d=.49$  (using the descriptive data given below), which according to the conventions marked down by Cohen (1988), was deemed to a medium effect. With  $d=.49$ , on a one-tailed t-test, power was calculated

to be .54 (power = .54), which is .26 below the .8 convention for statistical testing. According to Clark-Carter (2004) a sample size of 50 in each group would be necessary to reach .8 power in the analysis. On the negative-self subscale of the Brief Core Schema Scales (BCSS), an effect size was calculated to be  $d=.28$  (using the descriptive data given below), which according to the conventions marked down by Cohen (1988), was deemed to a small effect. With  $d=.28$ , on a one-tailed t-test, power was calculated to be .27, which is 0.53 below the .8 convention for statistical testing. According to Clark-Carter (2004) a sample size of 140 in each group would be necessary to reach .8 power in the analysis. Given that this part of the study was underpowered, it was decided to use an alpha level of .1 ( $\alpha=.1$ ) in order to help prevent type II errors from occurring through the analysis for hypothesis 1.

#### **6.4.5 Power analysis for hypothesis 2**

The power analysis for hypothesis 2 was based upon the results from the study reported in chapter 4. It was decided that the power analysis calculations should be based upon the actual disgust x group interaction, which produced a large effect ( $\eta^2 = .21$ ). According to the tables presented by Clark-Carter (2004), with  $\alpha=0.05$ , a sample size over 19 per group would have .86 power. Therefore, probability was set at .05.

#### **6.4.6. Main Hypothesis Testing – Regulation of Emotion Questionnaire, Brief Core Belief Schema Scale and the White Bear Suppression Inventory.**

Table 3 displays the mean and standard deviations (SD) for Emotion Regulation questionnaire (REQ), White Bear Suppression Inventory (WBSI) and the Brief Core Schema Scale (BCSS). As detailed above, only a handful of variables were found not to be normally distributed. Due to the power present within parametric tests, it was

decided to continue with the parametric tests, providing that other assumptions had not been violated. Each variable within the initial t-test analyses was tested for heterogeneity of variance and only emotional regulation – external dysfunction and negative self beliefs from the BCSS were found to be heterogeneous within the Levene's test of variance. However, the negative self-belief scale was normally distributed and, therefore, it was decided that parametric tests were still appropriate for this sub-scale. For the external dysfunction subscale data from the REQ, as two parametric assumptions had been broken, this data was tested with a non-parametric test of difference, a Mann-Whitney U test.

**Table 3 – tests of difference for hypothesis 1**

|   | Anorexia<br>Group<br>(SD)<br>N=32 | Control<br>Group<br>(SD)<br>N=22 | Probability     | Cohen's<br>d |
|---|-----------------------------------|----------------------------------|-----------------|--------------|
| Regulation of<br>Emotion<br>Questionnaire |                                   |                                  |                 |              |
| External – functional                     | 2.66<br>(.69)                     | 3.13<br>(.71)                    | .02 (t-test)**  | .67          |
| External –<br>dysfunctional               | 1.75<br>(.82)                     | 1.38<br>(.29)                    | .09 (U test)*   | .67          |
| Internal – functional                     | 2.58<br>(.68)                     | 3.06<br>(.60)                    | .01 (t-test)*** | .75          |
| Internal –<br>dysfunctional               | 3.43<br>(.72)                     | 2.10<br>(.59)                    | .01 (t-test)*** | 2.03         |
| White Bear<br>Suppression<br>Inventory    | 62.28<br>(7.42)                   | 45.68<br>(11.69)                 | .01 (t-test)*** | 1.73         |
| Basic Core<br>Schema Scale                |                                   |                                  |                 |              |
| Self-negative                             | 12.06<br>(6.27)                   | 2.05<br>(1.81)                   | .01 (t-test)*** | 2.47         |
| Self-positive                             | 4.27<br>(5.18)                    | 14.55<br>(5.31)                  | .01 (t-test)*** | 1.96         |
| Others-negative                           | 7.14<br>(5.76)                    | 3.68<br>(5.20)                   | .03 (t-test)**  | .63          |

|                 |                 |                 |              |     |
|-----------------|-----------------|-----------------|--------------|-----|
| Others-positive | 10.76<br>(6.25) | 12.09<br>(6.14) | .45 (t-test) | .21 |
|-----------------|-----------------|-----------------|--------------|-----|

**Table 3:** shows the results of the t-tests for the tests conducted upon the regulation of emotion questionnaire, white bear suppression inventory and the basic core schema scale. \*denotes significance at .1, \*\*denotes significance at .05, and \*\*\*denotes significance at .01. Cohen's d is the effect size (.2 = small effect, .5 = medium effect, .8 = large effect).

As can be seen from the above table, the initial analyses broadly confirmed hypotheses 1a-c, as the AN group demonstrated that they used less external-functional strategies and less internal-functional strategies for managing their emotions. However, the AN group reported significantly more internal-dysfunctional strategies for managing their emotions. This finding fits with the findings from the analysis on the White Bear Suppression Inventory (WBSI), as the AN group reported significantly more thought suppression than the control group. On the BSCC measure of core beliefs, the results showed that the AN group reported significantly more negative self-beliefs and fewer positive self-beliefs, whilst the AN group reported significantly more negative beliefs about other people. In order to check for effects of depression and anxiety, a co-variate analysis was conducted on the entire hypothesis 1 data. The results of these analyses can be seen in table 4 below.

**Table 4**

| Variable (co-variate)                             | Anorexia means (SD) | Control means (SD) | F     | P     | R <sup>2</sup> |
|---|---------------------|--------------------|-------|-------|----------------|
| WBSI (model)                                      | 62.28<br>(7.42)     | 45.58<br>(11.69)   | 14.09 | .001* | .463           |
| WBSI (HADS-D)                                     |                     |                    | 1.89  | .175  |                |
| WBSI (HADS-A)                                     |                     |                    | 2.22  | .143  |                |
| WBSI (Group)                                      |                     |                    | 30.20 | .001* |                |
| Emotion Regulation – internal dysfunction (model) | 3.43<br>(.72)       | 2.10<br>(.59)      | 18.05 | .001* | .530           |
| Emotion Regulation –                              |                     |                    | 3.75  | .060* |                |



|  |                 |                |       |              |      |
|--|-----------------|----------------|-------|--------------|------|
| internal dysfunction (HADS-D)                      |                 |                |       |              |      |
| Emotion Regulation – internal dysfunction (HADS-A) |                 |                | .002  | .970         |      |
| Emotion Regulation – internal dysfunction (Group)  |                 |                | 34.84 | <b>.001*</b> |      |
| Emotion Regulation – internal function (model)     | 2.58<br>(.68)   | 3.06<br>(.60)  | 4.27  | <b>.009*</b> | .208 |
| Emotion Regulation – internal function (HADS-D)    |                 |                | 3.13  | <b>.083*</b> |      |
| Emotion Regulation – internal function (HADS-A)    |                 |                | .142  | .708         |      |
| Emotion Regulation – internal function (Group)     |                 |                | 7.32  | <b>.009*</b> |      |
| Emotion Regulation – external dysfunction (model)  | 1.75<br>(.82)   | 1.38<br>(.29)  | 1.225 | .311         | .070 |
| Emotion Regulation – external dysfunction (HADS-D) |                 |                | .102  | .751         |      |
| Emotion Regulation – external dysfunction (HADS-A) |                 |                | .082  | .776         |      |
| Emotion Regulation – external dysfunction (Group)  |                 |                | 1.083 | .303         |      |
| Emotion Regulation – external function (model)     | 2.66<br>(.69)   | 3.13<br>(.71)  | 2.396 | <b>.080*</b> | .128 |
| Emotion Regulation – external function (HADS-D)    |                 |                | .490  | .485         |      |
| Emotion Regulation – external function (HADS-A)    |                 |                | .345  | .559         |      |
| Emotion Regulation – external function (group)     |                 |                | 3.25  | <b>.077*</b> |      |
| Core Beliefs – Negative Self (Model)               | 12.06<br>(6.27) | 2.05<br>(1.81) | 24.84 | <b>.001*</b> | .608 |
| Core Beliefs – Negative Self                       |                 |                | 6.039 | <b>.018*</b> |      |



|   |              |              |        |       |      |
|---|--------------|--------------|--------|-------|------|
| (HADS-D)                                |              |              |        |       |      |
| Core Beliefs – Negative Self (HADS-A)   |              |              | 1.213  | .276  |      |
| Core Beliefs – Negative Self (group)    |              |              | 41.039 | .001* |      |
| Core Beliefs – Positive Self (Model)    | 4.27 (5.18)  | 14.55 (5.31) | 16.368 | .001* | .511 |
| Core Beliefs – Positive Self (HADS-D)   |              |              | 1.103  | .299  |      |
| Core Beliefs – Positive Self (HADS-A)   |              |              | 0.188  | .677  |      |
| Core Beliefs – Positive Self (Group)    |              |              | 26.846 | .001* |      |
| Core Beliefs – Negative Others (Model)  | 7.14 (5.76)  | 3.68 (5.20)  | 1.558  | .212  | .092 |
| Core Beliefs – Negative Others (HADS-D) |              |              | .209   | .650  |      |
| Core Beliefs – Negative Others (HADS-A) |              |              | .002   | .962  |      |
| Core Beliefs – Negative Others (Group)  |              |              | 2.773  | .100* |      |
| Core Beliefs – Positive Others (Model)  | 10.76 (6.25) | 12.09 (6.14) | .343   | .794  | .022 |
| Core Beliefs – Positive Others (HADS-D) |              |              | .097   | .757  |      |
| Core Beliefs – Positive Others (HADS-A) |              |              | .511   | .478  |      |
| Core Beliefs – Positive Others (Group)  |              |              | .776   | .383  |      |

**Table 4:** shows the co-variate analyses of the Regulation of Emotions Scale, White Bear Suppression Scale, and the Basic Core Schema Scales, where depression (HADS-D) and anxiety (HADS-A) were co-varied from the ANOVA analyses.  $R^2$  is effect,  $R^2 = .09$  being a medium effect, and  $R^2 \geq .25$  being a large effect.

As can be seen in table 4, the differences found in the t-tests were supported by the results of the co-variate analysis. Across all the analyses, HADS-A was found not to be a significant co-variate, whilst HADS-D had a significant effect upon the internal dysfunction scale, the internal function scale and the negative self-beliefs scale. Although the HADS-D scale exerted significant effect, the overall significant effect was maintained. The negative others scale demonstrated an interesting pattern of results through the analysis, initially the result was non-significant, but the alpha level reduced to a significant level once depression and anxiety had been partialled out. With regards to the effects size (size of  $r^2$ ), all of the analyses, the effect sizes were medium to large, with only the external dysfunction scale and the positive others scale producing a small effect. These effect sizes do mirror the reported  $\alpha$  levels within these analyses.

#### 6.4.7. Results for Exploratory Hypothesis 1

As detailed in the hypothesis section above, an exploratory analysis was undertaken that investigated the relationship between the core belief scales and levels of state emotion as measured by the basic emotions scale (BES). In order to protect against type II errors, the alpha levels were set at 0.01 and the analyses were based upon 2 tailed tests. The results of these analyses are presented below in table 5 below:

**Table 5**

| N=22                   | State anger | State sadness | State disgust | State fear | State happiness |
|------------------------|-------------|---------------|---------------|------------|-----------------|
| Negative self beliefs  | .155        | .486*         | .628*         | .280       | -.274           |
| Positive self beliefs  | -.059       | -.466*        | -.469*        | -.433      | .309            |
| Negative other beliefs | .482*       | .356          | .402          | .302       | -.166           |
| Positive other         | .152        | -.264         | -.270         | -.349      | .140            |

**beliefs**

**Table 5:** shows four subscales of the Brief Core Schema scale (negative self beliefs, positive self beliefs, negative other beliefs and positive other beliefs), and the five basic state emotions taken from the Basic Emotions Scale. \*Denotes significance at .01.

The results from table 5 highlight strong correlations between negative self beliefs and state sadness, and state disgust, whilst, state anger showed a significant correlation with negative others beliefs. It is worth noting that the negative others scale showed a relatively strong correlation with the state disgust sub scale ( $p=.034$ ), but due to the correction applied to the analysis it did not reach significance. These patterns of correlations will be considered in more detail in the discussion section.

#### **6.4.8 Main Hypothesis Testing – Effects of anger on levels of anger, disgust and estimation of body size.**

##### **Statistical Strategy**

As detailed above, only two variables were found not to be normally distributed and these were ideal body shape (T1) and core disgust (T1). Due to the power present within parametric tests, it was decided to continue with the parametric tests, providing that no other assumptions had not been violated. Each variable within the initial t-test analyses was tested for heterogeneity of variance and only body shape perception (T1), disgust propensity (T1) and disgust sensitivity (T1) showed significance on the Levene's test of variance. Given that these variables were shown to be normally distributed upon the K-S test (as detailed above), it was decided to use parametric tests for all the hypotheses in hypothesis 2.

In order to test that the written reports of the anger eliciting material generated by the participants would actually lead to an increase in anger, each participant report sheet

was assessed by two independent assessors. These assessors were blind to the hypotheses of this study and were asked if they felt that these scenarios would make a person angry. Both assessors agreed that 93% of the scenarios would elicit anger. For the remaining 7%, the assessors reported that there was not sufficient information to guarantee that they felt the respective scenarios would elicit anger. In practice, this meant that 3 out of 41 were not agreed. Despite this, 93% was felt to be a good agreement level to allow the analyses to be made according to the hypotheses.

### *STAXI – State Anger, trait anger and anger expression scales*

The first sub hypothesis of hypothesis 2 was females with anorexia nervosa (AN) would have significantly higher levels of anger, following the induction of anger, when compared to individuals without any eating disorder symptoms (controls). The means and standard deviations for the State anger scores are presented in table 6.

**Table 6**

|   | <b>Control<br/>Condition<br/>(SD)</b> | <b>AN<br/>(SD)</b>       | <b>Probability<br/>(t-test)</b> | <b>Cohen's d</b> |
|---|---------------------------------------|--------------------------|---------------------------------|------------------|
| <b>Time 1<br/>(Prior to<br/>manipulation)</b> | 16.58<br>(2.83)<br>N=21               | 21.75<br>(10.61)<br>N=24 | P=.046*                         | .76              |
| <b>Time 2<br/>(post manipulation)</b>         | 21.47<br>(7.02)<br>N=19               | 30.95<br>(15.35)<br>N=21 | P=.016*                         | .84              |

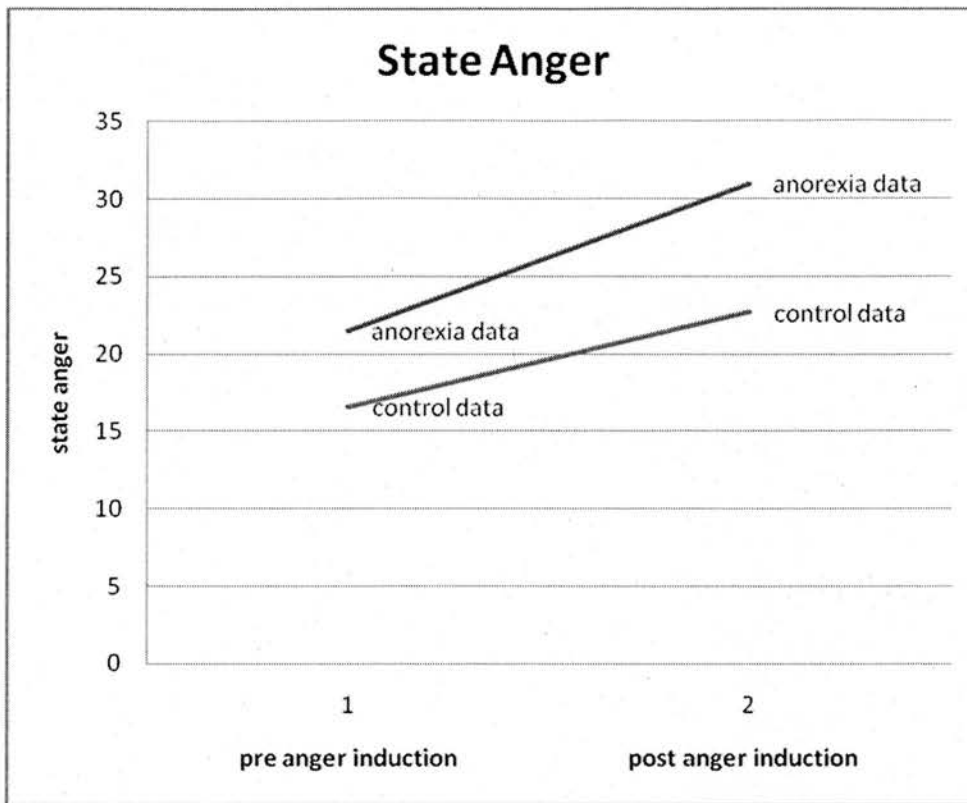
**Table 6:** Means, standard deviations and effect sizes for the State anger scores for both conditions across the participant groups. \*Denotes significance.

State anger scores were evaluated according to a two factorial model (group x time), and these data were analysed by a mixed model Analysis of Covariance (ANCOVA), as the analysis co-varied anxiety and depression scores (taken from the HADS). Effect sizes were calculated using the formula for  $\eta^2$  (eta-squared) from Clark-Carter

(2004). These  $\eta^2$  values were interpreted as per protocol from Cohen (1988) who proposed that  $\eta^2$  values of 0.01 is a small effect, 0.059 is a medium effect, whilst a  $\eta^2$  value of 0.138 can be regarded as a large effect.

As detailed earlier, each group (AN & Control) undertook the Anger induction task, and each group was assessed at time 1 (prior to the Induction) and at time 2 (post induction). This part of the design represented the repeated measures aspect of this study. Where appropriate, further univariate analyses were undertaken to locate the statistical effect within the analyses. The size of  $n$  for the mixed ANCOVA was slightly smaller as 3 people from the AN group did not complete the anger measures from the second stage of the experiment (AN group  $n=21$ ). This had some effect upon the means, the mean for the AN group at time 1 22.62 (SD = 11.102) and at time 2, the mean for the AN group at time 2 was 30.95 (SD = 15.351). For the control group, the means were the same as reported above. Analyses indicated a significant main effect for group,  $F = 18.179$  ( $df = 1, 38$ ),  $p = .01$ . However, there was not a significant group x time interaction effect,  $F = 1.228$  ( $df = 1, 38$ ),  $p = .275$ . The effect size for this interaction between group and anger was small ( $\eta^2 = .03$ ). As there was not a significant effect for group x time, the co-variate analysis was not conducted upon the state anger data. The group x time interaction is illustrated in Graph 1.

**Graph 1**



**Graph 1:** Shows the mean scores for the State anger scales for each participant group before and after the anger induction.

The results from analyses allowed for the rejection of the first sub hypothesis of the second hypothesis, in that, the participants in the AN group showed did not show a significantly greater increase in state anger score, following the anger induction, than the control group. Although the state anger results demonstrated a non-significant interaction effect, it did highlight that both participant groups demonstrated significant anger increases between time 1 and time 2, thereby confirming anecdotal reports from participants that they experienced an increase in anger resulting from the anger induction.



*Trait Anger and Anger Expression Scores*

Although not a part of the hypotheses, it was decided to investigate the trait and expression scales from the STAXI, as the results from the trait emotion sub-scales in chapter 5 were complex.

**Table 7**

| Variable                      | Mean  | Standard Deviation | Probability |
|-------------------------------|-------|--------------------|-------------|
| <b>Trait anger</b>            |       |                    |             |
| AN group                      | 21.83 | 7.26               | .09         |
| Control group                 | 18.79 | 3.82               |             |
| <b>Anger expression – In</b>  |       |                    |             |
| AN group                      | 22.63 | 3.54               | .01*        |
| Control group                 | 17.53 | 5.44               |             |
| <b>Anger expression – Out</b> |       |                    |             |
| AN group                      | 17.00 | 6.21               | .30         |
| Control group                 | 15.11 | 5.39               |             |
| <b>Anger Control – In</b>     |       |                    |             |
| AN Group                      | 17.79 | 5.25               | .01*        |
| Control Group                 | 23.16 | 4.82               |             |
| <b>Anger Control – Out</b>    |       |                    |             |
| AN Group                      | 22.21 | 6.18               | .11         |
| Control Group                 | 24.95 | 4.57               |             |

**Table 7:** shows the trait anger and the anger expression subscales means and standard deviations. \*denotes significance at 0.05.

As can be seen in table 7, trait anger showed a near significant difference between the AN group and the control group. Furthermore, the pattern of the results reported in table 7 highlighted that the AN group showed a higher propensity to suppress their anger and not to express it with other people.

*Disgust Sensitivity Scale*

The second sub-hypothesis of hypothesis 2 was whether the anorexia nervosa group would have significantly higher levels of disgust sensitivity, following the manipulation of anger, when compared to individuals without any eating disorder symptom. The means and standard deviations for the Disgust Sensitivity scale scores are presented in table 8.

**Table 8**

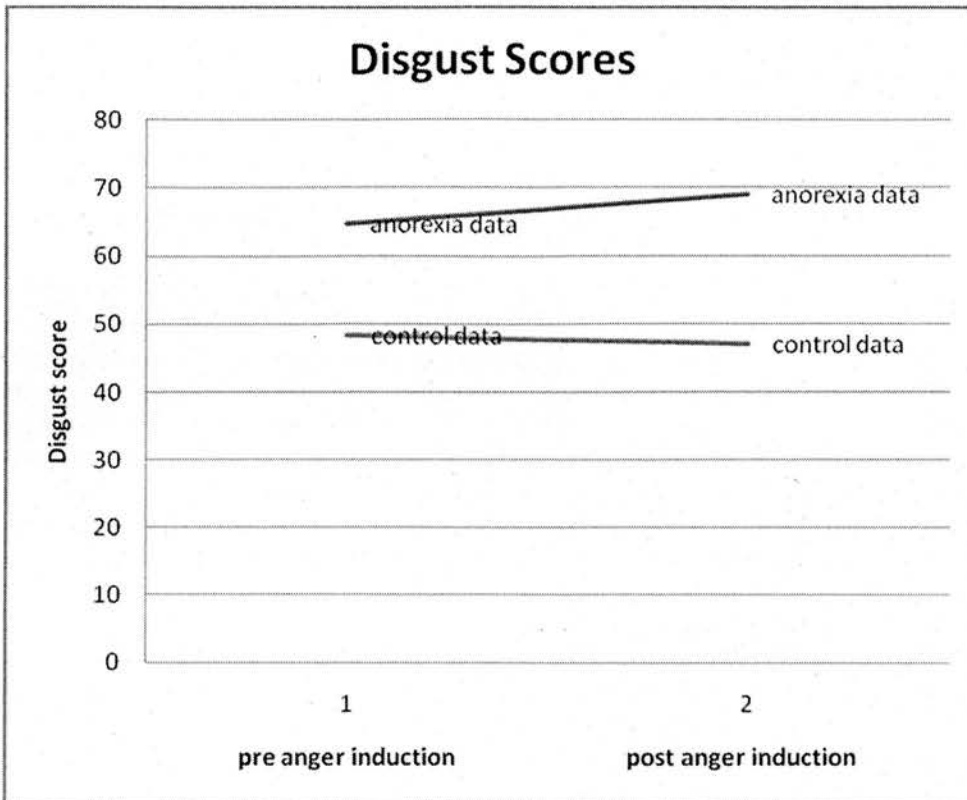
|   | <b>Control<br/>Condition<br/>(SD)</b> | <b>AN<br/>(SD)</b>       | <b>Probability<br/>(t-test)</b> | <b>Cohen's d</b> |
|---|---------------------------------------|--------------------------|---------------------------------|------------------|
| <b>Time 1<br/>(Prior to<br/>manipulation)</b> | 48.70<br>(14.82)<br>N=19              | 64.70<br>(14.82)<br>N=24 | P<.002*                         | 1.01             |
| <b>Time 2<br/>(post manipulation)</b>         | 47.78<br>(15.01)<br>N=19              | 69.04<br>(15.26)<br>N=23 | P<.001*                         | 1.39             |

**Table 8:** Means and standard deviations for the disgust sensitivity scale scores for both conditions across the participant groups. \*denotes significance.

As has been shown in the above table, the AN group scored significantly higher than the control group on the disgust sensitivity scale. This result highlights that the AN group were significantly more sensitive to the emotion of disgust than the control group prior to any anger induction.

Disgust sensitivity scores were evaluated according to a two factorial model (group x time), and this data was analysed by a mixed model Analysis of Co-Variance (ANCOVA). Analyses indicated a non-significant main effect for group,  $F = 3.573$  ( $df = 1, 37$ ),  $p < .067$ , as well as a significant group x time interaction effect,  $F = 6.557$  ( $df = 1, 37$ ),  $p < .015$ . The effect size for this interaction was large ( $\eta^2 = .177$ ). The covariate analyses indicated that HADS – A scores did not have a significant statistical effect on the disgust results,  $F = .124$ , ( $df = 1, 37$ );  $p = .727$ , whilst HADS-D depression scores also did not have a significant statistical effect upon the disgust results,  $F = .014$ , ( $df = 1, 37$ );  $p = .908$ . The group x time interaction is illustrated in Graph 2.

## Graph 2



**Graph 2:** Shows the mean scores for the disgust scale for each participant group before and after the anger induction.

The results from the ANCOVA analyses allow for the acceptance of the second sub hypothesis of the second hypothesis, in that, the participants in the AN group showed significantly higher disgust sensitivity scores, following the anger induction, than the control group.

*Estimation of Body Size*

The third sub-hypothesis of hypothesis 2 was whether the anorexia nervosa group would have significantly higher levels of body size perception, following the manipulation of anger, when compared to individuals without any eating disorder

symptomatology. The means and standard deviations for the estimation of body size scores are presented in table 9.

**Table 9**

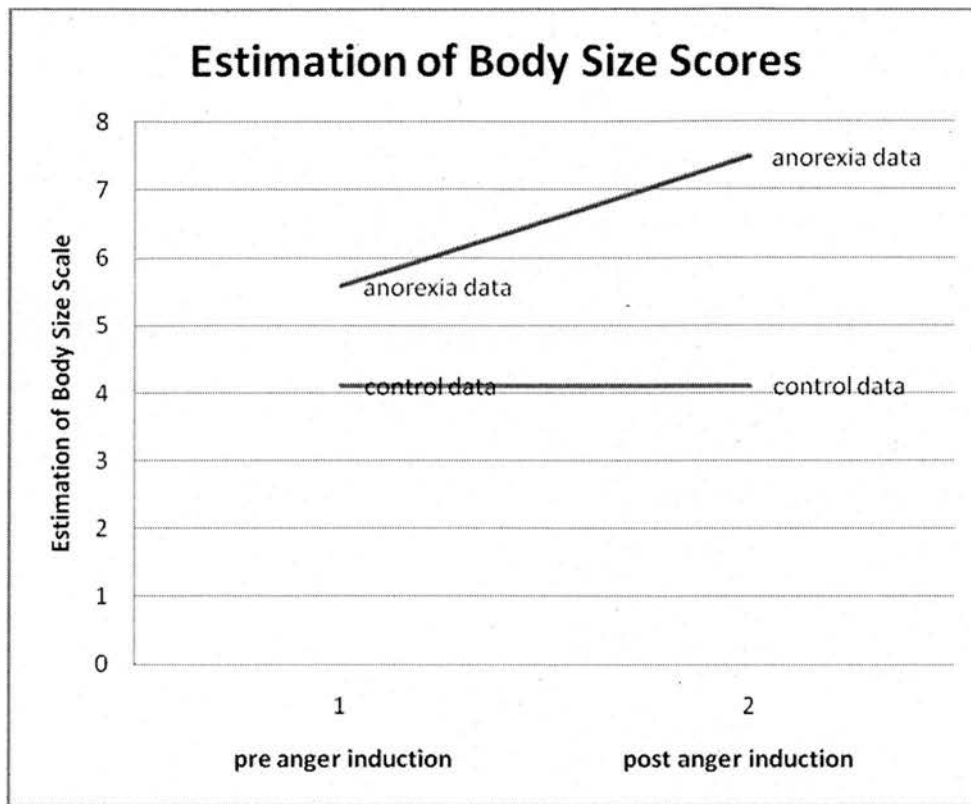
|                                       | Control Condition (SD) | AN (SD)              | Probability (t-test) | Cohen's d |
|---------------------------------------|------------------------|----------------------|----------------------|-----------|
| <b>Time 1 (Prior to manipulation)</b> | 4.11 (1.79)<br>N=19    | 5.58 (3.33)<br>N=24  | .071                 | .50       |
| <b>Time 2 (post manipulation)</b>     | 4.11 (1.91)<br>N=19    | 7.48 (3.146)<br>N=23 | .001*                | 1.33      |

**Table 9:** Means and standard deviations for the estimation of body size scale scores for both conditions across the participant groups. \*denotes significance.

As has been shown in the above table, the AN group scored marginally higher than the control group on the estimation of body size scale, however, this difference was not significant at 0.05. The reported effect size was a medium effect.

Estimations of body size were evaluated according to a two factorial model (group x time), and this data was analysed by a mixed model Analysis of Co-Variance (ANCOVA). Analyses indicated a significant main effect for group,  $F = 10.277$  ( $df = 1, 37$ ),  $p < .003$ , as well as a significant group x time interaction effect,  $F = 17.836$  ( $df = 1, 37$ ),  $p < .001$ . The effect size for this interaction was large ( $\eta^2 = .480$ ). The co-variate analyses indicated that HADS – A scores did not have a significant statistical effect on the disgust results,  $F = .693$ , ( $df = 1, 37$ );  $p = .411$ , whilst HADS-D depression scores also did not have a significant statistical effect upon the disgust results,  $F = .543$ , ( $df = 1, 37$ );  $p = .466$ . The group x time interaction is illustrated in Graph 3.

Graph 3



**Graph 3:** Shows the mean scores for the estimation of body size scale for each participant group before and after the anger induction.

The results from the ANCOVA analyses allow for the acceptance of the third sub-hypothesis of the second hypothesis, in that, the participants in the AN group showed significantly higher estimation of body size scores, following the anger induction, than the control group.

*Estimation of Ideal Body Size*

The fourth sub-hypothesis of hypothesis 2 was whether the anorexia nervosa group would have significantly lower ideal body size following the manipulation of anger, when compared to individuals without any eating disorder symptom. The means and standard deviations for the estimation of ideal body size scores are presented in table

**Table 10**

|   | <b>Control<br/>Condition<br/>(SD)</b> | <b>AN<br/>(SD)</b>      | <b>Probability<br/>(t-test)</b> | <b>Cohen's d</b> |
|---|---------------------------------------|-------------------------|---------------------------------|------------------|
| <b>Time 1<br/>(Prior to<br/>manipulation)</b> | 3.21<br>(.976)<br>N=19                | 1.92<br>(1.24)<br>N=24  | .001*                           | 1.15             |
| <b>Time 2<br/>(post manipulation)</b>         | 3.16<br>(.958)<br>N=19                | 1.70<br>(1.105)<br>N=23 | .001*                           | 4.71             |

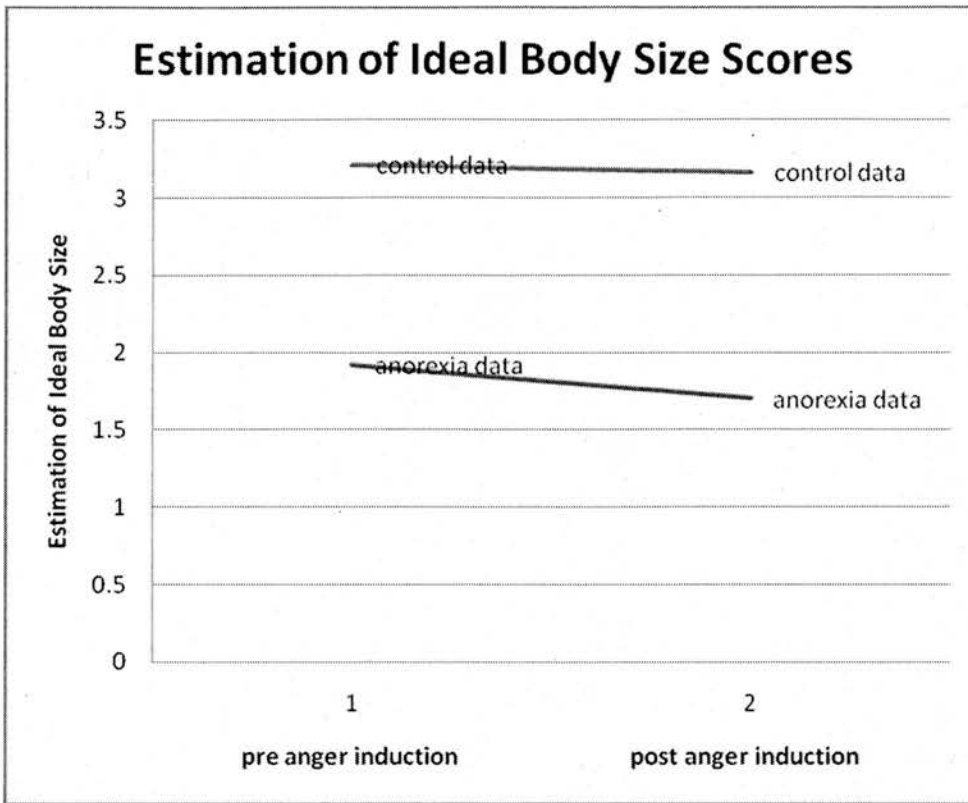
**Table 10:** Means and standard deviations for the estimation of ideal body size scale scores for both conditions across the participant groups. \*denotes significance.

As has been shown in the above table, the AN group scored significantly lower than the control group on the estimation of ideal body size scale. The reported effect size was a large effect.

Estimations of ideal body size were evaluated according to a two factorial model (group x time), and this data was analysed by a mixed model Analysis of Co-Variance (ANOVA). Analyses indicated a significant main effect for group,  $F = 10.277$  ( $df = 1, 40$ ),  $p < .001$ . However, there was not a significant effect for any group x time interaction effect,  $F = .490$  ( $df=1, 40$ ),  $p < .486$ . The effect size for this interaction was small ( $\eta^2 = .01$ ). As there was not a significant interaction between group and time, the co-variate analysis was not undertaken. The group x time interaction is illustrated in Graph 4.



**Graph 4**



**Graph 4:** Shows the mean scores for the estimation of ideal body size scale for each participant group before and after the anger induction.

The results from the ANOVA analyses allow for the rejection of the fourth sub hypothesis of the second hypothesis, in that, the participants in the AN group did not show a significant lower estimation of ideal body size scores, following the anger induction, than the control group.

**6.4.9. Exploratory Analysis**

As detailed in the hypothesis section above, an exploratory analysis was undertaken that investigated the relationship between state disgust and estimation of body size, shape concern and weight concern. As the analyses were based upon a model and previous findings, the correlation analyses used a 1 tailed test. The results of these analyses are presented below in table 11 below:

**Table 11**

| Clinical Anorexia group<br>N=22 | Shape Concern | Weigh concern | State Anger | State sadness | State disgust | State fear | State happy |
|---------------------------------|---------------|---------------|-------------|---------------|---------------|------------|-------------|
| Estimation of Body Shape        | .589**        | .626**        | .358*       | .209          | .455*         | .189       | -.135       |

**Table 11:** shows the correlation analyses between state disgust, state sadness, state anger, state fear, state happiness, estimation of body size, shape concern and weight concern for the anorexia nervosa group (\*denotes significance at 0.05, \*\*denotes significance at 0.01).

The results from table 11 highlight strong correlations between estimations of body perceptions and, state disgust, state anger, shape concerns and weight concerns. The correlations were tested using one-tailed tests, as the direction of the correlations was anticipated prior to the analyses being undertaken (e.g. estimation of body size would positively correlate with state disgust). These patterns of correlations will be considered in more detail in the discussion section.

#### 6.4.9. Summary of Results

As detailed above, hypotheses 1a to 1c were supported by the data from this study. The results from the emotional regulation - internal dysfunction scale showed both a highly significant difference and a large effect, and although depression significantly co-varied, it did not reduce the significance of the results for this hypothesis. The other results from the emotion regulation scale highlighted that the control group had significantly more internal functional strategies to manage their emotions, and this finding also had a medium effect size. Likewise, control participants also had significantly more external functional strategies to manage their emotions, and this

again produced a medium effect. The results from the White Bear Suppression Inventory showed a strong significant difference between the control and the AN group on this measure, with the AN group demonstrating much more thought suppression than the controls. The effect size for this result was very large. The core beliefs scale results showed that the AN group had significantly more negative internal beliefs when compared to the control group. Depression co-varied significantly within the negative internal beliefs analysis, but this did not affect the significance of the effect size. Likewise, the control group had significantly more positive beliefs about the self than the AN group. The results for the negative others beliefs were interesting, as the initial analysis using t-test produced a significant result, but this was initially supported by the results of the ANOVA. However, when depression was co-varied out, this result just met significance at the pre-set level. On the exploratory analysis, negative self beliefs strongly correlated with state sadness and, interestingly, state disgust. For negative other beliefs, there was a strong correlation with state anger and a near significant correlation with state disgust.

For hypothesis two, both participant groups demonstrated an increase in their anger scores on the STAXI following the anger induction, but there was not a significant effect for condition x group. For the disgust hypothesis, the clinical anorexia nervosa group demonstrated a significant increase in disgust scores, when compared to the control group. This was also true of the estimation of body size and this group by condition interaction showed a large effect within the analysis. The estimation of ideal body size showed a trend to preferring thinner bodies post the anger induction, however, this effect was not significant, and the effect size was small. The

correlations between the estimation of body size and state emotions showed significant correlations between state anger, state disgust and estimation of body size.

## **6.5. Discussion**

As detailed at the end of the results section, the majority of the hypotheses for this study were supported by the data of this study. The anorexia group demonstrated much more dysfunctional internal directed emotion regulation strategies than the control participants, and this suggests that people with eating disorders use more critical or harmful ways to manage their emotions. This finding was also supported by the data from the white bear suppression inventory, where the AN group demonstrated significantly more suppression of thoughts than the control group. These findings are very much in keeping with the hypotheses from the SPAARS-ED model and from previous research, in that, people with anorexia nervosa suppress their thoughts and emotions and punish themselves if they experience an emotion. Likewise, the results from the other emotional regulation strategies demonstrate that people with anorexia nervosa also have a poverty of more functional strategies to manage their emotions, such as talking to others or self-compassion. A key part of the SPAARS-ED model is that it proposes that emotions (especially negative emotions) are ego dystonic, and are therefore quite separate to the sense of self. The findings from this study appear to support this theoretical hypothesis. Furthermore, other authors in the field have acknowledged how individuals with eating disorders experience high levels of shame and often lack skills to be able to be compassionate to the self (e.g. Goss and Allan, in press). Interestingly, like the SPAARS-ED model, Goss and Allen argue that this lack of self-care skills has developmental origins, as they consider that sexual abuse, bullying and teasing, and some parenting styles may play an important role in the absence of self-compassion skills. Indeed, these findings have some support from the

findings in chapter 3, although the results from chapter 5 did not find any further evidence for the role of parental styles. Goss and Allen (in press) have developed a number of specific interventions that focus on teaching the client self-compassionate skills.

As detailed in the introduction to this chapter, this thesis has not given much attention to the actual cognitions within eating disorders. Within the literature, there has been a significant amount of consideration of cognitive accounts of eating disorders (e.g. Waller et al, 2007; Cooper, 2005), but as discussed in the introductory chapter of the thesis, this discussion has often left out any overt consideration of emotion. In SPAARS-ED terms, these more cognitive aspects of eating disorders can be accounted for both within the propositional and within the schematic arm of the model. The Brief Core Schema Scale (BCSS) was chosen as it most closely represents the proposed domains of knowledge that are discussed through the more general SPAARS model (Power and Dalgleish, 2008), in that, they propose that knowledge is organised around three mental domains, self, others and the world. Although the BCSS only has two of these domains, it was felt that this would give some preliminary data to test this branch of the SPAARS-ED model. The size of the difference between the anorexia nervosa group and the control group on the negative – self beliefs was highly significant, and the effect size was also very large. It was interesting that the negative self-belief scale strongly correlated with state sadness and state disgust, given that these emotions were predicted by SPAARS-ED model. Furthermore, these results add further support to the findings from the previous chapters within the thesis. Given that the prediction from the SPAARS-ED model about the role of anger, it was, perhaps, surprising that state anger did not correlate

significantly with negative-self beliefs. It could have been hypothesised that self anger may have been associated with negative-self beliefs. It is likely that issues to do with statistical power and sample size may have played a role in the lack of significance, but also the implicit heterogeneity of eating disorder symptoms within the anorexia nervosa group. The results from chapter 3 suggest that anger is an important emotion that differentiates between people who have a restricting eating disorder, and people who have a binge-purge sub-type of anorexia nervosa. In other words, if a purely binge-eating group was recruited, this may have been a much larger correlation. This remains an empirical question.

The negative others scales just showed a significant difference between the anorexia nervosa group and the control group, and it was interesting that this difference became significant with the co-varying of depression from the analyses. This finding is slightly contrary to the anticipated results, but it would suggest that depression somewhat clouds the role of negative others beliefs in anorexia nervosa, and when this is removed, the effect is enhanced. It may be that the depression actually leaves the person more likely to blame themselves for how they have been treated by other people, but once this is removed, the individual can see how others are perceived to be treating them. It was interesting that negative other beliefs were correlated with state anger, and this finding gives further evidence to the findings of chapter 3, in that, people with anorexia nervosa have an internal anger that has originated from how they perceive other people have treated them. It is important to note that none of the data in this thesis allows us to conclude that these events have actually occurred, or whether it is the actual perception of events that is important. According to the SPAARS-ED model, anger is a key emotion in understanding eating disorders, and this instance



anorexia nervosa, and the correlation between negative-other beliefs and state anger is theoretically significant, and supportive of the model. Furthermore, this result fits with the findings from the previous chapters within this thesis and previous research, such as Waller et al (2003) and Geller et al (2000).

The results from hypothesis 2 broadly support the results from chapter 4 and further develop their theoretical implications. The only result from hypothesis 2 that was not supported was the fact that there was not a significant effect for the condition x group interaction on levels of anger at the post anger induction stage. This is an interesting result as it does map the common clinical picture of the person with anorexia nervosa being totally unable to express negative emotion. However, in saying this, the results from both the t-tests and the mixed ANOVA (between subjects analysis) highlight that there were significant differences on the STAXI state anger measure at both time 1 and time 2 and this provides some additional evidence that the anorexia nervosa group were more angry than the control participants. This is especially true, in light of the findings detailed above from hypothesis 1, where the anorexia nervosa participants reported significantly more negative beliefs (both self and others) and these were associated with increased levels of negative emotion. On the expression of anger scales and the trait anger scales; there was a near significant difference between the AN group and the control group on the trait anger scale, whilst there was a significant difference on the propensity to express anger towards others. This score highlighted that the AN group were significantly more likely to suppress their anger and this result fits the findings from chapter 3 and 4.

The main finding of hypothesis 2 was the finding that disgust sensitivity significantly increased after the anger induction when compared to the control group. Furthermore, anxiety or depression did not exert a significant co-variate effect within the analysis. Given the results from the state anger hypothesis described above, this finding gives support to the idea that anger and disgust may operate in a coupled way, but unlike bulimia nervosa, this coupled relationship does not have a mutual facilitation, in that, anger did not significantly increase in the same way disgust, post anger induction. This data suggests one hypothesis, where disgust could be used to inhibit anger prior to consciousness and thereby, preventing the self from realising that they are angry (as per Waller et al, 2007). The findings on the disgust scale are even more interesting when these results are considered in relation to the findings on body size estimation. The size of the effect between group and condition was very large, and it demonstrated that the anorexia nervosa group reported feeling much larger than before the anger induction. The final correlation analyses demonstrated that state disgust and state anger were strongly correlated, with weight and shape concerns, to estimations of body shape. This result showed that as disgust went up for the clinical anorexia group, so did the estimation of body size. This was also true for body shape concern and weight concern. This finding has theoretical significance, in that, it connects level of disgust to the size of the body for people with anorexia nervosa. Although causation cannot be inferred from a correlation, the series of results from hypothesis 2 suggest that anger leads to increase in disgust, and this is also a significant factor in the increase in estimation of body size. It is important to note that the causation may go the other way, in that disgust follows the perceived increase in body size. Likewise, anger may directly work on body size estimation, as one hypothesis could be that anger may lead to bias in the perception of body image. The

correlation between state anger and estimation of body size offers some support for this hypothesis. However, the results of this study do suggest that whatever the process is in play, it is particular to eating disorders, especially anorexia nervosa.

### **Critique and Limitations of the Study**

As has been discussed in all the chapters of this thesis, all research has its drawbacks and this study is no exception. However, in saying this, in the designing of this study, the drawbacks from the study reported in chapter 4 were addressed as far as was feasibly possible. The main drawback from this study was the lack of an objective measure of emotion. This could have been a galvanic skin response (GSR). However, as with previous studies reported in this thesis, the inclusion of this type of measure could have had a deleterious effect upon recruitment of clinical participants. As has been reported both within this thesis and the wider research literature, emotions are a feared phenomena in the life of someone with an eating disorder, it was decided that participants with a diagnosis of anorexia nervosa may have been too wary of having to be connected to a GSR machine that measures emotion arousal. In saying this, verbal reports following the anger induction in the second stage of the study informed the researchers that they were experiencing some emotional arousal, such as increased heart rate and some 'churning' in their stomachs.

It would have been preferable to have assessed each participant with the eating disorders examination (Fairburn et al, 1993). However, the practical constraints on this study prevented such an intensive way of assessing eating pathology, and it was decided to use the next best strategy which was to ask the responsible Consultant Psychiatrist (who both had many years of experience of working with people with

eating disorders) to confirm diagnosis. Furthermore, the inclusion of the EDE-Q (based upon the EDE) also allowed a close proximate to be used in this study which was used to confirm the presence of anorexia nervosa symptomatology. Another unit of measurement that was not ideal was the body shape silhouettes, as it would have been preferable to have had some of form computer software that would allow the participants to accurately draw their estimations of their body size. This could have been compared with time 1 data. Furthermore, the actual anger induction methodology could have been improved by using more ecologically sound methodology, such as Ecological Momentary Assessments (e.g. Palm Pilots). This represents the next stage for this mood induction research. Finally, the relatively small sample size did not allow a comparison of different symptom patterns (e.g. restrictors vs. binge-vomiting). Again, this should form one of the research aims of any follow up studies to this research study.

## **Chapter 7: General Discussion**

Through this thesis, the role of emotions within eating pathology has been considered and examined by various methodologies and with different samples. Through this discussion a brief summary of the findings from each study will be presented and these findings will be then considered in light of the SPAARS-ED model proposed in chapter 2 and with the other main theoretical accounts presented in the introduction. As the strengths and weaknesses of the studies presented in this thesis have been discussed in each of the chapters they will not be repeated in this chapter. Finally, the clinical implications of the findings will be presented and this chapter will finish by offering some suggestions for future research.

### **7.1 Qualitative study's results**

This study was a grounded theory study with 11 participants. It had two principal research questions, one on the nature of their emotions in the 'here and now' and the other concerned more developmental aspect of the participants, as it pertained to their emotions. The qualitative study found some very interesting results about how people with anorexia nervosa understand and experience their emotions and their memories and understandings of how their own and other people's emotions were experienced whilst growing up. The most striking finding was that the participants viewed the emotion of anger as 'toxic' and 'dangerous', whilst sadness was viewed as an emotion of 'weakness'. For anger, there was a strong suggestion from the data that increasing levels of the emotion of anger increased the likelihood of vomiting, in an almost dose-like effect. It was interesting that participants discussed their sense that they were 'not allowed' to experience their emotions, as they were not entitled to be an 'emotional human being'. Related to this point was how participants discussed that they felt

expressing emotion would put them at risk of being rejected by other people. In terms of the actual management of emotions, the participant's discussed how they almost had an automatic suppression of emotions and there was a strong allusion of emotions becoming coupled, in order to protect interpersonal relationships and to not allow themselves to experience emotion.

In terms of their developmental histories, it was very interesting that the participants gave a sense that they had experienced 'too much emotion' as they were growing up, and one of the more contentious ideas to rise from this chapter was that there was a high level of anger within the participants. Related to this point was the theme of how there appeared to be poor emotional skills within the family home, and participants discussed that they were often confused about the emotional overtones to events as they were growing up.

## **7.2. Coupling Study for Participants with Bulimic Symptoms**

This study was an experimental study that compared 25 females with probable bulimia nervosa to 25 control participants within an anger induction study. Measures of anger and disgust were taken prior to an anger induction and then these were then taken after the induction.

This study found that females with bulimic symptoms reported a significant increase in both state anger and disgust sensitivity following an anger induction, when compared to controls. Furthermore, the bulimic symptomatology group reported that they were significantly less likely to express their anger than the control groups.



### **7.3. Basic Emotions Study**

This study was a single participant group study of 52 participants. These participants belonged to a database held by B-EAT (formally known as the Eating Disorder Association) and reported significant difficulty with their eating. This study investigated levels of state, trait and the perception of coping with individual emotions in people with significant disordered eating. The second aim of this study was to also investigate parent/ carer response styles to displays of emotions whilst the participants were children. For the state emotions, the results were clear as sadness and anger, predicted disordered eating patterns. The picture for the trait emotions data was far less clear cut, as depression exerted a significant influence across the relationship between disordered eating and all of the trait emotions. This was also true for all coping with emotions sub-scale. A number of different theoretical explanations were offered as to why there was this difference between state and trait emotions, with one explanation focusing on how individuals with eating disorders may not want to acknowledge their own emotionality and, hence, minimalised the reporting of their general sense of how often they feel particular emotions. Related to this point was the finding that participants reported a consistent difficulty coping with their emotions across all of the negative emotions. It was also tentatively hypothesised that alexithymia may also be playing a part in these results, and this played a role in the difficulty in teasing apart the significance of particular trait emotions in disordered eating. In terms of the responses to emotions, none of the variables significantly correlated with each other (i.e. between the subscales on the emotion measures and the disordered eating measures).

### **7.4. Core Beliefs, Basic Emotions and Coupling Study**

This study was a clinical study that compared participants with a diagnosis of anorexia nervosa with a control group. It was the final study of this thesis and, in many ways, represented the accumulation of the work undertaken so far through the thesis. This study had two parts, with the first part looking at emotion regulation styles, core beliefs and state emotion in people with diagnosed anorexia nervosa. The results showed that participants with anorexia nervosa had an internal dysfunctional emotional regulation style, and this finding suggests that people with AN manage their emotions in a ruminatory, repressive style. Within the co-variate analysis, depression showed a significant effect, but this did not affect the overall result. These results concerning emotion regulation style was supported by the findings from the white bear suppression inventory (WBSI). The WBSI showed that people with anorexia nervosa had a strong tendency to suppress their thoughts and emotions. For the Brief Core Schema Scale (BCSS), the results showed that participants with anorexia nervosa had significantly more negative internal beliefs than controls, and these beliefs were correlated with state sadness and state disgust. On the negative others scale from the BCSS, the AN group had significantly more negative beliefs about others and this was correlated with state anger. Interestingly, for the internal scales, depression significantly co-varied, but this did not remove the overall effect. On the second part of the study, the mood induction showed a significant effect upon both overall levels of disgust and estimation of body size. Although the anorexia nervosa group had significantly higher levels of state anger, there was not a significant condition x group effect.

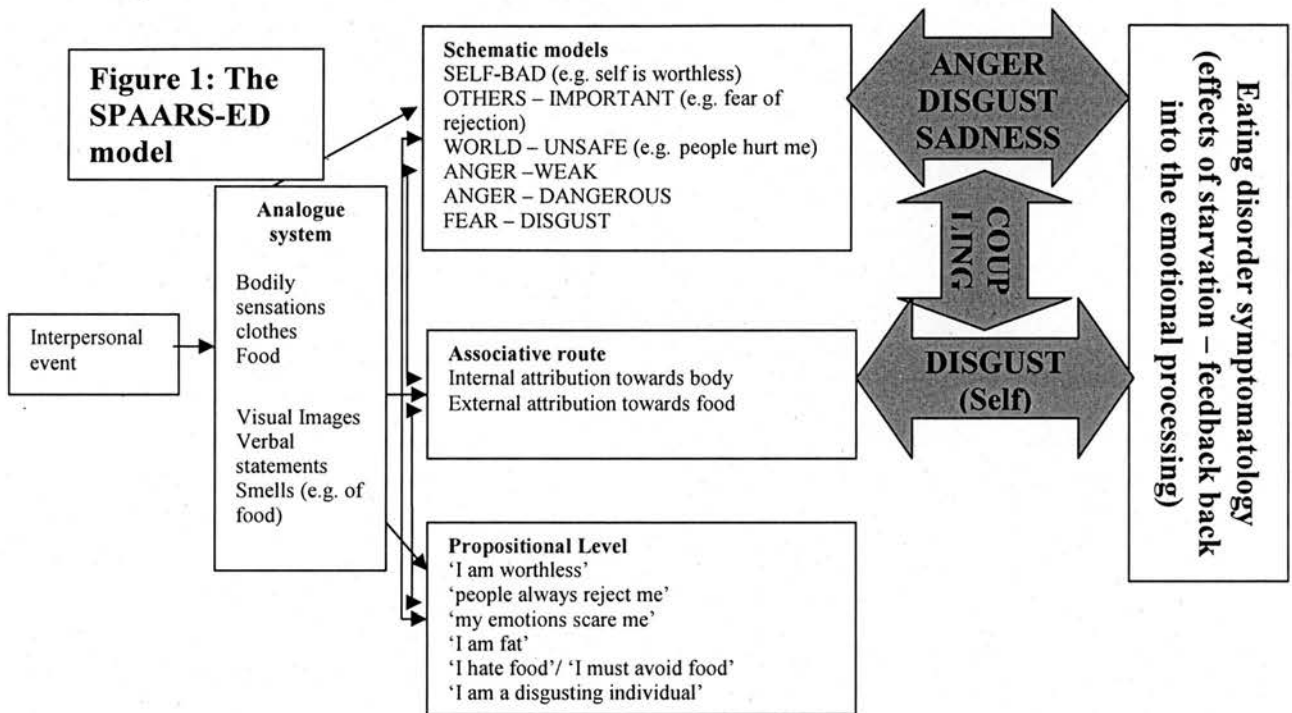
## **7.5. Theoretical Implications**

This section of the discussion will consider the broader theoretical implications of findings from this thesis. This discussion shall start off by returning to the SPAARS-

ED model proposed in chapter 2. This will then consider how well the results fit with the broader theoretical positions proposed within the literature.

**7.5.1. The SPAARS-ED model**

In order to consider the model, it is represented below:



The SPAARS-ED model was developed from a narrative review of the literature independent to any research being undertaken (please see the footnote below). From this review, it was proposed that eating disorders have the principal function of suppressing emotion (as per Waller et al. 2007, and Cooper et al. 2004). Related to this point was that the SPAARS-ED model made specific predictions about which emotions would be important, and where these emotions operate within disordered eating. For example, a recurring theme across this thesis has been the consideration of the emotion of anger. Within the SPAARS-ED model, it was proposed that certain developmental factors would leave the individual with experienced levels of anger. As discussed in chapter 2, DiGiuseppe and Tafrate (2007) argue that adverse experiences

in early life leave the developing child with a 'significant hurt', which leaves a sense of unfairness about the World. They go onto argue that these experiences also leave the developing child with a number of cognitive errors, such as expectation of threat and suspicion from others. This developmental angle of the SPAARS-ED model was considered via the qualitative study<sup>4</sup>. Within this study, it was clear that many of the participants had a number of difficult life events whilst they were growing up, and it was hypothesised that these events left the participants with a sense of anger and unfairness about the World. This finding was supported by the findings from the BCSS in chapter 6, where negative beliefs about others were significantly correlated with state anger. Equally, across chapter 4 and Chapter 6, the eating disorder groups reported significantly (or near significance) more trait anger than the controls. The results of the anger induction studies showed that once anger is induced, this leaves the individual with a significant increase in anger, when compared to controls. This convergence of all this evidence is in keeping with the findings of Waller et al. (2003) and the theoretical perspective of Hilde Bruch (1962). As was reflected upon within the qualitative study, this 'anger within' poses a significant challenge for people with eating disorders, as it also perceived as being 'very toxic' and 'dangerous' both for the existential self (a theme that will be returned to later in this discussion) and for their interpersonal relationships (e.g. Geller et al. 2000). These emotions were suppressed almost automatically, and some of the participants spoke of how they only realised that they have suppressed emotion once they have suppressed it (in keeping with Waller et al's primary avoidance hypothesis). In keeping with this finding from the qualitative research were the results from chapter 4 and 6, where the AN groups demonstrated significant levels of anger suppression and significantly lower anger

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<sup>4</sup> This study was completed before the complete development of the SPAARS-ED model, so that it would not interfere with the coding and theory development. Although the author endeavoured to undertake the literature review without allowing the results of the qualitative study to influence its construction too much, it is likely that it had some impact.

expression. This mixture of higher levels of anger and its reduced expression helps to explain, perhaps, why the participants in the qualitative study spoke of their anger being 'toxic' and dangerous'.

As discussed in chapter 2, one of the main tenants of the SPAARS-ED model is that the ED works as an emotion suppression vehicle and this theoretical point is in keeping with many contemporary theories in the literature (e.g. Waller et al, 2007; Cooper et al, 2004). However, the hypothesis to rise from the qualitative study that suggests that as anger increases so does the propensity to vomit is a new and slightly contentious idea. According to this hypothesis, as anger increases the self needs more extreme emotion regulation strategies to help them to suppress their emotions. This theoretical point is important when it is considered that one of the findings to emerge from the qualitative study was that the participants had poor meta-emotional skills. The participants also spoke about how they felt that their parents or significant others did not have good meta-emotional skills. Thus, it seems that not only is the anger is experienced as 'toxic' and 'dangerous', but the person with the eating disorder does not have the skills or expertise to manage their emotions. It is important to note that the results from hypothesis 2 did not show the same results as the qualitative study and this will be discussed more fully below. This theoretical point is supported by the findings of the emotion regulation scale in chapter 6, where people with anorexia nervosa had significantly higher internal dysfunctional emotional regulation strategies. This theoretical point has many parallels in the literature, with Linehan (1993) discussing similar themes in her consideration of 'invalidating environments' and Briere (1996) discussing how early adverse experiences also affect the child's ability to learn how to 'self-soothe'.

The other two emotions that were found to be significant across the research within this thesis were sadness and disgust. Sadness was found to be significant in all the studies and the qualitative results from chapter 3 gave some further insights into this sadness and how it was also a difficult emotion to express, as it was a sign of 'weakness'. In chapter 5, the results showed that sadness (with anger) was the biggest predictor of disordered eating patterns and chapter 6 negative beliefs about the self were significantly correlated with state sadness and state disgust. As discussed in the introduction, previous research has identified difficult attachment patterns between mothers and daughters with anorexia nervosa (Ward et al, 2000, 2001). Related to this point was that these attachment patterns may have alluded to difficulties in affiliation and parental warmth, which, according to Jenkins and Oatley, is associated to the emotion of sadness. Although it remains an empirical question, the parental styles identified in the qualitative study and the predominance of sadness may be accounted for by this affiliation difficulty in childhood. These findings regarding sadness fit with the prediction of the SPAARS-ED model and it also helps to explain the co-morbidity with depression, especially when it is considered with the findings of state disgust. At the start of this thesis, disgust was considered a prime candidate for a primary emotion within eating disorders due to its food and gustatory emphasis (e.g. Haidt et al. 1997). However, it became apparent through the research that although it is important, it does appear to be secondary to anger and sadness. This was shown in the results from chapter 5. It is important to note that the sample size led to restrictions in the analyses in chapter 5, and this does mean that the results need to be treated with caution. In chapter 4 and chapter 6, the relation between anger and disgust was stark and theoretically important. The key emotion within these studies was anger, but its



induction led to an increase in disgust. This coupling effect was also proposed to play a significant role in the increase in body estimation at time 2 in the study reported in chapter 6 (as demonstrated by the correlation between body size estimation and state disgust). This relation between body shape size and disgust was also discussed by the participants in the qualitative study, where they often used disgust terms to discuss their bodies.

In terms of the results that did not support the model or were contrary to prediction, the findings from the analysis on the trait emotion data in chapter 5 were not as predicted. This was especially true, given the results from the state emotion data in the same chapter. This contradiction in the findings meant that some explanations could be ruled out, such as measurement problems, or that people with eating disorders could not answer questions about their own emotional status. Equally, the results from hypothesis two in chapter 5 were surprising, as the results from the qualitative study suggested that there would some interesting and theoretically important findings from the responses to emotions questionnaire. It was the researcher's sense that the questionnaire did not tap into subtle interactions that were discussed in chapter 3. The other main hypothesis from chapter 5 that attempted to explain these findings was may be due to the participants not wanting to acknowledge their own emotionality. This theoretical perspective fits with some of the qualitative themes that were discussed in chapter 3, where one aspect of the grounded theory discussed that the participants did not feel that they were entitled to be a 'human being with emotions'. According to the literature on normal emotion processing, Oatley, Keltner and Jenkins (2006) discuss that emotions are the basis for social relationships. In other words, emotions are the guide that allows the self to develop and understand both itself and

other people. Within the eating disorders literature, one of the main challenges for recovery has been how people with eating disorders define their self by their eating disorder. Higbed and Fox (in press), in a grounded theory study on illness perception in anorexia nervosa, found that participants did not hold a true illness view of their anorexia nervosa, but regarded it as an extension of the self. A struggle within recovery for people with eating disorders, especially anorexia nervosa, is that putting on weight is associated with both a changing physical form and also the return of their emotions. Given the results discussed through this thesis, it is anticipated that this must be a huge challenge for people with eating disorders and it must raise questions regarding their existential nature.

In summary, the results of the studies presented in this thesis have broadly supported the SPAARS-ED model, both in terms of the actual emotions in play and the processes within the model. The findings regarding the proposed coupling effect between disgust and anger are a new and novel finding, which is emphasised by the finding that anger induction leads to an increase in the estimation of body size. The results from the core beliefs scale give an indication of the types of propositional level statements that occur within the SPAARS-ED and which emotions they are connected to. It was interesting, and slightly against prediction, that negative self beliefs did not correlate with anger, as it could have been hypothesised that self-anger may have been an important theoretical construct in eating disorders. A key finding of the research presented in this thesis has been that depression has often been noted to exert a co-variate effect across a number of the analyses, both within actual emotion data and core beliefs data. However, none of these co-variate effects removed the overall effect within the analysis. This finding sits with the dual processing model of Stice and

colleagues (Stice et al, 2001), in that, depression could be considered as both the cause and consequence of the other processes underpinning eating disorders. These findings were predicted by the SPAARS-ED model and also fit with the findings from other CBT models that were discussed in the introduction (e.g. Waller et al. 2007; Cooper et al. 2004; and Wonderlich et al. 2001).

## **7.6 Clinical Implications**

The research undertaken for this thesis has shown that the SPAARS-ED model holds promise in offering both a theoretical perspective and a framework for developing clinical approaches for people with eating disorders. As discussed in the introduction, this research has taken a pan diagnosis approach and it is interesting that different populations have some distinct similarities in their findings (e.g. coupling between anger and disgust for EDNOS/ bulimic presentations versus anorexic presentations). Although further research is necessary, these findings support the view and perspective of Chris Fairburn that we need to think about eating disorders from a trans-diagnostic perspective. One of the strengths of the SPAARS-ED model is that it is immersed in theory from both normal and abnormal psychology and, as a result, it offers a much more comprehensive theory for clinicians, theorists and researchers to build upon in the pursuit in understanding and treating eating disorders. In order to allow for clarity in the discussion of the clinical implications of the SPAARS-ED model and the research upon which it is built, this discussion shall be written around the three main principal areas of clinical work; namely assessment, formulation and intervention.

### 7.6.1 Assessment and formulation

In the assessment of eating disorders, the clinical presentation is often striking with the patient explaining that they have either a very distressing relationship with food (as in bulimia), or they resent the fact that professional are trying to get them to eat, despite the fact that they are losing weight. Within either of these assessment scenarios, the actual eating disorder symptoms tend to be the focus and often a war of attrition can ensue between the clinician and the patient. The SPAARS-ED model builds upon the 2<sup>nd</sup> generation cognitive theories (e.g. Waller et al. 2007 and Cooper et al. 2004), in that, it helps to highlight the functionality of the eating disorder and change may not be possible until these underlying emotional factors have been addressed. Strober (2004) discussed how the clinician working with eating disorders faces a number of significant hurdles and challenges and the therapist needs a large repertoire of personal skills to manage the therapy of someone with an eating disorder.

One of the main strengths of the SPAARS-ED model is that it is a useful model to assist in the formulation of patients with eating disorder's difficulties. Many clinical approaches still only use single route explanations to explain the eating disorder, where one set of beliefs/ automatic thoughts (e.g. overvalued ideas of weight and shape) lead to the actual eating disorder. However, these models miss the complexity of presentation, such as co-morbid anxiety and depression. Only schematic interventions (e.g. Waller) currently focus on the schematic modules of emotion, in that they focus on goals, aspirations and beliefs about the self and others. Other models, such as ACT (Hayes et al. 2003) and DBT (Linehan, 1993) have addressed some of these difficulties, in that, they have focused upon the underlying issues

pertaining to eating disorders, such as emotional avoidance. However, they offer very little to explain the array of symptoms that are present in eating disorders (e.g. very poor body satisfaction, perfectionistic tendencies). The SPAARS-ED model offers an architecture for understanding both the underlying emotional difficulties and how this manifests itself as an eating disorder. For example, the findings concerning the coupling of anger/ disgust and body size shape estimation highlight how events that provoke anger are likely to increase how the body is viewed and create further disgust, which would have a deleterious impact upon mood. Furthermore, the idea that emotion can exist in different representations can also help to understand why there may be a denial of an emotional experience (due to it being ego dystonic), but the patient experiences their jeans feeling tighter, or an increase in visual images of being 'fat'. Likewise, the theoretical notion of associative emotions can explain why emotions for people with eating disorders seem to happen outside the awareness of the patient concerned. Although these are interesting theoretical perspectives, they remain empirical questions.

A key feature of the SPAARS-ED model is that it offers a basic emotion perspective that can explain co-morbidity in a clinically meaningful way. Therapy for people with eating disorders can often be faced with the dilemma of treating the actual eating disorder, whilst their depression is steadily getting worse. The SPAARS-ED model, in keeping with Crisp's clinical observations (Crisp, 1990), offers the clinician pointers about the emotional processes that may be in play for the patient. This helps the clinician to predict and warn the patient of what is likely to happen, and also to use the idea of coupled emotions as a pointer for developing the formulation even more.

Robert Leahy (2003) and Steven Hayes (2004) have discussed that the implicit search by ourselves and our patients for happiness often benign the fact emotional responses to deeply difficult and traumatic events are healthy and normal. However, both of these authors fall foul of the fact that they have developed theories and models of emotional distress that does not draw from normal emotional processes. The SPAARS-ED model offers the clinician an insight into the everyday processing of emotions and how these emotional processes are linked in the appraisal of events, experiences and memories. This allows the clinician to not pathologise the emotions in the room, but to allow their expression and working through. This point is of importance when it is considered how staff on eating disorders units may fail to understand why their patients are very angry and/ or sad. In this instance, they may attempt to 'quieten them down' or for themselves to feel attacked by the patient. The SPAARS-ED model allows for a shared formulation to be developed where normal emotional processes are understood rather than suppressed.

### **7.6.2. Intervention**

Traditional CBT approaches have tended to focus on the propositional levels of the SPAARS-ED (e.g. by challenging NATS), and thus fail to address the higher level schematic models. Not only will this prevent any real emotional change, it can paradoxically reinforce the schematic model. A good example offered by Power and Dalgleish (1999) concerns how the therapist may work to challenge the clients assumptions about being a failure, thereby reinforcing that very belief, as the person is 'incapable of doing it on their own'. As proposed by more traditional models of CBT (e.g. Fairburn et al, 2003), there is a directive manner in the treatment of bulimia



nervosa, and the outcome studies have only demonstrated approx. 50% improvement rates. The points above may suggest that there is a risk that this type of manualised approach may reinforce schematic representations of the self as a 'failure' because the focus is the propositional statements occurring as negative automatic thoughts.

The above discussion on unhealthy preoccupation with the avoidance of negative or painful emotions highlighted the need for the clinician to understand that one of the core aims of therapy for a patient is to accept his or her emotions and to learn to live with them in a more productive manner. Thus, in theoretical terms, this would involve the teaching and/ or facilitation of the development of cognitive skills that allows the person to experience painful overwhelming emotion (and/ or associated traumatic event), whilst being held in the consciousness of the experiencer. This allows the individual to become aware of the self-as-experiencer of the emotion. This reflective state could allow the individual to develop a new schematic model of what may have previously been overwhelming, but now it is experienced as painful, but contained within the self.

Within the SPAARS model, Power and Dalgleish (1997; 2008) discuss fast and slow change processes in therapy. They give the example of panic disorder in which therapy helps the person to reframe or reappraise his or her beliefs about imminently having a panic attack to one of understanding that it is symptoms of anxiety/ panic. However, panic sufferers may still have marked symptoms after therapy, and Power and Dalgleish argue that this is due to the over-learned associative route taking longer to change than the fast route for therapeutic change. Within the eating disorder field, it is argued that therapy will need to work with the emotion of disgust that is directed

at the body, and with the schematic model of the unacceptability of certain emotions, especially anger. Power and Dalglish (1997; 1999) argue that exposure and the use of 'behavioural experiments' are much more useful than purely cognitive or linguistic methods for associative route change and it has long been argued by some authors that behavioural change is an essential component of the treatment plan for someone with an eating disorder (e.g. Waller et al. 2007). Moreover, the notion of working with disgust towards the body, in the guise of marked body dissatisfaction, would need to be incorporated into any treatment option. This would enable the person to start to re-learn, via the associative route, a non-disgust emotion attached to his or her body. This is an empirical question, but recent work by Jansen et al on attentional training in body image distortion in eating disorders tends to suggest that this could be a productive way to work with individuals with eating disorders (Jansen, Nederkoorn, & Mulkens, 2005). According to this point, the individual is trained to attend to parts of their body they do not dislike (by using a mirror) in order to help the person gain a more balanced perspective of their body. Within the SPAARS understanding of eating disorders, it is argued that this would allow the individual to learn to associate alternative emotions to their bodies and, thereby, reduce the relation of disgust towards the body and food. Indeed, this may be an important theoretical point why exposure work to new or banned foods may help to break down the associated disgust attached to the foods.

## **7.7. Research Implications**

The research in this thesis has not covered all the predictions made by the SPAARS-ED model. For example, there has been a reliance on verbal report when the SPAARS-ED model proposes that emotions are present in different modalities (e.g.

olfactory, tactile, etc.). It is the sense of the author of this thesis that there is a need to develop creative methodologies that would allow the testing of these aspects of the model. Although the methodologies in chapter 6 allowed testing of some of the predictions from the associative route from the SPAARS-ED model, this would need further research. As with the above point, this would need to be done quite creatively by using different, less verbal methodologies. The author is currently developing a programme of research that will be based upon fMRI scanning methodologies and looking at emotion priming procedures to test the predictions that anger would leave the participant primed to respond to self-disgust stimuli. This would use a stroop methodology. Furthermore, there is need to test some of the laboratory findings in more ecological way, such as the use of palm pilots (EMA). This could be done by looking at the interface between anger, body disgust and other eating disorder phenomena (as discussed below) within the context of the participant's everyday life.

Eating disorders are often associated with other patterns of cognition and behaviour. For example, Fairburn et al. (2003) discusses the importance of perfectionism and control in eating disorders. One hypothesis that could help to explain the relation between the findings of this thesis and these clinical phenomena is that perfectionism is actually a 'red herring', as it the fear of failure that drives unrelenting standards. In other words, the fear of failing and then experiencing the emotions of sadness and self-disgust drives the person with the eating disorder to be 'perfect' in everything she does. Likewise, the need for control can be understood within a similar process where the person with the eating disorder desires control in order to protect the emotions that are so overwhelming to their sense of self. Future research could address these

questions and, hopefully, expand the theoretical understanding of these challenging disorders.

The final test of any clinical model is how well it works in the treatment of the problem in question. Although more research is needed to develop and refine the model, it is hoped that it will be used to develop clinical interventions (in keeping with the discussions above) that would need to be thoroughly tested by appropriate methodologies (e.g. randomised control trials).

## **7.8. Conclusions**

The research reported throughout this thesis has shown that emotions and their functioning are of central importance in understanding eating disorders. It is interesting that Hilda Bruch (1962) discussed that emotions, and in particular, anger are key in formulating the main difficulties of eating disorders, especially restricting anorexia nervosa. It does appear as if the literature is going through a cycle where it is now moving away from purist CBT approaches that predominantly focus on cognitions and behaviours. This research has many parallels with other research and theory development in psychological treatments, with Stephen Hayes using a more behavioural theory back drop to develop his Action and Commitment therapy (ACT). ACT focuses on problematic way in which language is used by people who have psychological difficulties, and how this is central to emotional avoidance. Underpinning this perspective, Hayes argues that the acknowledgement that emotional distress is entirely normal and psychological growth involves facing these difficulties. These theoretical perspectives has many echoes in this thesis's argument, in that, people with eating disorders often have a significant amount of emotional

distress but will use their eating to suppress their emotions. Interestingly across the thesis, research has demonstrated that similar emotional processes are in play for many different eating disorder groups (e.g. emotional coupling) and this offers further evidence for a transdiagnostic perspective. It does seem that the different eating disorder groups are closer to one another in the underlying processes, but may manifest themselves in differing ways. These reflections remain empirical questions. The main finding that anger is potentially coupled to disgust/ body size estimation was a striking finding and can help to explain the often clinical reported phenomena of an increase in body dissatisfaction/ ED symptoms following an interpersonal confrontation/ row. Through the literature, it has often been discussed that eating disorders are a female difficulty because of the thin body ideal that is prevalent in modern society (e.g. Stice, 2001). It is interesting to also reflect upon how female anger is often not seen favourably in contemporary society and this may be the 'elephant in the room' when it comes to understanding eating disorders. This may well be the legacy of this doctoral research.

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# APPENDICES

## **Appendix 1: DSM-IV Criteria for the Eating Disorder**

### **DSM-IV Criteria for Anorexia Nervosa**

- A.** Refusal to maintain body weight at or above a minimally weight for age and height (e.g. weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during a period of growth, leading to body weight less than 85% of that expected).
- B.** Intense fear of gaining weight or becoming fat, even though underweight.
- C.** Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.
- D.** In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g. estrogen, administration).

#### *Specify Type:*

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

**Binge-Eating/ Purging Type:** during the current episode of anorexia nervosa, the person has regularly engaged in binge eating or purging behaviour (i.e. self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

### **DSM-IV Criteria for Bulimia Nervosa**

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

Specify type:

- **Purging type:** During the current episode of bulimia nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics or enemas.
- **Nonpurging type:** During the current episode of bulimia nervosa, the person has used inappropriate compensatory behaviours, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics or enemas

### **Eating Disorder not Otherwise Specified**

The eating disorder not otherwise specified category is for disorders of eating that do not meet the criteria for any specific eating disorder. Examples include:

1. For females, all of the criteria for anorexia nervosa are met except that the individual has regular menses.
2. All of the criteria for the anorexia nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.
3. All of the criteria for bulimia nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur at a frequency of less than twice a week or for a duration of less than 3 months.
4. The regular use of inappropriate compensatory behaviour by an individual of normal weight after eating small amounts of food (e.g. self-induced vomiting after the consumption of two cookies).
5. Repeatedly chewing and spitting out, but not swallowing, large amounts of food.
6. Binge eating disorder: recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviours characteristic of bulimia nervosa.

***Appendix 2 - A copy of the Ethics Approval Letter for the Qualitative Study presented in chapter 3.***





**South Manchester Research Ethics Committee**

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16 November 2005

Dear Dr Fox

**Full title of study:** A qualitative investigation of the perception of emotions  
in people with eating disorders  
**REC reference number:** 05/Q1403/207

Thank you for your letter of 02 November 2005, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information was considered at the meeting of the Sub-Committee of the REC held on 10 November 2005. A list of the members who were present at the meeting is attached.

**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.

**Ethical review of research sites**

The Committee has not yet been notified of the outcome of any site-specific assessment (SSA) for the research site(s) taking part in this study. The favourable opinion does not therefore apply to any site at present. I will write to you again as soon as one Local Research Ethics Committee has notified the outcome of a SSA. In the meantime no study procedures should be initiated at sites requiring SSA.

**Conditions of approval**

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

**Approved documents**

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

| Document    | Version | Date              |
|-------------|---------|-------------------|
| Application | 5.0     | 07 September 2005 |

|   |                                    |                   |
|---|------------------------------------|-------------------|
| Investigator CV   | Dr John Fox                        | 07 September 2005 |
| Investigator CV   | Michael John Power                 | 07 September 2005 |
| Investigator CV   | Jayne Hayers                       | 07 September 2005 |
| Investigator CV   | Kathryn Pemberton                  | 07 September 2005 |
| Protocol  | 1.1                                | 07 September 2005 |
| Peer Review   |                                    | 24 August 2005    |
| Compensation Arrangements                                       | Clinical Trial Liability Insurance | 22 August 2005    |
| Interview Schedules/Topic Guides                                | Interview Schedule (Pre therapy)   | 09 September 2005 |
| Interview Schedules/Topic Guides                                | Interview Schedule (post therapy)  | 09 September 2005 |
| Questionnaire   | Demographic Questionnaire          | 09 September 2005 |
| GP/Consultant Information Sheets                                | 1.1- Letter                        | 24 August 2005    |
| Participant Information Sheet                                   | 1.3                                | 15 November 2005  |
| Participant Consent Form  | 1.2                                | 02 November 2005  |
| Response to Request for Further Information                     | 1                                  | 02 November 2005  |
| Other – Protocol for Participants who are in Emotional Distress | 1.1                                | 24 August 2005    |
| Other – Lone Worker Policy                                      | 1                                  | 15 November 2005  |

### Research governance approval

The study should not commence at any NHS site until the local Principal Investigator has obtained final research governance approval from the R&D Department for the relevant NHS care organisation.

### Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

05/Q1403/207

Please quote this number on all correspondence

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

Yours sincerely

 Dr Philip G Haji-Michael  
Chair

Enclosures: List of names and professions of members who were present at the meeting and those who submitted written comments  
Standard approval conditions SL-AC2  
Site approval form

Copy to: Deana Kelly, R & D Co-ordinator, MMH & SC Trust

**South Manchester Research Ethics Committee****Attendance at Sub-Committee of the REC meeting on 10 November 2005****Committee Members:**

| <i>Name</i> | <i>Profession</i> | <i>Present<br/>?</i> | <i>Notes</i> |
|-------------|-------------------|----------------------|--------------|
|-------------|-------------------|----------------------|--------------|

**Chair:** Dr Philip Haji-Michael, Consultant Anaesthetist, Christie Hospital NHS Trust

**Vice Chair:** Dr Ann Wakefield, University Representative

Ms Bridget Simpson, Research Nurse

***Also in attendance:***

| <i>Name</i> | <i>Position (or reason for attending)</i> |
|-------------|---|
|-------------|---|

Ms Cynthia Carter, REC Co-ordinator

**Appendix 3 – Transcript of Participant 3’s interview**

| Memo Notes  | Transcript   | Codes                                     |
|---|--|---|
|   | <b>Just to, the first question is how long have you been in the day service?</b>   |   |
|   | Erm, I’d say 11, no about 10 weeks probably. Two or three months.  |   |
|   | <b>So about two and a half?</b>  |   |
|   | Yeah, yeah.  |   |
|   | <b>Did you come in via the inpatient route?</b>  |   |
|   | Yeah, yeah.  |   |
|   | <b>And how long were you in the inpatient?</b>   |   |
|   | Five months, I think, yeah, yeah, from the beginning of this year, so I’ve been in, in like, involved in this whole service since the beginning of January.  | Length of time with service               |
|   | <b>So you came in just after Christmas?</b>  |   |
|   | Yeah.  |   |
|   | <b>Ok, and was that your first admission onto an eating disorder clinic?</b>   |   |
|   | Yeah, yeah.  | Number of admissions                      |
|   | <b>I just want to check which term you feel comfortable, whether it’s a diagnostic term, like an anorexia, or bulimia, or if you would prefer me using a term like an eating disorder, how would you like me to refer ...?</b> |   |
| Wondered if this was an indication that she does not believe the severity of the condition? | Eating disorder.   | Non-diagnosis                             |
|   | <b>Could you tell me a little bit about your eating disorder before you came into hospital?</b>  |   |
| Why the need for control at this time? Is there anything else going on???                   | Erm, I don’t know, it was, it just, I suppose it just got a bit of control I suppose, erm, with a think the pressure of exams, set it off a bit, the downrolling, things just spiralled and I just ended up here.              | Perceived cause of ED<br>Need for control |
|   | <b>Ok, were you a student?</b>   |   |
|   | Yeah.  |   |

|   |   |   |
|---|---|---|
|   |   |   |
|   | <b>Where were you studying?</b>   |   |
|   | Erm, at you know college, not college, in the high school and it kind of, it kind of started off when I like, I did my mock exams, cos I was doing my GCSE's, I did my mocks and I got, not as good grades as I expected, so then I went, right, I'm doing, I'm doing better than that, so I kind of set full .....??(counter 48) into my studies, and I suppose I kind of dropped my eating at the same time.  | Perceived cause of ED<br>Fell short of<br>unrelenting standards<br>Need for perfect   |
|   | <b>And how old are you now if you don't mind me asking?</b>   |   |
|   | 17.   |   |
|   | <b>And when was your seventeenth birthday?</b>  |   |
|   | Erm, it was last October, I'm 18 in like this October.  |   |
|   | <b>So, after your mock exams, were they the mocks for what, A levels or .., no GCSE's sorry, you did say. Erm, you stopped eating, ..</b>   |   |
| Is there a fragile sense of self that needs to achieve to be worthwhile???? | I don't know, I suppose I started controlling it a bit more, erm, I started being quite obsessive over counting everything what I ate. Like, erm, I actually set up a, like a kind of like on my computer, like a kind of like a database, with erm, it had like this little book was on which would show how I've eaten and stuff, and I counted everything what I'd eaten during the day into this database what counted it all at the end of the day, like all the calories, the fat content, the protein and just this whole thing on excel like, what I like went to every night checking and working out and it was, it became quite obsessive really. And that was around the time I was studying so I kind of just went from one thing to the other thing, studying, to kind of this database to the studying and looking out what I was eating and it just, that was all I was, life seemed to revolve around. And it just got worse kind of thing, other things started dropping off. | Obsessions = control?<br>Rigidity and checking<br>Calorie counting<br>Relationship between perfectionism, ED and studying. Bounce of each other.....? |
|   | <b>So that was really the, when things became sort of more and more focussed on what you were eating?</b>   |   |
|   | Yeah.   |   |
|   | <b>How did you feel about your own body weight at the time?</b>   |   |
| Is this driven by the need of perfection, or poor body image.....           | Well I felt bad, I felt like I needed to loose weight really, so and then I don't know, I cant really remember, I just remember like the feeling better every time I looked at the scales and thought yes!  | Beliefs about the body being fat<br>'never enough weight loss'  |



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|  | <p><b>It was very much as though a downward, in terms of reducing what you were eating to reduce your weight?</b></p>   |   |
|  | <p>Yeah, yeah. and it was never, it never seemed good enough. Like I had a target in my head, I was saying something a couple of weeks ago, and it was like my actual target is like 8 stone, which was only about half a stone less than what I'd started out at, but I just carried on, I just thought, well I'll lose a bit more and it just kind of, just never ended, basically it just didn't stop.</p> | <p>Never enough weight loss<br/>Moving goal post – on the scale</p>         |
|  |   |   |
|  | <p><b>Do you know what your weight went down to when you came in?</b></p>   |   |
|  | <p>Erm, oh, just under 5 stone, I think, I'm not sure. But I know, I lost about, er nearly 4 I think.</p>   | <p>Marked restriction</p>   |
|  |   |   |
|  | <p><b>And it never felt that you would ever reach that point?</b></p>   |   |
|  | <p>No, I never really realised, oh that's enough now, stop. It would never, I don't think it would have ever enough. I suppose now, it seems ridiculous but, I suppose as you lose the weight it just gets kind of more ingrained into losing it.</p>   | <p>Never enough<br/>Almost automatic weight loss</p>                        |
|  |   |   |
|  | <p><b>What I was wondering is around, that there are other associated behaviours, which sometimes go alongside an eating disorder, people use the phrase bingeing, vomiting and such, were any of those, did you ever use any of those?</b></p>   |   |
|  | <p>No. Only exercising really, that was the only, I never made myself sick, I never binged, I never used laxatives, I never used slimming pills, no.</p>  | <p>Restriction<br/>symptomatology<br/>Denial of bingeing and vomiting</p>   |
|  |   |   |
|  | <p><b>So it was very much about just reducing what you were eating?</b></p>   |   |
|  | <p>I did, I don't know if it is anything to do with slimming, but have you ever heard of .....??(counter 93 – sounds like a brand name/medicine?) or something, what people use for their cholesterol? They're herbal things what people, I used to eat lots of that, I thought that might help, but I don't know whether, I did that, but that's all.</p>  | <p>Use of diet aids</p>   |
|  |   |   |
|  | <p><b>Did it feel like it was helping?</b></p>  |   |
|  | <p>I don't know, but I think, I think it didn't contribute to when I came in, my liver was very badly damaged, and I got it scanned and I think, I think that'd probably contributed to that I suppose, I don't know.</p>   | <p>Diet aids did not work<br/><br/>Damaged liver – physiological damage</p> |
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|  | <b>It felt like things got quite difficult, was it Christmas time last year?</b>  |  |
|  | Yeah, yeah.   |  |
|  | <b>How long, when did it start, do you think?</b>   |  |
|  | Probably about, I'd say about, it started getting noticeably worse about a year ago, last summer, at the beginning of last summer, because I was looking back on pictures last night, and you wouldn't tell anything was wrong last year, but it's just gone downhill within this year I think.   | Quick deterioration  |
|  | <b>So from about summer last year to Christmas, it's only really kicked in?</b>   |  |
|  | Yeah.   |  |
|  | <b>Was there anything last summer, in particular looking for, anything stressful or ..?</b>   |  |
| Given the above discussion – wondered if P.3 was worried about failing or 'not reaching the required standard.'  | I did my GCSE's, which it probably got worse then, erm, I was on holiday so I had more time to be like obsessive about what I ate and spend more time blocking everything out. Erm, I had more time to like go on bike rides, go and do things in the garden and exercise a lot more and, and I don't know, I suppose, I just had more time to do things what didn't contribute, I don't know.  | Stress from GCSE's<br><br>Blocking out emotions as well as food (metaphor?)                                      |
|  | <b>So it was an amalgamation of different things, not just one particular event?</b>  |  |
| If P.3 blocked out the stress, I guess that it is not surprising that she does not feel stressed – hypothesis.....?  | No, no. There was nothing what really, you know was stressed about.   | Denial of emotions?  |
|  | <b>Did you notice if your eating disorder sort of fluctuated...?</b>  |  |
| Very confused part of the conversation. Not sure about help. Mother tried to help, but in light of the conversation below, I wondered if this help was not particular warm, but functional.....? | Erm, there is at one time, I mean I don't know if it, I did like, just my mum something's gone wrong, I said I don't know what's happening but it's definitely not right, and then like, I went to the doctors and like, I started like having like sort of kind of therapy, oh no that was a lot later on, but at one point, me and my mum like said right, we're gonna like organise some kind of menu and we're gonna, things are gonna get back on track, and I managed to gain a bit of weight during then, but I think one week I'd drunk a lot of water before, before I got, well my mum was weighing me, I was weighed and I kind of shocked myself into how much I'd gained and then things | Confusion of mother's help<br><br>Started some help, but unclear<br><br>Mother help with food – concrete help??? |

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|   | just plummeted, completely from there.   |  |
|   | <b>....?? (counter 130) with your mums help or ...?</b>  |  |
|   | I don't know, I just.  |  |
|   | <b>Ok, are you ok so far?</b>  |  |
|   | Yeah.  |  |
|   | <b>Ok, one of the other things I'm interested in, and one reason why I'm sort of having these interviews, is I'm kind of interested how people who have suffered an eating disorder felt about expressing their emotions. And I was wondering if, as a general question, how do you feel about your own expression of emotion, do you feel you can express emotions?</b> |  |
| Is this a clear that P.3 is not au fait with talking about her emotions???  | Erm, as in like speaking to people or ...?   | Confusion about expressing emotion?<br>What is emotional expression?   |
|   | <b>I guess yeah, a good question, I mean emotional expression by whether it's speaking, behavioural and non verbally, such as facial expressions of emotion. How are you emotionally?</b>  |  |
| Still some confusion – is this due to a poorly constructed question or something more fundamental? It is interesting that she first talks about is anger? | I suppose I'm kind of like, I have strong views sometimes of that I shouldn't be ..., but there's times when I'm annoyed when I think oh I shouldn't be saying that, I shouldn't be expressing my opinion, and I suppose sometimes, but most, erm, I feel like I shouldn't be like telling people what I feel, cos they don't want to know.                              | Confusion<br>Anger = difficult<br><br>Beliefs about not deserving of expressing emotion                            |
|   | <b>I'm wondering if you could tell me a little bit more about that, or maybe to help me understand is can you give me an example of when you feel you're able to express an emotion and when you feel you're not able to express?</b>  |  |
|   | Er, I suppose when I would is when someone asks me kind of for my opinion, maybe, if I'm asked like they expect you to sort of talk back to them, but if no-one's talking to you I suppose then, they've not give you their permission.  | Negative emotion difficult to express.<br><br>Interpersonally, it is not allowed to express yourself with someone. |
|   | <b>So it feels almost like a permissive thing, so if someone actually asks you ...?</b>  |  |
|   | Yeah, yeah.  |  |
|   | <b>In situations we can sometimes feel angry, we can feel</b>  |  |

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|  | <b>sad, or we can feel fearful, we can feel disgusted and we can feel happy. Do you think that some of those emotions are more difficult to express than others?</b>  |  |
| No permission to express for P.3 to express her own needs? | Yeah, I suppose it's a lot easier to express being happy than it is like expressing that you're sad, that you've got a problem, that something's gone wrong for you, it's a lot harder to tell people that something's gone wrong than tell them it's gone right.   | Positive emotion is OK to express<br><br>No permission to talk about negative emotions   |
|  | <b>So it feels like the negative emotions, if we use that term, are much more difficult to express than others?</b>   |  |
|  | Yes.  |  |
|  | <b>But out of those, which ones would be the most difficult of say anger, disgust, sadness and fear?</b>  |  |
| Anger onto the self – ED????                               | Probably sadness. Anger is probably isn't, I don't know, I, sadness probably is the one probably the most. I'm not sure really, because I think when you're angry as well that's quite a, the one what, I quite, the chances are like, you can keep it to yourself and take your anger out on yourself rather than on other people.   | Sadness- most difficult<br><br>Anger is almost automatically suppressed onto the self  |
|  | <b>Are you ok with these questions? but what I was wondering is about feeling angry, what would it be like, it sounds like both the anger and sadness it feels quite difficult to express?</b>  |  |
| Monosyllabic answer – lack of emotional words???           | Yes.  |  |
|  | <b>And I wonder why that is. I mean, you've touched on it a bit earlier there about permission, but I was wondering why it was so difficult to express those particular emotions?</b>   |  |
|  | I suppose because it shows there's something going wrong and I don't know, it, I don't like being angry at people, because it makes people feel bad, it felt if you ...??(counter 188) people constantly it makes them feel, it's like ....??(counter 189) but if you're sad, it's gonna make, it's gonna rub off on other people, it's gonna make them sad, if you're angry you're gonna take it out on other people, it's gonna even make them angry and you get something back at you, or, it's not gonna be good feeling really, I suppose. | Other's judging emotional expression<br>Fear of transferring negative emotions onto others<br>Toxic emotions – especially anger<br>Expression of anger means you are at risk or vulnerable |

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| <p>It is almost a complete attempt to deny oneself any emotions. It is like she does not think she is entitled to any sense of self to be expressed.</p> | <p><b>Trying to avoid that bad feeling?</b><br/>Yeah, it's alright if you can keep it to yourself because I mean it's not as bad, you're not affecting anyone, you can kind of feel bad about yourself, you can be angry about yourself and like kind of punish yourself but when you're taking it out on other people, it kind of makes you feel worse, so it kind of makes you feel worse than you probably would have done in the first place.</p>  | <p>Suppression of emotions – not 'infecting others'. Punish self for feeling emotions. Worse to share emotions that punish self.</p>  |
|  | <p><b>Do you feel that you'd be entitled to be angry? Listening to what you've just said, I was wondering if ...?</b></p>  |   |
|  | <p>Um, I don't feel like no, I shouldn't be angry with these people unless it some kind of specific valid reason, if they've clamped my car and I'd paid, and the ticket was stuck on my window, then I'd be angry, and I'd feel alright being angry, but if I'd woke up in a bad mood, and someone'd like, someone had just like, I don't know, like, hit me on back of the head like joking me or something, if someone'd done something like joking me and I'd snapped on them, that's not a valid reason to be angry, I don't think.</p> | <p>Concrete example of anger is OK<br/>No meaning interpersonally – so OK to express anger<br/><br/>Inhibited emotion to protect others<br/>Not entitled to express emotion</p> |
|  | <p><b>Can you remember the last time you were sad or angry?</b></p>  |   |
|  | <p>Oh, I don't know, erm, I don't know, I've been on holiday this week, I'm not (laughter)</p>   | <p>Confusion around emotion<br/>?looking for confirmation from the interviewer?</p>   |
|  | <p><b>I'm asking at the wrong time?</b></p>  |   |
|  | <p>Yeah. erm..</p>   |   |
|  | <p><b>Does it feel like a long time ago?</b></p>   |   |
|  | <p>It's probably not, but I cant remember, erm, I felt sad when we come back home I suppose, off holiday, I don't know if that's a valid sad, but I don't know ...</p>   | <p>Confusion about emotion.</p>   |
|  | <p><b>.....??(counter 215) mum and dad you were sad?</b></p>   |   |
|  | <p>No. I suppose, no they wouldn't have done, I didn't like to oh I'm sad to be back home .....??(counter 125)</p>   | <p>Denial of emotion</p>  |
|  | <p><b>Where did you go?</b></p>  |   |
|  | <p>Erm, oh on holiday? When to Wales.</p>  |   |



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|   | <b>It sounds like you had a good time?</b>  |  |
|   | Yeah, yeah, it was alright and I'm going again on Saturday.   |  |
|   | <b>That sounds great, sounds good. So it feels like, there's something around not feeling entitled, not, people not giving you permission to experience or to express those emotions. That feels kind of important, does that feel important, do you think?</b>   |  |
|   | I suppose it's important that like you can talk at the right time and like you don't, you don't make people feel worse than they should.  | Responsible for how other's feel   |
|   | <b>I suppose what I'm left with, I'm left with a word in my mind of responsibility. It's almost that you're feeling, and I don't want to put words in your mouth, I'm just trying to offer a suggestion, if it's wrong then just say, but it feels like in a way, if you are angry and you make someone else angry, or if you're sad and you make someone else sad, it almost feels that you're feeling very responsible?</b>   |  |
|   | Yeah, yeah. it is in a way really. Like it's kind of like you're if you feel bad then you're like spreading that to other people.   | Expression emotion is almost akin to spreading disease (metaphor)  |
|   | <b>That responsibility feels very difficult for you, and I was kind of wondering why that was?</b>  |  |
|   | I don't really know, I don't know I suppose I feel alright if I'm happy and you're spreading like happiness and enjoyment, but in a way like you are responsible for people around you I suppose, and you kind of do feel responsible for if you're making them feel worse in any way, you do feel that kind extra like oh I shouldn't, if I'm feeling bad I shouldn't be, it's my problem not theirs.  | Responsible for other's emotions<br>Need to protect others from feeling worse<br>Not entitled to share emotion |
|   | <b>And you talked about earlier, you talked a bit about, if I feel angry, if I feel sad then I'll take that away and hold it, you used the word punishing yourself, and I was wondering what you meant by that, and how you've done that in the past?</b>   |  |
| This seems to be an important point in the interview, P.3 is discussing that in response to emotions she feels the need to punish herself and to stop eating. | Erm, I suppose it's kind of, it sounds crazy, but you carry yourself off and like you, you make yourself feel like I don't know, things you're going to, doing work or you go quiet and carry yourself off, well you kind of pull yourself, keep it quite, don't say anything, cos then you might affect people like, and like you kind of you keep it to yourself, like, you tell yourself off kind of thing, inside your head, and like you don't, I suppose like I don't eat | Inhibited expression of emotion<br>'keep it to yourself'<br><br>Punish self by not eating                      |

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| <p>These processes have an almost automatic feel to them.....</p>  | <p>comes into it, like you punish yourself, like if you've done something wrong, if you're bad about something, you cant really say, or like, you get off your food or something, not like really bad cut yourself but just, just I don't know.</p>   | <p>Automatic process<br/>Outside consciousness?</p>   |
|  | <p><b>I appreciate that it may feel difficult sharing some of this, and that's why I stress, while we're here, that it's entirely confidential, you know the information doesn't leave this room, well it does in effect, it doesn't leave it with your name attached, I'm aware just from what you're sharing there, that it feels like you use quite powerful methods of almost like punishing yourself, by using a pair of scissors for example, telling yourself off and denying yourself food, are you ok to continue?</b></p> |   |
|  | <p>Yeah.</p>  |   |
|  | <p><b>What I was wondering a little bit about is, if you could tell me something about your family, just first off, who's there? Where were you brought up?</b></p>   |   |
|  | <p>Erm, in Wigan, erm, with my mum, my dad, and my brother. My brother's been at university for 3 years, but he's come back home now. Erm, and that's it really.</p>  |   |
|  | <p><b>Ok, what did your brother study there?</b></p>  |   |
|  | <p>He studied motorsport (?) engineering.</p>   |   |
|  | <p><b>Oh where was that?</b></p>  |   |
|  | <p>That was at Farnborough (?) in London. He's been like in London, he lived down there, not at home.</p>   |   |
|  | <p><b>How about your folks? What do they do?</b></p>  |   |
|  | <p>My dad's got a business what's next door to us, erm, fixing cars and selling car types and stuff like that and my mum used to work at a factory down the road from us but she finished last year I think it was, erm, due to like the stresses of it and depression she ended up with, so ....??(counter 290 – mumbling quietly).</p>  | <p>Very concrete job for father<br/><br/>Maternal depression</p>                                      |
|  | <p><b>Sounds like your mum went through a difficult patch?</b></p>  |   |
|  | <p>Yeah.</p>  |   |
|  | <p><b>How did that affect home life?</b></p>  |   |
| <p>This answer gives a very strong sense that the environment at the family home was largely devoid of</p> | <p>It was difficult cos I suppose my mum wasn't like she should be really, she were scared of going out sometimes she wouldn't answer the door, erm, she had various like bad like low points really and there was a lot of upset really, like, but at the time we were living in a caravan in</p>  | <p>Mother not going out<br/>Alluded to home environment<br/>Confined space-<br/>intense emotional</p> |



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| emotions.                                   | our back garden, we were having a house being built, this was about four years ago, and erm, we were all like confined closely and I think my mum didn't want the house to be built, but my dad was going ahead with it, so it was kind of, a lot of combination of bad feelings going on as well.  | environment<br><br>Ignoring of parental feelings<br>Lack of communication |
|   | <b>Sounds like a difficult time.</b>  |   |
| Same time as when the ED really 'took off'. | Mm, I suppose, I've only just realised what actually was going on, but like at the time I weren't really, I were just enjoying living in a caravan to be honest, I weren't like taking a great deal of notice what was going on in family round me. And I don't, I think it might have been more than 4 years ago, so I don't think I were really old enough to understand what was happening until, until probably about a year or so ago, and I've only just kind of realised what my mum's been through. | Lack of communication<br><br>Realisation of maternal depression           |
|   | <b>So it came to a head for your mum what about last year?</b>  |   |
|   | About 2 years ago I think it was.   |   |
|   | <b>And she left work what the beginning of 2005, so it will have been the end of last year?</b>   |   |
|   | Oh I don't know.  |   |
|   | <b>Don't feel it has to be exact, I'm just what I'm trying to do is just to get, and it sounds like there's a few time frames, so four years ago you had the house built?</b>   |   |
|   | Yeah, about 4 or 5 years ago the house was built.   |   |
|   | <b>And then your mum started having problems with depression about 2 years ago?</b>   |   |
|   | Yeah.   |   |
|   | <b>Then it came to a head ...?</b>  |   |
|   | Well she started, she started a lot more than two years ago with depression, she started probably about 6 years ago, 6 or 7, and it just got gradually worse I think.   |   |
|   | <b>I wonder, did that have a bearing on how emotions were expressed at home?</b>  |   |
|   | Yeah, probably, cos she kept a lot like bottled up I think and just I think we didn't really understand what was going on because she'd never talk to us about what was happening, it was just a lot of her keeping herself to herself basically I think. I think that was why we didn't understand what was going on until like later.   | Lack of communication<br>Modelling female role                            |

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|  | <b>And that sounds like a difficult time where, it feels like your mum, and I mean this with all due respect here, but it feels like she was quite distant?</b>  |  |
|  | Yeah.  |  |
|  | <b>Do you see your parents ever, did they get emotional, quiet, did they get upset, did they get angry, did they get scared, how was that?</b>   |  |
| P.3 very upset in this part of the interview (but no tears). Alludes to two very big angry confrontations. Maybe this makes them much more 'toxic' | I think they used to get, well yeah, I suppose yeah they did, but not, not like big arguments in front of me, I can only remember one or two incidences where there's been like a big confrontation.   | An atmosphere where emotions were avoided<br>Isolated big confrontations               |
|  | <b>And how were you doing growing up through that? Because I was wondering how you felt about your own emotions, with everything else going on around you?</b>   |  |
| Don't believe her – think this is evidence of a lack of awareness of how much this did effect her, but unaware of it all. 'spoken vs unspoken'.    | I don't think it affected, I don't know if I noticed, maybe I don't notice if it affected me, I don't know. maybe it just got normal really, so I don't really.  | Denial of impact of maternal depression  |
|  | <b>Because, I mean I'm being transparent, we talked earlier about some of your earlier difficulties with emotions, and you know I don't want to add one and one and get four, but it's about difficulties with emotions now, it's interesting when you talk a little bit about growing up, you talked a bit about when your mum was quite distant because of her own difficulties, we haven't talked much about your father, and I was wondering a bit about how he is and if ...?</b> |  |
|  | Erm, he's just .....??(counter 357). Erm, if anything's going wrong, erm it's not! It's like, it'll be alright, it's not got to be talked about kind of thing, it'll sort itself out, I suppose that kind of feeling.  | Lack of communication<br>Denial of emotion in the family home<br>Lack of communication |
|  | <b>So if you were upset as a child, would you have been able to get to your father?</b>  |  |
|  | It depends what kind of upset, if it were kind of like, hurt my finger, yeah, he'll be alright, but no, I don't think  | Concrete response to distress  |

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|  | <p>emotions weren't something what are talked about really, they're not, it was just like, it was something we didn't talk about really, we don't talk things through, we just, if you've got any problems just keep them to yourself kind of thing.</p>   | <p>No discussion of emotion<br/>Learnt to internalise</p>  |
|  | <p><b>Feels like in a sense that that, I'm wondering in a way if that may have been responsible for ...?</b></p>   |  |
|  | <p>Mmm, maybe yeah.</p>  |  |
|  | <p><b>I mean that's really, I suppose, all the questions, I've just got one left really, it feels like as you were saying it sounds like, you were saying there were times where your family didn't talk about emotions, they were kept very much, it was almost an unspoken rule, you deal with them yourself, you just take them away, what would happen, or what did happen when, if there were examples, if you felt angry or you were upset or ....? How was it managed?</b></p>  |  |
|  | <p>Erm, I cant remember, I think, (laughter). Now if get angry it kind of, if comes out like, well, if you feel bad, I don't remember being angry at people but, I suppose before all this, if I was angry, don't know I cant remember having any like any confrontation or anything with my mum and dad, apart from once, I don't know I suppose like, it like, if I were angry or kind of like have a big fall out and then it probably be a bit like we just wouldn't speak to each other for a couple of days and like then we'd get speaking to each other, but it, it wouldn't be anything that we talked to or anything, it's not, you know we weren't talked to while we were angry or something, it's just like ...</p> | <p>Almost automatic inhibition of emotion<br/><br/>Evidence of the toxicity of anger for interpersonal relationships</p> |
|  | <p><b>Just wait for it to blow over?</b></p>   |  |
|  | <p>Yeah.</p>   |  |
|  | <p><b>Are there any final comments you'd like to say?<br/>There don't have to be.</b></p>  |  |
|  | <p>No, not really.</p>   |  |

### **Appendix 4 – tests of normal distribution for the analyses in chapter 4**

|  | Kolmogorov-Smirnov(a) |    |         | Shapiro-Wilk |    |      |
|--|-----------------------|----|---------|--------------|----|------|
|  | Statistic             | df | Sig.    | Statistic    | df | Sig. |
| Disgust sensitivity scores 1st time          | .125                  | 49 | .053    | .943         | 49 | .020 |
| State anger scale time 1                     | .282                  | 49 | .000    | .662         | 49 | .000 |
| Feeling angry time 1                         | .243                  | 49 | .000    | .782         | 49 | .000 |
| Feel like expressing anger verbally time 1   | .429                  | 49 | .000    | .396         | 49 | .000 |
| Feel like expressing anger physically time 1 | .490                  | 49 | .000    | .250         | 49 | .000 |
| Trait anger scale time 1                     | .137                  | 49 | .023    | .956         | 49 | .063 |
| Angry temperament time 1                     | .225                  | 49 | .000    | .837         | 49 | .000 |
| Angry reaction time 1                        | .217                  | 49 | .000    | .904         | 49 | .001 |
| Anger expression out time 1                  | .098                  | 49 | .200(*) | .981         | 49 | .591 |
| Anger expression in time 1                   | .076                  | 49 | .200(*) | .980         | 49 | .572 |
| Anger control out time 1                     | .148                  | 49 | .009    | .959         | 49 | .087 |
| Anger control in time 1                      | .160                  | 49 | .003    | .818         | 49 | .000 |
| Anger expression index time 1                | .099                  | 49 | .200(*) | .956         | 49 | .062 |
| BES 1 During last week Anger                 | .116                  | 49 | .100    | .962         | 49 | .113 |
| BES 1 During last week Sadness               | .208                  | 49 | .000    | .846         | 49 | .000 |
| BES 1 During last week Fear                  | .104                  | 49 | .200(*) | .957         | 49 | .072 |
| BES 1 During last week Happiness             | .136                  | 49 | .024    | .959         | 49 | .089 |
| BES State disgust time 1                     | .168                  | 49 | .001    | .865         | 49 | .000 |
| BES 1 General Anger                          | .107                  | 49 | .200(*) | .955         | 49 | .059 |
| BES 1 General Sadness                        | .190                  | 49 | .000    | .897         | 49 | .000 |
| BES 1 General Fear                           | .108                  | 49 | .200(*) | .961         | 49 | .106 |
| BES 1 General Happiness                      | .198                  | 49 | .000    | .902         | 49 | .001 |
| BES trait disgust time 1                     | .204                  | 49 | .000    | .864         | 49 | .000 |
| BES 1 coping Anger                           | .124                  | 49 | .058    | .957         | 49 | .073 |
| BES 1 coping Sadness                         | .122                  | 49 | .067    | .977         | 49 | .430 |
| BES 1 coping Fear                            | .096                  | 49 | .200(*) | .972         | 49 | .285 |
| BES cope disgust 1                           | .135                  | 49 | .025    | .932         | 49 | .007 |
| BES 1 coping Happiness                       | .246                  | 49 | .000    | .727         | 49 | .000 |
| Disgust sensitivity scores 2nd time          | .100                  | 49 | .200(*) | .973         | 49 | .313 |
| State anger scale time 2                     | .222                  | 49 | .000    | .734         | 49 | .000 |

**Appendix 4 – Levene’s test for the t-test results for Chapter 4**

|                                  |                             | Levene's Test for Equality of Variances |      |        |        |                 |
|----------------------------------|-----------------------------|---|------|--------|--------|-----------------|
|                                  |                             | F                                       | Sig. | t      | df     | Sig. (2-tailed) |
| BES 1 During last week Anger     | Equal variances assumed     | 1.198                                   | .279 | -1.889 | 47     | .065            |
|                                  | Equal variances not assumed |   |      | -1.881 | 44.316 | .067            |
| BES 1 During last week Sadness   | Equal variances assumed     | 1.250                                   | .269 | -2.061 | 48     | .045            |
|                                  | Equal variances not assumed |   |      | -2.061 | 43.997 | .045            |
| BES 1 During last week Fear      | Equal variances assumed     | 2.638                                   | .111 | -1.754 | 48     | .086            |
|                                  | Equal variances not assumed |   |      | -1.754 | 47.086 | .086            |
| BES 1 During last week Happiness | Equal variances assumed     | 2.382                                   | .129 | 2.236  | 48     | .030            |
|                                  | Equal variances not assumed |   |      | 2.236  | 45.977 | .030            |
| BES State disgust time 1         | Equal variances assumed     | 6.127                                   | .017 | -3.125 | 48     | .003            |
|                                  | Equal variances not assumed |   |      | -3.125 | 39.673 | .003            |
| BES 1 General Anger              | Equal variances assumed     | 1.196                                   | .280 | -1.767 | 48     | .084            |
|                                  | Equal variances not assumed |   |      | -1.767 | 44.615 | .084            |
| BES 1 General Sadness            | Equal variances assumed     | .077                                    | .782 | -2.538 | 48     | .014            |
|                                  | Equal variances not assumed |   |      | -2.538 | 47.515 | .014            |
| BES 1 General Fear               | Equal variances assumed     | .904                                    | .347 | -1.947 | 48     | .057            |
|                                  | Equal variances not assumed |   |      | -1.947 | 47.097 | .058            |
| BES 1 General Happiness          | Equal variances assumed     | .599                                    | .443 | 2.687  | 48     | .010            |
|                                  | Equal variances not assumed |   |      | 2.687  | 47.961 | .010            |
| BES trait disgust time 1         | Equal variances assumed     | 8.624                                   | .005 | -3.485 | 48     | .001            |
|                                  | Equal variances not assumed |   |      | -3.485 | 37.070 | .001            |

**Appendix 4 (cont'd) – Tests of heterogeneity for the multi-variate analyses and the confirmatory non-parametric analyses in chapter 4**

**Test of homogeneity for the STAXI state anger scale for the multi-variate analyses**

|         |           |
|---------|-----------|
| Box's M | 36.177    |
| F       | 11.514    |
| df1     | 3         |
| df2     | 414720.00 |
|         | 0         |
| Sig.    | .000      |

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a Design: Intercept+group  
 Within Subjects Design: anger

**Test of homogeneity for the Disgust Sensitivity scale for the multi-variate analyses**

|         |           |
|---------|-----------|
| Box's M | 3.747     |
| F       | 1.193     |
| df1     | 3         |
| df2     | 414720.00 |
|         | 0         |
| Sig.    | .311      |

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a Design: Intercept+group  
 Within Subjects Design: disgust

**The table below tests the hypothesis that there is a significant difference between state anger at time 1 and state anger at time 2 for the eating disorder group.**

|                        |   |
|------------------------|---|
|                        | State anger scale time 2 - State anger scale time 1 |
| Z                      | -3.923(a)   |
| Asymp. Sig. (2-tailed) | .000  |

a Based on negative  
 b Wilcoxon Signed Ranks Test



**Appendix 4 (cont'd) – Tests of heterogeneity for the multi-variate analyses and the confirmatory non-parametric analyses in chapter 4**

The table below tests the hypothesis that there is a significant difference between the participant groups at state anger at time 2.

|                        | State anger scale time 2 |
|------------------------|--------------------------|
| Mann-Whitney U         | 180.500                  |
| Wilcoxon W             | 505.500                  |
| Z                      | -2.575                   |
| Asymp. Sig. (2-tailed) | .010                     |

a Grouping Variable: Participant type - control or eating disordered

**Appendix 5- *A copy of the Ethics Approval Letter for the Study presented in chapter 4.***

School of Psychological  
Sciences  
The University of Manchester  
Oxford Road  
Manchester M139PL

+44(0) 181 306 0280

03 January 2006

**Project Ref:** 59/05  
**Title:** The coupled emotions of disgust and anger in eating disordered women  
**Type:** 3rd year  
**Level:** Level 2  
**Credits:** 100  
**Tutor:** John Fox  
**Author:** Amy Harrison

Dear John,

Thank you for your recent submission to the Departmental Ethics Committee.

This research now has **FINAL APPROVAL** and you may proceed with your investigation.

Please ensure the following minor changes are made:

— no changes necessary —

Please ensure that the ethics committee reference number for this project appears on all documentation.

It is your responsibility to inform the Committee of all new research that you undertake. Please note that any research that you undertake (including research undertaken by your students or research assistants) that has not been submitted to the committee has not been approved by either the Ethics Committee or the Psychology Department. In the event of an investigation into the ethics of such research being undertaken by the British Psychological Society, neither the department nor the Ethics Committee can be held responsible. You will also not be covered by the insurance policies taken out by the University to provide protection for members carrying out research with human participants.

Yours sincerely,

**Dr Catherine Hodgson (Chair)**  
**Dr Anne-Marie Brennan (Acting Chair)**  
**Dr Martin Lea**  
**Dr Ben Glaizner**  
**Dr Daniela Montaldi**  
**Dr Sam Cartwright-Hatton**  
**Dr Kevin Munro**

(Departmental Ethics Committee)

**Appendix 6 -Tests of Normality from Chapter 5**

|                             | Kolmogorov-Smirnov(a) |    |         |
|-----------------------------|-----------------------|----|---------|
|                             | Statistic             | df | Sig.    |
| DISTRESS                    | .104                  | 34 | .200(*) |
| PUNITIVE                    | .130                  | 34 | .154    |
| EXPRESSIVE<br>ENCOURAGEMENT | .191                  | 34 | .003    |
| EMOTION FOCUSED             | .111                  | 34 | .200(*) |
| PROBLEM FOCUSED             | .108                  | 34 | .200(*) |
| MINIMIZATION                | .087                  | 34 | .200(*) |
| State Anger                 | .111                  | 34 | .200(*) |
| State Sad                   | .127                  | 34 | .178    |
| State Disgust               | .127                  | 34 | .179    |
| State Fear                  | .185                  | 34 | .005    |
| State Happiness             | .146                  | 34 | .064    |
| Trait Anger                 | .130                  | 34 | .157    |
| Trait Sadness               | .129                  | 34 | .168    |
| Trait Disgust               | .129                  | 34 | .164    |
| Trait Fear                  | .144                  | 34 | .070    |
| Trait Happiness             | .135                  | 34 | .120    |
| Anger Coping                | .217                  | 34 | .000    |
| Sadness Coping              | .171                  | 34 | .013    |
| Disgust Coping              | .192                  | 34 | .003    |
| Fear Coping                 | .142                  | 34 | .079    |
| Happiness Coping            | .147                  | 34 | .059    |
| Total Eat                   | .110                  | 52 | .162    |

\* This is a lower bound of the true significance.

a Lilliefors Significance Correction

**Appendix 7 - Correlations between age and the main variables in the analysis, for the study presented in chapter 5.**

| Variable                       | Correlation test    | age      |
|--------------------------------|---------------------|----------|
| <b>TraitAnger</b>              | Pearson Correlation | -.120    |
|                                | Sig. (2-tailed)     | .392     |
| <b>TraitSadness</b>            | Pearson Correlation | .105     |
|                                | Sig. (2-tailed)     | .459     |
| <b>TraitDisgust</b>            | Pearson Correlation | -.102    |
|                                | Sig. (2-tailed)     | .466     |
| <b>TraitFear</b>               | Pearson Correlation | .063     |
|                                | Sig. (2-tailed)     | .655     |
| <b>hadsd</b>                   | Pearson Correlation | .110     |
|                                | Sig. (2-tailed)     | .434     |
| <b>hadsa</b>                   | Pearson Correlation | .066     |
|                                | Sig. (2-tailed)     | .639     |
| <b>StateAnger</b>              | Pearson Correlation | -.192    |
|                                | Sig. (2-tailed)     | .169     |
| <b>StateSad</b>                | Pearson Correlation | .068     |
|                                | Sig. (2-tailed)     | .627     |
| <b>StateDisgust</b>            | Pearson Correlation | -.122    |
|                                | Sig. (2-tailed)     | .383     |
| <b>StateFear</b>               | Pearson Correlation | .159     |
|                                | Sig. (2-tailed)     | .255     |
| <b>StateHappiness</b>          | Pearson Correlation | -.090    |
|                                | Sig. (2-tailed)     | .525     |
| <b>TraitHappiness</b>          | Pearson Correlation | -.035    |
|                                | Sig. (2-tailed)     | .801     |
| <b>DISTRESS</b>                | Pearson Correlation | .224     |
|                                | Sig. (2-tailed)     | .118     |
| <b>PUNITIVE</b>                | Pearson Correlation | .389(*)  |
|                                | Sig. (2-tailed)     | .016     |
| <b>EXPRESSIVEENCOURAGEMENT</b> | Pearson Correlation | -.172    |
|                                | Sig. (2-tailed)     | .248     |
| <b>EMOTIONFOCUSE</b>           | Pearson Correlation | -.307(*) |
|                                | Sig. (2-tailed)     | .028     |
| <b>PROBLEMFOCUSED</b>          | Pearson Correlation | -.283    |
|                                | Sig. (2-tailed)     | .054     |
| <b>MINIMIZATION</b>            | Pearson Correlation | .126     |
|                                | Sig. (2-tailed)     | .379     |

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

***Appendix 8 - A copy of the Ethics Approval Letter for the Study presented in chapter 5.***



School of Psychological Sciences  
The University of Manchester  
Oxford Road  
Manchester  
M139PL

tel +44(0)161 306 0280  
www.manchester.ac.uk

3 March 2006

**Project Ref:** 207/05  
**Title:** The effects of early adverse experiences on emotional experience in eating disorder  
**Type:** PG research  
**Level:** Level 2  
**Credits:** NA  
**Supervisor:** John Fox  
**Author:** Katy Froom

Dear Katy,

Thank you for your recent submission to the Departmental Ethics Committee.

The Committee has made the following decision regarding the project:

**Approved**

Please address the following comments:

1. There should be a wider representation of the of the questions that will be asked in the PIS.
2. Remove the sentence "Read the question below and mark..." on the PIS and amend the sentence above to read "Below are a number of examples of the type of questions you can be expected to answer by indicating how you have been feeling in the past week"
3. Scale and columns are missing from the Basic Emotions Scale
4. Send copies of the revised documents to the committee for our records

**What to do now:**

If the decision is: Approved

Correct any minor points mentioned and submit copies of any amended documentation to the SREC. Ensure that the project reference number appears on all documentation. The project may commence.

If the decision is: Conditional approval

Overall, the project is satisfactory but some changes are required. The project may not start until you receive Final Approval.

1. Download the Amendments Coversheet from the Intranet. Detail the changes you have made in the space provided. Submit the documents you have been asked to amend or include.
2. Leave the documents in the Ethics Amendments Resubmissions pigeon hole.

Amendments are reviewed every Tuesday.

If the decision is: Resubmission required

There are several major concerns with the project.

1. Re-submit all documents, including the application form and cover sheet, making the changes requested by the SREC. Use the original reference number unless instructed otherwise.
2. Leave the documents in the Ethics Amendments/Resubmissions pigeon hole by 5pm on the

Tuesday one week prior to the meeting in which you would like your resubmission reviewed.

**Appendix 9 - Shows the statistics for the K-S test of normality for the variables reported in chapter 6**

Tests of Normality

|   | Kolmogorov-Smirnov(a) |    |         | Shapiro-Wilk |    |      |
|---|-----------------------|----|---------|--------------|----|------|
|   | Statistic             | df | Sig.    | Statistic    | df | Sig. |
| White bear suppression inventory              | .078                  | 17 | .200(*) | .981         | 17 | .966 |
| state anger                                   | .102                  | 17 | .200(*) | .960         | 17 | .640 |
| state sadness                                 | .131                  | 17 | .200(*) | .918         | 17 | .137 |
| state disgust                                 | .121                  | 17 | .200(*) | .927         | 17 | .191 |
| state fear                                    | .239                  | 17 | .011    | .874         | 17 | .025 |
| state happy                                   | .146                  | 17 | .200(*) | .925         | 17 | .182 |
| trait anger                                   | .156                  | 17 | .200(*) | .921         | 17 | .153 |
| trait sadness                                 | .161                  | 17 | .200(*) | .919         | 17 | .141 |
| trait disgust                                 | .129                  | 17 | .200(*) | .962         | 17 | .678 |
| trait fear                                    | .256                  | 17 | .004    | .900         | 17 | .069 |
| trait happy                                   | .339                  | 17 | .000    | .541         | 17 | .000 |
| coping anger                                  | .153                  | 17 | .200(*) | .932         | 17 | .232 |
| coping sadness                                | .087                  | 17 | .200(*) | .980         | 17 | .957 |
| coping disgust                                | .140                  | 17 | .200(*) | .951         | 17 | .474 |
| coping fear                                   | .116                  | 17 | .200(*) | .938         | 17 | .292 |
| coping happy                                  | .137                  | 17 | .200(*) | .955         | 17 | .540 |
| emotional regulation - internal dysfunctional | .108                  | 17 | .200(*) | .976         | 17 | .912 |
| emotional regulation - internal functional    | .127                  | 17 | .200(*) | .955         | 17 | .536 |
| emotional regulation - external dysfunctional | .240                  | 17 | .011    | .883         | 17 | .035 |
| emotional regulation - external functional    | .214                  | 17 | .038    | .907         | 17 | .088 |
| Core Beliefs Questionnaire - negative self    | .134                  | 17 | .200(*) | .934         | 17 | .249 |
| Core Beliefs Questionnaire - positive self    | .311                  | 17 | .000    | .665         | 17 | .000 |
| Core Beliefs Questionnaire - negative others  | .153                  | 17 | .200(*) | .915         | 17 | .121 |
| Core Beliefs Questionnaire - positive others  | .135                  | 17 | .200(*) | .940         | 17 | .314 |
| Body Shape perception - now - Time 1          | .140                  | 17 | .200(*) | .943         | 17 | .353 |
| Ideal Body Shape - Time 1                     | .347                  | 17 | .000    | .663         | 17 | .000 |
| Disgust proponsity - time 1                   | .144                  | 17 | .200(*) | .976         | 17 | .914 |
| Disgust sensitivity - time 1                  | .153                  | 17 | .200(*) | .962         | 17 | .668 |
| Core Disgust - time 1                         | .207                  | 17 | .051    | .869         | 17 | .021 |

|                                     |      |    |         |      |    |      |
|-------------------------------------|------|----|---------|------|----|------|
| animal reminder disgust -<br>time 1 | .150 | 17 | .200(*) | .894 | 17 | .054 |
| Contamination disgust -<br>time 1   | .169 | 17 | .200(*) | .919 | 17 | .142 |
| total disgust score - time<br>1     | .145 | 17 | .200(*) | .923 | 17 | .168 |

\* This is a lower bound of the true significance.

a Lilliefors Significance Correction

**Appendix 10 (Cont'd) – Levene’s test for the t-test for chapter 6**

|   |                             | Levene's Test for Equality of Variances |      |        |        |                 |
|---|-----------------------------|---|------|--------|--------|-----------------|
|   |                             | F                                       | Sig. | t      | df     | Sig. (2-tailed) |
| emotional regulation - internal dysfunctional | Equal variances assumed     | 1.008                                   | .320 | 6.980  | 51     | .000            |
|   | Equal variances not assumed |   |      | 7.277  | 48.392 | .000            |
| emotional regulation - internal functional    | Equal variances assumed     | .287                                    | .594 | -2.669 | 52     | .010            |
|   | Equal variances not assumed |   |      | -2.733 | 48.758 | .009            |
| emotional regulation - external dysfunctional | Equal variances assumed     | 8.760                                   | .005 | 2.047  | 52     | .046            |
|   | Equal variances not assumed |   |      | 2.368  | 41.614 | .023            |
| emotional regulation - external functional    | Equal variances assumed     | .039                                    | .845 | -2.420 | 52     | .019            |
|   | Equal variances not assumed |   |      | -2.405 | 44.317 | .020            |

|                                      |                             | Levene's Test for Equality of Variances |       |        |        |                 |
|--------------------------------------|-----------------------------|---|-------|--------|--------|-----------------|
|                                      |                             | F                                       | Sig.  | t      | df     | Sig. (2-tailed) |
|                                      |                             | Lower                                   | Upper | Lower  | Upper  | Lower           |
| Body Shape perception - now - Time 1 | Equal variances assumed     | 11.047                                  | .002  | 1.740  | 41     | .089            |
|                                      | Equal variances not assumed |   |       | 1.859  | 36.610 | .071            |
| Ideal Body Shape - Time 1            | Equal variances assumed     | .042                                    | .839  | -3.706 | 41     | .001            |
|                                      | Equal variances not assumed |   |       | -3.814 | 40.998 | .000            |
| total disgust score - time 1         | Equal variances assumed     | 1.226                                   | .275  | 3.266  | 41     | .002            |
|                                      | Equal variances not assumed |   |       | 3.325  | 40.695 | .002            |

**Appendix 10(Cont'd) – Levene’s test for the t-tests for chapter 6**

|  |                             | Levene's Test for Equality of Variances |      |        |        |                 |
|--|-----------------------------|---|------|--------|--------|-----------------|
|  |                             | F                                       | Sig. | t      | df     | Sig. (2-tailed) |
| Age  | Equal variances assumed     | .857                                    | .359 | 1.122  | 47     | .267            |
|  | Equal variances not assumed |   |      | 1.255  | 39.791 | .217            |
| BMI  | Equal variances assumed     | 3.818                                   | .056 | -7.565 | 49     | .000            |
|  | Equal variances not assumed |   |      | -6.651 | 25.426 | .000            |
| White bear suppression inventory             | Equal variances assumed     | 3.133                                   | .083 | 6.387  | 52     | .000            |
|  | Equal variances not assumed |   |      | 5.892  | 32.560 | .000            |
| Core Beliefs Questionnaire - negative self   | Equal variances assumed     | 24.419                                  | .000 | 7.263  | 51     | .000            |
|  | Equal variances not assumed |   |      | 8.414  | 36.747 | .000            |
| Core Beliefs Questionnaire - positive self   | Equal variances assumed     | .045                                    | .832 | -6.987 | 50     | .000            |
|  | Equal variances not assumed |   |      | -6.960 | 44.754 | .000            |
| Core Beliefs Questionnaire - negative others | Equal variances assumed     | 1.167                                   | .285 | 2.209  | 49     | .032            |
|  | Equal variances not assumed |   |      | 2.241  | 47.462 | .030            |
| Core Beliefs Questionnaire - positive others | Equal variances assumed     | .005                                    | .942 | -.759  | 49     | .452            |
|  | Equal variances not assumed |   |      | -.761  | 45.762 | .451            |
| State Anger - time 1                         | Equal variances assumed     | 10.846                                  | .002 | 2.061  | 41     | .046            |
|  | Equal variances not assumed |   |      | 2.285  | 27.048 | .030            |
| state anger - time 2                         | Equal variances assumed     | 20.985                                  | .000 | 2.466  | 38     | .018            |
|  | Equal variances not assumed |   |      | 2.550  | 28.630 | .016            |



***Appendix 11 - A copy of all the measures, questionnaires and procedures used in the research presented in this thesis.***

## ***The Basic Emotions Scale***

The purpose of this scale is to find out about how much or how often you experience certain emotions and then to ask some questions about how you feel actually during particular emotions themselves.

The first part of the scale is designed to explore how you have felt **DURING THE LAST WEEK**. For each emotion, please circle **ONE** number only between 1 and 7, to indicate how you have felt.

### **OVER THE PAST WEEK I HAVE FELT:**

|                           | Not at all |   | Some of the time |   |   | All of the time |   |
|---------------------------|------------|---|------------------|---|---|-----------------|---|
|                           | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| ANGER                     | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| DESPAIR                   | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| SHAME                     | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| ANXIETY                   | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| HAPPINESS                 | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| FRUSTRATION               | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| MISERY                    | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| GUILT                     | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| NERVOUSNESS               | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| JOY                       | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| IRRITATION                | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| GLOOMINESS                | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| HUMILIATED                | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| TENSE                     | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| LOVING                    | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| AGGRESSION                | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| MOURNFUL                  | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| BLAMEWORTHY               | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| WORRIED                   | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| CHEERFUL                  | 1          | 2 | 3                | 4 | 5 | 6               | 7 |
| DISGUST (i.e., repulsion) | 1          | 2 | 3                | 4 | 5 | 6               | 7 |

**In the second part** of this questionnaire we would like to know about how you feel **IN GENERAL**.

The question asks **HOW OFTEN** you feel the emotion.

**Again**, for each question please circle **ONE** number only between 1 and 7 to indicate how you feel.

**IN GENERAL, I FEEL THIS EMOTION:**

|                           | Never |   | Sometimes |   |   | Very often |   |
|---------------------------|-------|---|-----------|---|---|------------|---|
|                           | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| ANGER                     | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| DESPAIR                   | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| SHAME                     | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| ANXIETY                   | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| HAPPINESS                 | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| FRUSTRATION               | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| MISERY                    | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| GUILT                     | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| NERVOUSNESS               | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| JOY                       | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| IRRITATION                | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| GLOOMINESS                | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| HUMILIATED                | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| TENSE                     | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| LOVING                    | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| AGGRESSION                | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| MOURNFUL                  | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| BLAMEWORTHY               | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| WORRIED                   | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| CHEERFUL                  | 1     | 2 | 3         | 4 | 5 | 6          | 7 |
| DISGUST (i.e., repulsion) | 1     | 2 | 3         | 4 | 5 | 6          | 7 |

**In the third part** of this questionnaire we would like to ask you for some information about **HOW WELL YOU FEEL YOU COPE** when you experience that emotion. For example, you might feel completely out of control of the emotion, or overwhelmed by the emotion in some other way.

**Please note:** even if you **never** experience a particular emotion, please answer the question by imagining how you think you would feel if you did experience that emotion.

**Again,** for each part of the question, please circle **ONE** number between 1 and 7 to indicate how well you feel you cope with the emotion.

|                           | Cope very well |   |   |   |   | Cope very badly |   |
|---------------------------|----------------|---|---|---|---|-----------------|---|
|                           | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| ANGER                     | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| DESPAIR                   | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| SHAME                     | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| ANXIETY                   | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| HAPPINESS                 | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| FRUSTRATION               | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| MISERY                    | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| GUILT                     | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| NERVOUSNESS               | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| JOY                       | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| IRRITATION                | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| GLOOMINESS                | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| HUMILIATED                | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| TENSE                     | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| LOVING                    | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| AGGRESSION                | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| MOURNFUL                  | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| BLAMEWORTHY               | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| WORRIED                   | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| CHEERFUL                  | 1              | 2 | 3 | 4 | 5 | 6               | 7 |
| DISGUST (i.e., repulsion) | 1              | 2 | 3 | 4 | 5 | 6               | 7 |

**Thank you very much for your help with this questionnaire**

### ***The Disgust Scale - As used in the study presented in chapter 4.***

**Please circle T (true) or F (false):**

- T F 1. It bothers me to see someone in a restaurant eating messy food with their fingers.  
 T F 2. Seeing a cockroach in someone else's house doesn't bother me.  
 T F 3. It bothers me to hear someone clear a throat full of mucous.  
 T F 4. I think it is immoral for people to seek sexual pleasure from animals.  
 T F 5. It would bother me to be in a science class, and to see a human hand preserved in a jar.  
 T F 6. I would go out of my way to avoid walking through a graveyard.  
 T F 7. I never let any part of my body touch the toilet seat in public toilets  
 T F 8. Even if I was hungry, I would not drink a bowl of my favourite soup if it had been stirred by a used by a thoroughly washed flyswatter.  
 T F 9. I might be willing to try eating monkey meat, under some circumstances.  
 T F 10. It would bother me to see a rat run across my path in a park.  
 T F 11. If I see someone vomit, it makes me sick to my stomach.  
 T F 12. I think homosexual activities are immoral.  
 T F 13. It would not upset me at all to watch a person with a glass eye take the eye out of the socket.  
 T F 14. It would bother me tremendously to touch a dead body.  
 T F 15. I probably would not go to my favourite restaurant if I found out that the cook had a cold.  
 T F 16. It would bother me to sleep in a nice hotel room if I knew that a man had died of a heart attack in that room the night before.

**Please rate (0, 1, or 2) how disgusting you would find the following experiences.**

0 = not disgusting at all

1 = slightly disgusting

2 = very disgusting

If you think something is bad or unpleasant, but not disgusting, you should write "0".

- \_\_\_ 17. You see someone put ketchup on vanilla ice cream, and eat it.  
 \_\_\_ 18. You see maggots on a piece of meat in an outdoor rubbish bin.  
 \_\_\_ 19. While you are walking through a tunnel under a railroad track, you smell urine.  
 \_\_\_ 20. You hear about a 30 year old man who seeks sexual relationships with 80 year old women.  
 \_\_\_ 21. You see someone accidentally stick a fishing hook through his finger.  
 \_\_\_ 22. Your friend's pet cat dies, and you have to pick up the dead body with your bare hands.  
 \_\_\_ 23. You take a sip of soda, and then realize that you drank from the glass that an acquaintance of yours had been drinking from.  
 \_\_\_ 24. A friend offers you a piece of chocolate shaped like dog poo.  
 \_\_\_ 25. You are about to drink a glass of milk when you smell that it is off.  
 \_\_\_ 26. You are walking barefoot on concrete, and you step on an earthworm.  
 \_\_\_ 27. You see a bowel movement left unflushed in a public toilet.  
 \_\_\_ 28. You hear about an adult woman who has sex with her father.  
 \_\_\_ 29. You see a man with his intestines exposed after an accident.  
 \_\_\_ 30. You accidentally touch the ashes of a person who has been cremated.  
 \_\_\_ 31. You discover that a friend of yours changes their underwear only once a week.  
 \_\_\_ 32. As part of a sex education class, you are required to inflate a new unlubricated condom using your mouth.

**EAT-26**

Please Circle a Response for Each of the Following Statements for the last 7 days:

| Question  | Always | Usually | Often | Sometimes | Rarely | Never |
|---|--------|---------|-------|-----------|--------|-------|
| 1. Am terrified about being overweight  | 3      | 2       | 1     | 0         | 0      | 0     |
| 2. Avoid eating when I am hungry.   | 3      | 2       | 1     | 0         | 0      | 0     |
| 3. Find myself preoccupied with food.   | 3      | 2       | 1     | 0         | 0      | 0     |
| 4. Have gone on eating binges where I feel I may not be able to stop.                     | 3      | 2       | 1     | 0         | 0      | 0     |
| 5. Cut my food into small pieces.   | 3      | 2       | 1     | 0         | 0      | 0     |
| 6. Aware of the calorie content of foods I eat.   | 3      | 2       | 1     | 0         | 0      | 0     |
| 7. Particularly avoid food with a high carbohydrate content (bread, rice, potatoes, etc.) | 3      | 2       | 1     | 0         | 0      | 0     |
| 8. Feel that others would prefer if I ate more.   | 3      | 2       | 1     | 0         | 0      | 0     |
| 9. Vomit after I have eaten.  | 3      | 2       | 1     | 0         | 0      | 0     |
| 10. Feel extremely guilty after eating  | 3      | 2       | 1     | 0         | 0      | 0     |
| 11. Am preoccupied with a desire to be thinner.   | 3      | 2       | 1     | 0         | 0      | 0     |
| 12. Think about burning up calories when I exercise.                                      | 3      | 2       | 1     | 0         | 0      | 0     |
| 13. Other people think I'm too thin.  | 3      | 2       | 1     | 0         | 0      | 0     |
| 14. Am preoccupied with the thought of having fat on my body.                             | 3      | 2       | 1     | 0         | 0      | 0     |
| 15. Take longer than others to eat my meals.  | 3      | 2       | 1     | 0         | 0      | 0     |
| 16. Avoid foods with sugar in them.   | 3      | 2       | 1     | 0         | 0      | 0     |
| 17. Eat diet foods.   | 3      | 2       | 1     | 0         | 0      | 0     |
| 18. Feel that food controls my life.  | 3      | 2       | 1     | 0         | 0      | 0     |
| 19. Display self-control around food.   | 3      | 2       | 1     | 0         | 0      | 0     |



|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 20. Feel that other pressure me to eat.     | 3 | 2 | 1 | 0 | 0 | 0 |
| 21. Give too much time and thought to food. | 3 | 2 | 1 | 0 | 0 | 0 |
| 22. Feel uncomfortable after eating sweets. | 3 | 2 | 1 | 0 | 0 | 0 |
| 23. Engage in dieting behavior.             | 3 | 2 | 1 | 0 | 0 | 0 |
| 24. Like my stomach to be empty.            | 3 | 2 | 1 | 0 | 0 | 0 |
| 25. Have the impulse to vomit after meals.  | 3 | 2 | 1 | 0 | 0 | 0 |
| 26. Enjoy trying new rich foods.            | 0 | 0 | 0 | 1 | 2 | 3 |

**INTERFERENCE TASK – From the study reported in chapter 4**

In the following task, read each list of words and circle the word you think is the odd one out:

|              |           |              |             |          |                   |             |
|--------------|-----------|--------------|-------------|----------|-------------------|-------------|
| Cake         | Apple     | Pear         | Grapes      | Tomato   | Strawberry        | Fig         |
| Minnie Mouse | The Queen | Mickey Mouse | Donald Duck | Goofy    | Pluto             | Donald Duck |
| Table        | Door      | Bench        | Chair       | Desk     | Shelf             | Car         |
| Yellow       | Pink      | Blue         | Orange      | Green    | Striped           | Red         |
| Canada       | Ireland   | Paris        | Mongolia    | India    | Australia         | England     |
| Vodka        | Cranberry | Wine         | Beer        | Cider    | Sherry            | Whiskey     |
| Vacuum       | Duster    | Cloth        | Brush       | Computer | Washing up liquid | Scourer     |
| Skirt        | Dress     | Boy          | Blouse      | Tie      | Jumper            | Cardigan    |
| Necklace     | Ring      | Bracelet     | Drive       | Bangle   | Broach            | Choker      |
| Cough        | Belt      | Sneeze       | Itch        | Graze    | Cut               | Scratch     |

**MODIFIED VELTEN MOOD INDUCTION TECHNIQUE**

Please recall an event that has happened to you recently that made you feel angry. It doesn't matter if the event was small or large but it has to be one that made you feel really angry at the time. Over the next few minutes, think about what happened, the details of the event, why it angered you and how angry you felt.

You do not need to write anything down about the event, you only need to think about it.

Now, after thinking about this event, how angry do you currently feel?  
Please circle the number that corresponds to how angry you feel.

Not angry

Extremely angry

1 2 3 4 5 6 7 8 9 10

## ***Hospital Anxiety and Depression Scale (HADS)***

Clinicians are aware that emotions play an important part in most illnesses. If your clinician knows about these feelings, he or she will be able to help you more. This questionnaire is designed to help your clinician to know how you feel. **Read each item below and underline the reply** which comes closest to how you have been feeling in the past week.

Don't take too long over your replies. Your immediate reaction to each item will probably be more accurate than a long, thought-out response.

A) I feel tense or wound up:

Most of the time

A lot of the time

From time to time, occasionally

Not at all

B) I still enjoy the things I used to enjoy:

Definitely as much

Not quite so much

Only a little

Hardly at all

C) I get a short of frightened feeling as if something awful is going to happen:

Very definitely and quite badly

Yes, but not too badly

A little, but it doesn't worry me

Not at all

D) I can laugh and see the funny side of things:

As much as I always could

Not quite as much now

Definitely not so much now

Not at all

E) Worrying thoughts go through my mind:

A great deal of the time

A lot of the time

Not too often

Very little

F) I feel cheerful

Never

Not often

Sometimes

Most of the time

G) I can sit at ease and feel relaxed

Definitely

Usually

Not often

Not at all

H) I feel as if I am slowed down:

Nearly all the time

Very often

Sometimes

Not at all

I) I get a sort of feeling like butterflies in the stomach:

Not at all

Occasionally

Quite often

Very often

J) I have lost interest in my appearance:

Definitely

I don't take as much care as I should

I may not take quite as much care

I take just as much care as ever

K) I feel restless as if I have to be on the move:

Very much indeed

Quite a lot

Not very much

Not at all

L) I look forward with enjoyment to things:

As much as I ever did

Rather less than I used to

Definitely less than I used to

Hardly at all

M) I get sudden feelings of panic:

Very often indeed

Quite often

Not very often

Not at all

N) I can enjoy a good book, radio or television programme:

Often

Sometimes

Not often

Very seldom

Now check that you have answered all the questions.

HADS © R.P. Snaith and A. S. Zigmond, 1983, 1992, 1994.

**Parent Attitude/Behaviour Questionnaire**

Instructions: In the following items, please indicate on a scale from 1 (very unlikely) to 7 (very likely) the likelihood that your parents would have responded in the ways listed for each item. Please read each item carefully and respond as honestly and sincerely as you can. For each response, please circle a number from 1-7.

Response Scale:    1   2   3   4   5   6   7  
                           Very unlikely                            Medium            Very likely

|  |   |
|--|---|
| <p>1. When I was a child and I was prevented from going to a fun outing, (e.g. a friend's birthday party), because I was sick or hurt, my parents responded to my anger by:</p> <p>a) sending me to my room to cool off</p> <p>b) getting angry with me</p> <p>c) helping me to think about ways that I could have still been with my friends (e.g., invite some friends over after the party)</p> <p>d) telling me not to make a big deal out of missing the party</p> <p>e) encouraging me to express my feelings of anger and frustration</p> <p>f) soothing my feelings and doing something fun instead so I would feel better about missing the party</p> | <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> |
| <p>2. If I had broken a special toy, and became upset and cried, my parents would have:</p> <p>a) remained calm and not let themselves get anxious</p> <p>b) comforted me and helped me to try to forget about the accident</p> <p>c) told me that I was over-reacting</p> <p>d) helped me to figure out how to get the toy fixed</p> <p>e) told me that it is OK to cry and be sad</p> <p>f) told me to stop crying or I wouldn't be allowed to play with my toys anytime soon</p>  | <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> |
| <p>3. If I had lost some prized possession and reacted with tears, my parents would have:</p> <p>a) got upset with me for being so careless and then crying about it</p>   | <p>1 2 3 4 5 6 7</p>  |



|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| b) told me that I was over-reacting   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c) helped me to think of places where we hadn't looked yet  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d) distracted me by talking about happy things  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e) told me that it's OK to cry when you feel unhappy  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f) told me off for not being careful enough.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <p>4. If I was being taken to the doctors' for an injection (which I was afraid of) and I became, for example, quite shaky and tearful while waiting for my turn, my parents would:</p> |   |   |   |   |   |   |   |
| a) tell me to shape up or I wouldn't be allowed to do something I liked to do when I got home (e.g., watch TV)  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b) encourage me to talk about my fears  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c) tell me not to make a big deal of the injection  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d) tell me not to embarrass them by crying  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e) comfort me before and after the injection  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f) talk to me about ways to make it hurt less (such as relaxing or taking deep breaths)   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <p>5. If I had eaten something that I thought was disgusting and spat it out onto the side of my plate, my parents would have:</p>  |   |   |   |   |   |   |   |
| a) comforted me and tried to make me feel better  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b) told me that I was over-reacting   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c) appear to be disgusted and uncomfortable with me   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d) told me that if I did that again I would have my food taken away   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e) explained that it was OK not to like certain foods   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f) suggested that I have some drink to wash away the taste  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <p>6. If I was about to appear in a school play or sports activity and I became visibly nervous about people watching me, my parents would have:</p>                                    |   |   |   |   |   |   |   |
| a) helped me to think of things that I could do to get ready for my turn (e.g., to do some warm-ups or not to look at the audience)   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b) suggested that I could think about something relaxing so that my nervousness would go away   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c) remained calm and not get worked up themselves   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d) told me that I was being a baby about it   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|
| e) told me that if I didn't calm down, we would have to leave and go home right away   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f) encouraged me to talk about my nervous feelings   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. If I had been looking forward to watching my favourite TV programme and the TV stopped working, my parents would have responded to my anger by:   |   |   |   |   |   |   |   |
| a) Suggesting that I do something relaxing to feel better, such as have a hug, play a game, etc.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b) telling me to telephone a friend so that they can video it for me   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c) getting angry themselves  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d) telling me that I was over-reacting   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e) scolding me for getting angry   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f) Told me that it was Ok to feel angry when something frustrating happens   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. If I had trodden in some dog mess in the front garden without any shoes on, my parents would have reacted to my disgust by:   |   |   |   |   |   |   |   |
| a) encouraging me to talk about what it was that disgusted me  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b) getting upset with me for being so disgusting   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c) telling me that I was over-reacting   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d) helping me to sort out the problem (e.g., getting my foot washed, cleaning the front garden)  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e) telling me that I have to go to my room   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f) doing something fun with me to help me forget the whole experience  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. If I had been playing a sport in front of a crowd (e.g. netball, rounders, football) and I made a mistake that meant that my team lost the game, my parents would have reacted to my sense of shame by: |   |   |   |   |   |   |   |
| a) comforting me and trying to make me feel better   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b) telling me that I was I was overreacting  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c) appear to feel ashamed themselves, and look uncomfortable   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d) tell me to 'sort it out', or they would take me home there and then.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e) After the game, encourage me to talk about my feelings of shame   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f) Tell me to practice more so that I don't make the same mistake next time  |   |   |   |   |   |   |   |

|  |  |
|--|--|
|  |  |
|--|--|

## COPING WITH CHILDREN'S NEGATIVE EMOTIONS SCALE (CCNES)<sup>1</sup>

Purpose: To measure the degree to which adult's recall their parent's reaction to emotional situations whilst they were children (Primary school through to Secondary School).

Six subscales are derived that reflect the specific types of coping response parents tend to use in these situations.

### SUBSCALES

1. **Distress Reactions (DR).** These items reflect the degree to which parents experience distress when children express negative affect.

Scoring: Mean of: 1B, 2A\*, 3A, 4D, 5C, 6C\*, 7C, 8B, 9C,

\* = REVERSED SCORING

2. **Punitive Reactions (PR).** These items reflect the degree to which parents respond with punitive reactions that decrease their exposure or need to deal with the negative emotions of their children.

Scoring: Mean of: 1A, 2F, 3F, 4A, 5D, 6E, 7E, 8E, 9D

3. **Expressive Encouragement (EE).** These items reflect the degree to which parents encourage children to express negative affect or the degree to which they validate child's negative emotional states (i.e., "it's ok to feel sad.")

Scoring: Mean of: 1E, 2E, 3E, 4B, 5E, 6F, 7F, 8A, 9E

4. **Emotion-Focused Reactions (EFR).** These items reflect the degree to which parents respond with strategies that are designed to help the child feel better (i.e., oriented towards affecting the child's negative feelings).

Scoring: Mean of: 1F, 2B, 3D, 4E, 5A, 6B, 7A, 8F, 9A

5. **Problem-Focused Reactions (PFR).** These items reflect the degree to which parents help the child solve the problem that caused the child's distress (i.e., oriented towards helping the child solve his/her problem or coping with a stressor).

Scoring: Mean of: 1C, 2D, 3C, 4F, 5F, 6A, 7B, 8D, 9F

6. **Minimization Reactions (MR).** These items reflect the degree to which parents minimize the seriousness of the situation or devalue the child's problem or distressful reaction.

Scoring: Mean of: 1D, 2C, 3B, 4C, 5B, 6D, 7D, 8C, 9B

**EDE-Q**

**Instructions**

The following questions are concerned with the PAST FOUR WEEKS ONLY (28 days). Please read each question carefully and circle the appropriate number on the right. Please answer all the questions.

| ON HOW MANY DAYS OUT 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 <u>trying</u> to limit the amount of food you eat to influence your shape or weight?  | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 2.   | Have you gone for long periods of time (8 hours or more) without eating anything in order to influence your shape or weight?   | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 3.   | Have you <u>tried</u> to avoid eating any foods which you like in order to influence your shape or weight?   | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 4.   | Have you <u>tried</u> to follow definite rules regarding your eating in order to influence your shape or weight; for example, a calorie limit, a set amount of food, or rules about what or when you should eat? | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 5.   | Have you wanted your stomach to be empty?  | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 6.   | Has thinking about food or its calorie content made it much more difficult to concentrate on things you are interested in; for example, read, watch TV, or follow a conversation?                                | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 7.   | Have you been afraid of losing control over eating?  | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 8.   | Have you had episodes of binge eating?   | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 9.   | Have you eaten in secret? (Do not count binges.)   | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 10.  | Have you definitely wanted your stomach to be flat?  | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 11.  | Has thinking about shape or weight made it more difficult to concentrate on things you are interested in; for example read, watch TV or follow a conversation?   | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 12.  | Have you had a definite fear that you might gain weight or become fat?   | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 13.  | Have you felt fat?   | 0       | 1        | 2         | 3          | 4          | 5          | 6         |
| 14.  | Have you had a strong desire to lose weight?   | 0       | 1        | 2         | 3          | 4          | 5          | 6         |

OVER THE PAST FOUR WEEKS (28 DAYS)

|    |  |  |
|----|--|--|
| 5. | On what proportion of times that you have eaten have you felt guilty because of the effect on your shape or weight? (Do not count binges.)<br><br>(Circle the number which applies.) | 0 – None of the times<br>1 – A few of the times<br>2 – Less than half the times<br>3 – Half the times<br>4 – More than half the times<br>5 – Most of the times<br>6 – Every time |
|----|--|--|

|     |  |     |     |
|-----|--|-----|-----|
| 6.  | Over the past four weeks (28 days), have there been any times when you have felt that you have eaten what other people would regard as an unusually large amount of food given the circumstances? (Please circle YES or NO and put appropriate number in box.) | YES | NO  |
| 7.  | How many such episodes have you had over the past four weeks?  | ( ) | ( ) |
| 8.  | During how many of these episodes of overeating did you have a sense of having lost control over your eating?  | ( ) | ( ) |
| 9.  | Have you had other episodes of eating in which you have had a sense of having lost control and eaten too much, but have <u>not</u> eaten an unusually large amount of food given the circumstances?  | YES | NO  |
| 10. | How many such episodes have you had over the past four weeks?  | ( ) | ( ) |
| 11. | Over the past four weeks have you made yourself sick (vomit) as a means of controlling your shape or weight?   | YES | NO  |
| 12. | How many times have you done this over the past four weeks?  | ( ) | ( ) |
| 13. | Have you taken laxatives as a means of controlling your shape or weight?   | YES | NO  |
| 14. | How many times have you done this over the past four weeks?  | ( ) | ( ) |
| 15. | Have you taken diuretics (water tablets) as a means of controlling your shape or weight?   | YES | NO  |
| 16. | How many times have you done this over the past four weeks?  | ( ) | ( ) |
| 17. | Have you exercised <u>hard</u> as a means of controlling your shape or weight?   | YES | NO  |
| 18. | How many times have you done this over the past four weeks?  | ( ) | ( ) |

| OVER THE PAST FOUR WEEKS (28 DAYS) (PLEASE CIRCLE THE NUMBER WHICH BEST DESCRIBES YOUR BEHAVIOUR.) |   | NOT AT ALL |   | SLIGHTLY |   | MODERATELY |   | MARKEDLY |
|--|---|------------|---|----------|---|------------|---|----------|
| 9.   | Has your weight influenced how you think about (judge) yourself as a person?                  | 0          | 1 | 2        | 3 | 4          | 5 | 6        |
| 10.  | Has your shape influenced how you think about (judge) yourself as a person?                   | 0          | 1 | 2        | 3 | 4          | 5 | 6        |
| 11.  | How much would it upset you if you had to weigh yourself once a week for the next four weeks? | 0          | 1 | 2        | 3 | 4          | 5 | 6        |

|    |  |   |   |   |   |   |   |   |
|----|--|---|---|---|---|---|---|---|
| 2. | How dissatisfied have you felt about your weight?  | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. | How dissatisfied have you felt about your shape?   | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. | How concerned have you been about other people seeing you eat?   | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. | How uncomfortable have you felt seeing your body; for example, in the mirror, in shop window reflections, while undressing or taking a bath or shower? | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. | How uncomfortable have you felt about others seeing your body: for example, in communal changing rooms, when swimming or wearing tight clothes?        | 0 | 1 | 2 | 3 | 4 | 5 | 6 |



**The Brief Core Schema Scales: Beliefs about Self and Others**

This questionnaire lists beliefs that people can hold about themselves and other people. Please indicate whether you hold each belief (NO or YES). If you hold the belief then please indicate how strongly you hold it by circling a number (1-4). Try to judge the beliefs on how you have generally, over time, viewed yourself and others. Do not spend too long on each belief. There are no right or wrong answers and the first response is often the most accurate.

|                              |    |     |   | Believe it slightly | Believe it moderately | Believe it very much | Believe it totally |
|------------------------------|----|-----|---|---------------------|-----------------------|----------------------|--------------------|
| <b>MYSELF</b>                |    |     |   |                     |                       |                      |                    |
| I am unloved                 | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am worthless               | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am weak                    | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am vulnerable              | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am bad                     | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am a failure               | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am respected               | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am valuable                | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am talented                | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am successful              | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am good                    | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| I am interesting             | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| <b>OTHER PEOPLE</b>          |    |     |   |                     |                       |                      |                    |
| Other people are hostile     | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are harsh       | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are unforgiving | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are bad         | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are devious     | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are nasty       | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are fair        | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are good        | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are trustworthy | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are accepting   | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are supportive  | NO | YES | → | 1                   | 2                     | 3                    | 4                  |
| Other people are truthful    | NO | YES | → | 1                   | 2                     | 3                    | 4                  |

**White Bear Suppression Inventory**

**Please select a number from 1 'strongly disagree' to 5 'strongly agree' for each statement**

|   | 1<br>strongly<br>disagree | 2                     | 3                     | 4                     | 5<br>strongly<br>agree |
|---|---------------------------|-----------------------|-----------------------|-----------------------|------------------------|
| 1. There are things I prefer not to think about                           | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 2. Sometimes I wonder why I have the thoughts I do                        | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 3. I have thoughts I cannot stop  | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 4. There are images that come to mind that I cannot erase                 | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 5. My thoughts return frequently to one idea                              | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 6. I wish I could stop thinking of certain things                         | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 7. Sometimes my mind races so fast I wish I could stop it                 | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 8. I always try to put problems out of mind                               | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 9. There are thoughts that keep jumping into my head                      | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 10. Sometimes I stay busy just to keep thoughts from intruding on my mind | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |
| 11. There are things I try not to think about                             | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |

|  |                       |                       |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 12. Sometimes I really wish I could stop thinking                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 13. I often do things to distract myself from my thoughts        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 14. I have thoughts that I try to avoid                          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15. There are many thoughts that I have that I don't tell anyone | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

## ***Emotion Regulation Questionnaire 2***

We all experience lots of different feelings or emotions. For example, different things in our lives make us feel happy, sad, angry and so on...

The following questions ask you to think about **how often** you do certain things **in response to your emotions**. You do not have to think about specific emotions but just how often you **generally** do the things listed below.

Please tick the box corresponding to the answer that fits best. We all respond to our emotions in different ways so there are no right or wrong answers.

| <b><i>In GENERAL how do you respond to your emotions?</i></b>  | <b><i>Never</i></b>   | <b><i>Seldom</i></b>  | <b><i>Often</i></b>   | <b><i>Very</i></b>    | <b><i>Always</i></b>  |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. I talk to someone about how I feel  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. I take my feelings out on others verbally (e.g. shouting, arguing)                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. I seek physical contact from friends or family (e.g. a hug, hold hands)                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. I review (rethink) my thoughts or beliefs   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. I harm or punish myself in some way   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. I do something energetic (e.g. play sport, go for a walk)   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7. I dwell on my thoughts and feelings (e.g. It goes round and round in my head and I can't stop it) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| <i><b>In GENERAL how do you respond to your emotions?</b></i>  | <i><b>Never</b></i>   | <i><b>Seldom</b></i>  | <i><b>Often</b></i>   | <i><b>Very</b></i>    | <i><b>Always</b></i>  |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 8. I ask others for advice   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9. I review (rethink) my goals or plans  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 10. I take my feelings out on others physically (e.g. fighting, lashing out)   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 11. I put the situation into perspective   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 12. I concentrate on a pleasant activity   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 13. I try to make others feel bad (e.g. being rude, ignoring them)   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 14. I think about people better off and make myself feel worse   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15. I keep the feeling locked up inside  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16. I plan what I could do better next time  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17. I bully other people (e.g. saying nasty things to them, hitting them)  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18. I take my feelings out on objects around me (e.g. deliberately causing damage to my house, school or outdoor things) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 19. Things feel unreal (e.g. I feel strange, things around me feel strange, I daydream)                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 20. I telephone friends or family  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

|  |   |   |   |   |   |
|--|---|---|---|---|---|
| 21. I go out and do something nice (e.g. cinema, shopping, go for a meal, meet people) | ○ | ○ | ○ | ○ | ○ |
|--|---|---|---|---|---|

Thank you for your help.

The Revised 21-Item Measure: Scales, Items & Strategies

- 1) Internal-Dysfunctional: -‘I harm or punish myself in some way’ (*self-harm*)  
 -‘I dwell on my thoughts and feelings (e.g. it goes round and round in my head and I can’t stop it)’ (*rumination*)  
 -‘I think about people better off than myself and make myself feel worse’ (*negative social comparison*)  
 -‘I keep the feeling locked up inside’ (*repression*)  
 -‘Things feel unreal (e.g. I feel strange, things around me feel strange, I daydream)’ (*de-realisation*)
- 2) Internal-Functional: -‘I review (re-think) my thoughts or beliefs’ (positive re-appraisal)  
 -‘I review (re-think) my goals or plans’ (modification of goals)  
 -‘I plan what I could do better next time’ (*planning*)  
 -‘I put the situation into perspective’ (*perspective*)  
 -‘I concentrate on a pleasant activity’ (*concentration*)
- 3) External-Dysfunctional: -‘I bully other people (e.g. saying nasty things to them, -‘I take my feelings out on other people verbally (e.g. shouting, arguing)’ (*verbal assault*)  
 -‘I take my feelings out on other people physically (e.g. fighting, lashing out)’ (*physical assault*)  
 -‘I try to make others feel bad (e.g. being rude, ignoring them)’ (*making others feel bad*)  
 -‘I take my feelings out on objects around me (e.g. deliberately causing damage to my house, school or outdoor things)’ (*lashing out at objects*)
- 4) External-Functional: -‘I talk to someone about how I feel’ (*expression of feelings*)  
 -‘I ask others for advice’ (advice seeking)  
 -‘I seek physical contact from friends or family (e.g. a hug, hold hands)’ (*physical contact*)  
 -‘I do something energetic (e.g. play sport, go for a walk)’ (*exercise*)  
 - I telephone friends or family (*new item 1*)



- I go out and do something nice (e.g. cinema, shopping,  
go  
for a meal, meet people) (*new item 2*)

**Part 1 Directions**

Number of statements that people use to describe themselves are given below. Read each statement and then circle the number which indicates how you feel *right now*. There are no right or wrong answers. Do not spend too much time on any one statement. Mark the answer that *best* describes your *present feelings*.

| Not at all<br>1 | Somewhat<br>2 | Moderately so<br>3 | Very much so<br>4 |
|-----------------|---------------|--------------------|-------------------|
|-----------------|---------------|--------------------|-------------------|

**How I Feel Right Now**

- I am furious. .... 1 2 3 4
- I feel irritated ..... 1 2 3 4
- I feel angry ..... 1 2 3 4
- I feel like yelling at somebody. .... 1 2 3 4
- I feel like breaking things..... 1 2 3 4
- I am mad..... 1 2 3 4
- I feel like banging on the table..... 1 2 3 4
- I feel like hitting someone..... 1 2 3 4
- I feel like swearing..... 1 2 3 4
- I feel annoyed. .... 1 2 3 4
- I feel like kicking somebody ..... 1 2 3 4
- I feel like cursing out loud ..... 1 2 3 4
- I feel like screaming ..... 1 2 3 4
- I feel like pounding somebody..... 1 2 3 4
- I feel like shouting out loud ..... 1 2 3 4

Continued=>

## Part 2 Directions

Read each of the following statements that people have used to describe themselves, and then circle the appropriate number to indicate how you *generally* feel or react. There are no right or wrong answers. Do not spend too much time on any one statement. Circle the answer that *best* describes how you *generally* feel or react.

|                          |                       |                   |                           |
|--------------------------|-----------------------|-------------------|---------------------------|
| <b>Almost never</b><br>1 | <b>Sometimes</b><br>2 | <b>Often</b><br>3 | <b>Almost always</b><br>4 |
|--------------------------|-----------------------|-------------------|---------------------------|

### How I Generally Feel

- |  |   |   |   |   |
|--|---|---|---|---|
| 16. I am quick tempered.....   | 1 | 2 | 3 | 4 |
| 17. I have a fiery temper.....   | 1 | 2 | 3 | 4 |
| 18. I am a hotheaded person.....   | 1 | 2 | 3 | 4 |
| 19. I get angry when I'm slowed down by others' mistakes. ....               | 1 | 2 | 3 | 4 |
| 20. I feel annoyed when I am not given recognition for doing good work. .... | 1 | 2 | 3 | 4 |
| 21. I fly off the handle.....  | 1 | 2 | 3 | 4 |
| 22. When I get mad, I say nasty things.....                                  | 1 | 2 | 3 | 4 |
| 23. It makes me furious when I am criticized in front of others. ....        | 1 | 2 | 3 | 4 |
| 24. When I get frustrated, I feel like hitting someone. ....                 | 1 | 2 | 3 | 4 |
| 25. I feel infuriated when I do a good job and get a poor evaluation. ....   | 1 | 2 | 3 | 4 |

Contint

### Part 3 Directions

Everyone feels angry or furious from time to time, but people differ in the ways that they react when they are angry. A number of statements are listed below which people use to describe their reactions when they feel *angry* or *furious*. Read each statement and then **circle** the appropriate number to indicate how *often* you *generally* react or behave in the manner described when you are feeling angry or furious. There are no right or wrong answers. Do not spend too much time on any one statement.

| Almost never<br>1 | Sometimes<br>2 | Often<br>3 | Almost always<br>4 |
|-------------------|----------------|------------|--------------------|
|-------------------|----------------|------------|--------------------|

#### How I Generally React or Behave When Angry or Furious...

|  |   |   |   |   |
|--|---|---|---|---|
| I control my temper.....   | 1 | 2 | 3 | 4 |
| I express my anger.....  | 1 | 2 | 3 | 4 |
| I take a deep breath and relax.....                              | 1 | 2 | 3 | 4 |
| I keep things in.....  | 1 | 2 | 3 | 4 |
| I am patient with others.....                                    | 1 | 2 | 3 | 4 |
| If someone annoys me, I'm apt to tell him or her how I feel..... | 1 | 2 | 3 | 4 |
| I try to calm myself as soon as possible.....                    | 1 | 2 | 3 | 4 |
| I pout or sulk.....  | 1 | 2 | 3 | 4 |
| I control my urge to express my angry feelings.....              | 1 | 2 | 3 | 4 |
| I lose my temper.....  | 1 | 2 | 3 | 4 |
| I try to simmer down.....  | 1 | 2 | 3 | 4 |
| I withdraw from people.....                                      | 1 | 2 | 3 | 4 |
| I keep my cool.....  | 1 | 2 | 3 | 4 |
| I make sarcastic remarks to others.....                          | 1 | 2 | 3 | 4 |
| I try to soothe my angry feelings.....                           | 1 | 2 | 3 | 4 |
| I boil inside, but I don't show it.....                          | 1 | 2 | 3 | 4 |
| I control my behavior.....                                       | 1 | 2 | 3 | 4 |
| I do things like slam doors.....                                 | 1 | 2 | 3 | 4 |
| I endeavor to become calm again.....                             | 1 | 2 | 3 | 4 |
| I tend to harbor grudges that I don't tell anyone about.....     | 1 | 2 | 3 | 4 |
| I can stop myself from losing my temper.....                     | 1 | 2 | 3 | 4 |
| I argue with others.....   | 1 | 2 | 3 | 4 |

| Almost never<br>1 | Sometimes<br>2 | Often<br>3 | Almost always<br>4 |
|-------------------|----------------|------------|--------------------|
|-------------------|----------------|------------|--------------------|

**How I Generally React or Behave When Angry or Furious...**

- |  |   |   |   |   |
|--|---|---|---|---|
| 8. I reduce my anger as soon as possible. ....                   | 1 | 2 | 3 | 4 |
| 9. I am secretly quite critical of others. ....                  | 1 | 2 | 3 | 4 |
| 0. I try to be tolerant and understanding. ....                  | 1 | 2 | 3 | 4 |
| 1. I strike out at whatever infuriates me. ....                  | 1 | 2 | 3 | 4 |
| 2. I do something relaxing to calm down.....                     | 1 | 2 | 3 | 4 |
| 3. I am angrier than I am willing to admit. ....                 | 1 | 2 | 3 | 4 |
| 4. I control my angry feelings.....                              | 1 | 2 | 3 | 4 |
| 5. I say nasty things.....                                       | 1 | 2 | 3 | 4 |
| 6. I try to relax. ....  | 1 | 2 | 3 | 4 |
| 7. I'm irritated a great deal more than people are aware of..... | 1 | 2 | 3 | 4 |



## Perceived Body Image Questionnaire

These questions ask about how you look now, and how you would best like to look. Please circle the figure that best answers the following:

1. Right now I look like:



3



4



5



6



7



8



9



12



13



14



15



16



17



18

2. I would like it best if I looked like:



3



4



5



6



7



8



9



12



13



14



15



16



17



18



***Appendix 12 - A copy of the Ethics Approval Letter for the study presented in chapter 6.***

**15 November 2007**

Dr John R.E. Fox  
Chartered Clinical Psychologist/ PhD Student  
100 Wilmslow Road  
Cheadle  
SK8 3DG

Dear Dr Fox

**Study title:** Eating Disorders: An Investigation into Core Beliefs and Emotional Regulation  
**REC reference:** 07/MRE00/60  
**Amendment number:** No 1.5  
**Amendment date:** 22 October 2007

The above amendment was reviewed at the meeting of Scotland A REC held on 09 November 2007.

The members of the Committee present gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

The documents reviewed and approved at the meeting were:

| Document                                     | Version | Date            |
|--|---------|-----------------|
| Covering Letter                              |         | 22 October 2007 |
| Notice of Substantial Amendment (non-CTIMPs) |         | 22 October 2007 |
| HADS   | V1.0    | 22 October 2007 |
| Proposal                                     | V1.5    | 22 October 2007 |

The members of the Committee who were present at the meeting are listed on the attached sheet.

Chairman: Professor Kennedy Lees  
Vice-Chairman: Dr George Masterton  
Vice Chairman: Dr Malcolm Booth

**Scotland A Research Ethics Committee  
Amendments Sub-Committee**

**Meeting Held on 9<sup>th</sup> November 2007**

**Members Present**

**Chairman  
Dr George Masterton**

**Dr Richard Quigley  
Mrs Margaret Thomson**

## ***Appendix 13: Emotion elicitation using film clips: A replication of Hewig et al, (2005) study on an English speaking sample***

### **Introduction**

Experimental research into emotion has advanced considerably in recent decades with researchers developing new mood induction techniques with which to study emotional processes in the laboratory. Self statements, autobiographical recall, hypnosis, facial expression, social feedback, music, pictorial slides and film clips are but a selection of procedures utilised in emotion research, (see Martin, 1990, for review). The benefits of Mood Induction Procedures (MIPs) have been twofold; firstly, in terms of having a standardised and reliable means of eliciting an emotion and, secondly, to do this in an ethically acceptable manner without the need for deception.

A multitude of techniques have been used, each having varied levels of emotional differentiation which would impact on the results gained from participants (see Christie and Friedman, 2004). The researcher's choice of affect induction procedure is diverse, with Christie and Friedman (2004) highlighting the importance of selecting the correct procedure according to the underlying structural model on which the emotion research is based, and the differential results that may be drawn from such procedural considerations.

An MIP which has a distinct practical advantage and that is increasingly utilized by many researchers is the use of film clips (Davidson *et al*, 1990, Philippot, 1993, Gross and Levenson, 1995). Briefly, this method involves presenting participants with short film segments considered relevant to a target emotion. To determine the success of a chosen clip in its ability to elicit the targeted emotion, participants would complete an

inventory of emotion terms by indicating the intensity of each emotion felt after viewing.

Not only does this method provide researchers with a standardised set of materials but it is culturally relevant, easily administered to large groups, and realistic in terms of events which would naturally evoke an emotional reaction. The popularity of this method of MIP has resulted in a bank of film clips taken from commercially available feature presentations found to be effective across studies, (Tomarken *et al.*, 1990; Hagemann *et al.*, 1997; Christie and Friedman, 2003).

Hewig and colleagues (2005) undertook a study in which a number of well known clips from feature presentations, including 'neutral' clips, were presented to validate the utility of clips in eliciting selected target emotions. With at least two clips for each target emotion they found that they reliably induced the target emotions of anger, sadness, fear, disgust, and happiness selectively, which the research group were able to condense into a smaller but more selective bank. These researchers argued that the reduction of stimulus material would be beneficial to researchers by lessening participant fatigue, whilst the use of equivalent neutral stimuli may also be utilised in distracter tasks between emotional manipulations.

However, emotional variation across different cultures in terms of recognition, experience and expression has been documented across the years, (Ekman 1972, Matsumoto *et al.*, 1989, Matsumoto 1993, Vrana and Rollock 2002), and as the recent 2005 paper by Hewig and colleagues had been conducted on a German speaking population the reliability and validity of the revised film set must be established

before using the materials as part of a controlled investigation within other countries and/or cultures.

The aims of the present study were twofold. Firstly, to confirm the reliability and validity of the film clips in their ability to elicit the five basic emotions anger, fear, happiness, disgust and sadness within an English speaking population. Secondly, to confirm the reliability and validity of this film set in the exclusivity of particular clips in eliciting a single emotion.

## METHOD

### *Participants*

Thirty seven participants (M=14, F=23) were recruited by means of a convenience sampling method. The mean age of the sample was twenty-nine, with all participants having English as their first language.

### *Stimulus Material and Rating Scales*

A set of 11 clips taken from those proving most successful in the study by Hewig *et al*, (2005) was presented to participants on a laptop computer with 12 inch screen. All clips were taken from commercially available feature presentations and intended to elicit each of the target emotions anger, sadness, fear, disgust, happiness and also included one clip found by Hewig *et al*, (2005) to elicit a neutral valence. The clips used to elicit happiness were from “An Officer and a Gentleman” and “When Harry Met Sally”, for the neutral clip “Hannah and her Sisters” was used. “Witness” and “My Bodyguard” were used to elicit feelings of anger while “The Godfather” and

“Pink Flamingos” were shown when targeting the emotion of disgust. For the fear condition “Silence of the Lambs” and “Halloween” were shown. Lastly, a second clip from “An Officer and a Gentleman” and one from “The Champ” were used for the sadness condition.

The length of each clip shown varies from 29 to 236 seconds, and as outlined in previous emotion research using film clips the set was presented in silence in order to avoid any confounding effects. In order to gain a quantitative measure of the emotion elicited by the film clip, participants were given a set of 12 rating style questionnaires- one to complete after each clip.

The questionnaire used contains 17 unipolar scales with a range of 0 (not at all) to 9 (very strongly) to assess the strength of each rating. The emotion labels used for these scales were Happiness, Pleasure, Amusement, Hope, Affection, Desire, Relief, Frustration, Anger, Rage, Sadness, Fear, Disgust, Shame, Guilt, Boredom and Empathy. (see appendix I) The questionnaire also included 2 bipolar scales, if the emotion experienced is pleasant (+4) to unpleasant (-4), and whether this feeling is weak (-4) to strong (+4). This was included to follow Russell’s (1980) Valence X Arousal circumflex theory of emotion and as in the original paper by Hewig *et al*, (2005). The questionnaire also asked participants to indicate whether they have seen the film prior to the study and whether they looked away at all during the presentation of that particular clip. Before taking part in the experiment, all participants were given a brief description of how the experiment would run, and asked to sign a consent form.



### *Procedure*

To reduce order effects, each participant was allocated in alternating sequence to one of two viewing conditions in which clips varied in sequence. The order had been established in accordance to the previous study using this method of MIP (Davidson *et al*, 1990, Hagemann *et al*, 1999, Hewig *et al*, 2005). The first clip shown was neutral in valence in order to accommodate participants to the requirements of the task. This also assisted in re-establishing a baseline level and avoided any additive effects of residual mood states. As a further control of additive effects, no two clips of the same target emotion were shown consecutively. Clips were shown in colour and in silence. In order to reduce any demand characteristics participants were given simple instructions, "Watch each film clip carefully. Afterwards you will have two minutes in which to complete the items on the questionnaire provided".

## **RESULTS**

### *Cluster analysis*

A cluster analysis was first conducted on the data to determine whether film clips of each target emotion were distinguishable from the film clips of other target emotions. Using the 17 unipolar rating scales on the questionnaires as distance measures and using the Ward method based on squared Euclidean distances as in the study by Hewig *et al*, (2005), the cluster analysis revealed that the distance between clips of the same target emotion was always much smaller than the distance between clips of differing target emotions. Therefore, the results of the study by Hewig *et al*, were confirmed by formation of 6 groups.

Place figure 1 about here

### *Emotional rating of film clips*

Subsequently, analyses were performed to examine the ability of each film clip to elicit the targeted emotion without also eliciting a non-target emotion. Items from the unipolar rating scales which most closely resembled the target emotion were included in these analyses, 8 in total. Items included were rage, anger, pleasure, happiness, amusement, sadness, disgust and fear.

A FILM (11 levels) X EMOTION (8 levels) repeated measures analysis of variance was performed with significant main effects of FILM,  $F(10, 350)= 36.203$ ,  $p<0.001$ , and EMOTION,  $F(9, 350)= 19.472$ ,  $p<0.001$ , and with a significant interaction of the two,  $F(90, 3150)=48.054$ ,  $p<0.001$ . These results confirm that the rating profiles of each film clip differed from one another significantly, the degrees of freedom although high are of a comparable level to those stated in the 2005 paper by Hewig and colleagues.

Post hoc t tests were then conducted in which the target emotion for each clip was compared to the highest rated non-target emotion. Alpha levels were adjusted using the bonferoni correction to 0.0045.

### *Disgust clips*

The highest rated emotion for both clips 'Pink Flamingos' and 'The Godfather' was disgust ( $M=7.78$ ,  $SD=1.97$ ), ( $M=4.27$ ,  $SD=2.8$ ). For Pink Flamingos, the rating of disgust was significantly higher than the highest rated non-target emotion of

amusement ( $M=1.81$ ,  $SD=2.84$ ),  $t(36)=8.967$ ,  $p<0.001$ . For *The Godfather*, the rating of disgust was significantly higher than the highest rated non-target emotion of sadness ( $M=1.86$ ,  $SD=2.43$ ),  $t(36)=6.133$ ,  $p<0.001$ .

#### *Happiness/Amusement clips*

The highest rated positive emotion for *When Harry Met Sally* was amusement, ( $M=5.89$ ,  $SD=1.2$ ). For *An Officer and a Gentleman*, the highest rated positive emotion was happiness ( $M=4.54$ ,  $SD=2.5$ ). For *When Harry Met Sally*, the lowest rated positive emotion of pleasure ( $M=3.49$ ,  $SD=2.41$ ) was still significantly higher than the highest rated negative emotion of disgust ( $M=0.16$ ,  $SD=0.60$ ),  $t(36)=8.708$ ,  $p<0.001$ . For *An Officer and a Gentleman* the lowest rated positive emotion of amusement ( $M=3.43$ ,  $SD=2.12$ ) was still significantly higher than the highest rated negative emotion of sadness ( $M=0.19$ ,  $SD=0.62$ ),  $t(36)=8.614$ ,  $p<0.001$ .

#### *Fear clips*

For both clips of *Halloween* and *Silence of the Lambs*, the highest rated emotion was for the target emotion of fear ( $M=6.49$ ,  $SD=3.01$ ), ( $M=3.22$ ,  $SD=3.08$ ). For *Halloween*, the highest rated non-target emotion of disgust ( $M=1.24$ ,  $SD=2.13$ ) was rated significantly lower than that of fear,  $t(36)=6.291$ ,  $p<0.001$ , whilst for *Silence of the lambs*, fear was rated significantly higher than the highest rated non-target emotion of rage ( $M=1.30$ ,  $SD=2.17$ ),  $t(36)=3.561$ ,  $p=0.001$ .

#### *Sadness clips*

For both The Champ and An Officer and a Gentleman, the target emotion of sadness was given the highest rating from participants, ( $M=6.49$ ,  $SD=2.33$ ), ( $M=4.73$ ,  $SD=2.82$ ). For The Champ, the highest rated non-target emotion was that of fear ( $M=1.08$ ,  $SD=2.24$ ), which was significantly lower than that of sadness,  $t(36)=12.075$ ,  $p<0.001$ . For An Officer and a Gentleman, sadness was rated significantly higher than the highest rated non-target emotion of fear ( $M=1.49$ ,  $SD=2.19$ ),  $t(36)=6.965$ ,  $p<0.001$ .

### *Anger clips*

For both the clips 'Witness' and 'My Bodyguard', the target emotion of anger was given the highest rating from participants ( $M=4.32$ ,  $SD=2.65$ ), ( $M=6.54$ ,  $SD=2.43$ ); rage being rated only slightly lower ( $M=3.70$ ,  $SD=2.96$ ), ( $M=5.78$ ,  $SD=2.81$ ). For both clips, the highest rated non-target emotion was that of disgust and  $p$  values did not reach significance when tested, both  $t$   $s<1.5$ , both  $ps>0.14$ .

### *Additional Ratings*

The intensity ratings for the neutral clip 'Hannah and Her Sisters' ( $M=-0.14$ ,  $SD=1.437$ ) were significantly lower than the intensity ratings than emotional stimuli (all  $t$   $s>4$ , all  $ps<0.002$ ).

Similarly, valence ratings for this clip were neutral, ( $M=0.05$ ,  $SD=1.104$ ), and were significantly less than for positively rated emotional clips and significantly more than the negatively rated emotional clips (all  $ts>2.1$ , all  $ps<0.043$ )

### *Post study feedback data*

The non-significant findings that indicated the lack of specificity in the ratings of the anger clips raised questions regarding participant's interpretations of the emotion labels used. In the follow up section of the study, the hypothesis of whether the definition intended by the investigators for the emotions being investigated did not match that of the participants was explored.

In order to investigate this hypothesis in more depth, participants were re-approached and asked to complete a follow up questionnaire asking for their definitions of 'disgust', 'repulsion', 'disgust at a person's behaviour' and 'anger'. They were then asked to reflect back on the 2 anger clips used and the disgust clip with the highest rating (Pink Flamingos) and indicate which label term they thought most appropriate (see appendix II).

Of the 37 participants originally recruited for the study, 11 feedback forms (see appendix II) were returned fully completed. For the definition of disgust, overall consensus was towards 'shock', 'disapproval', 'moral offence', 'dislike', 'unhappiness'. For repulsion, definitions were given such as 'revulsion', 'stomach turning', 'sickened', several participants stating it was a feeling 'worse than disgust'. It is interesting to note that the definition of the word repulsion appears to resemble the semantics of disgust as used in the basic emotions research and elicitation, whilst the word disgust appears to have a number of heterogeneous lay definitions. It does seem that it is mixed with labels for anger and sadness, as well as repulsion.

In defining anger, participants gave a wider range of responses such as 'losing control', 'annoyed', 'hostile', 'confusion', 'frustration', 'stress'. Several participants did show agreement in that anger was felt in reaction to offensive behaviour from

another person, and in light of the above point, the term 'disgust' was also used as a definition for anger.

In order to address the hypothesis that these heterogeneous lay definitions of emotions led to the insignificant findings for the anger clips, participants were asked to indicate which of the above terms would describe the clips from the films 'Witness' (W), 'My Bodyguard' (MB), 'Pink Flamingos' (PF).

### **Graph 1 goes about here**

The graph displays the clear consensus for the repulsion felt towards the 'Pink Flamingos' clip, whilst the reactions to the two clips targeting the emotion of anger do not attain this consensus on any emotional term. For the anger clips, the heterogeneous nature of the definitions was confirmed. Not one term was reliably used by participants to describe the emotion induced in the clips. As previously discussed, this may be due to the issue of lay definitions of emotion labels, or it may be that the clips used by Hewig (2005) are not reliable for inducing specific anger emotions within an English speaking culture.

## **DISCUSSION**

The results taken from this study support the previous findings from the study using a German speaking population by Hewig and colleagues (2005) in that the emotion ratings of the clips reliably form into six distinct groups, and can be reliably distinguished from one another in terms of eliciting one of the basic emotions of

anger, sadness, happiness, disgust and fear on a self report measure. Further investigations into the accuracy with which a film clip can elicit one basic emotion without simultaneously eliciting a second basic emotion proved successful in the targeted emotions of fear, happiness, sadness and disgust. However, in the case of anger it was found that the anger emotion was not reliably induced and there is some evidence from the follow up study that the emotion of anger may also be defined by disgust.

In comparison with the results of this study, Christie and Friedman (2004) found anger did not differ from sadness and disgust items, despite differing from all the ratings of positive emotions. Interestingly, difficulties were encountered in a similar study conducted by Philippot and colleagues (1993) using 2 clips for each of five target emotions. Despite most clips reliably eliciting the target emotion, they were unable to selectively elicit the emotions of anger and disgust.

Such results, alongside those collected from the present study, highlight basic concerns regarding the validity of using film clips to elicit anger in the laboratory and our ability to elicit anger selectively. Although not using the term repulsion in response to the anger clips, the selection of terms used by participants to describe their emotional reactions to the clips intended to elicit anger were diverse and further suggests the inability of such clips to elicit anger selectively.

The differing results of the paper by Hewig and colleagues (Hewig *et al*, 2005) to the findings of the present study may be in part due to essential implications of the labels used being lost in the translation from German into English. For instance when the



word 'Disgust' is translated into German it becomes 'Der ekel' however on translating back into English the description is that of 'aversion' and 'distaste'. It may be argued that the German 'der ekel' is more similar to the English 'repulsion', and as already outlined, the use of such a term may have been more appropriate and indicative of the actual experiences of the participants. Reported levels of disgust during the clips intended to target the emotion of anger may have been, in part, due to interpretation of the label given to it.

A study conducted by Hagemann (1999) used only the labels happiness, pleasure, amusement, fear, anger and disgust in the post film rating scales. The success of such a design would suggest the possibility that the inventory used in the present study proved to be too exhaustive and had the effect of diluting the participant's scorings.

Therefore, in future investigations, especially where materials used have been influenced by studies using different language speaking participants, the results of this study suggest that it would be useful for participants to be directed towards the meaning of the labels used, and for the list of emotion labels used to avoid being overly exhaustive.

In sum, this study has shown that the Hewig *et al*, (2005) list of basic emotion inducing film clips was broadly reliable in a English speaking culture. However, the clips that Hewig *et al*, identified for anger were shown not to reliably induce anger on their own and it has been argued and shown that the terms used in this study may actually lead to confusion in the response patterns for participants on the clips with the highest anger scores. As discussed above, it may be that the emotion of anger is

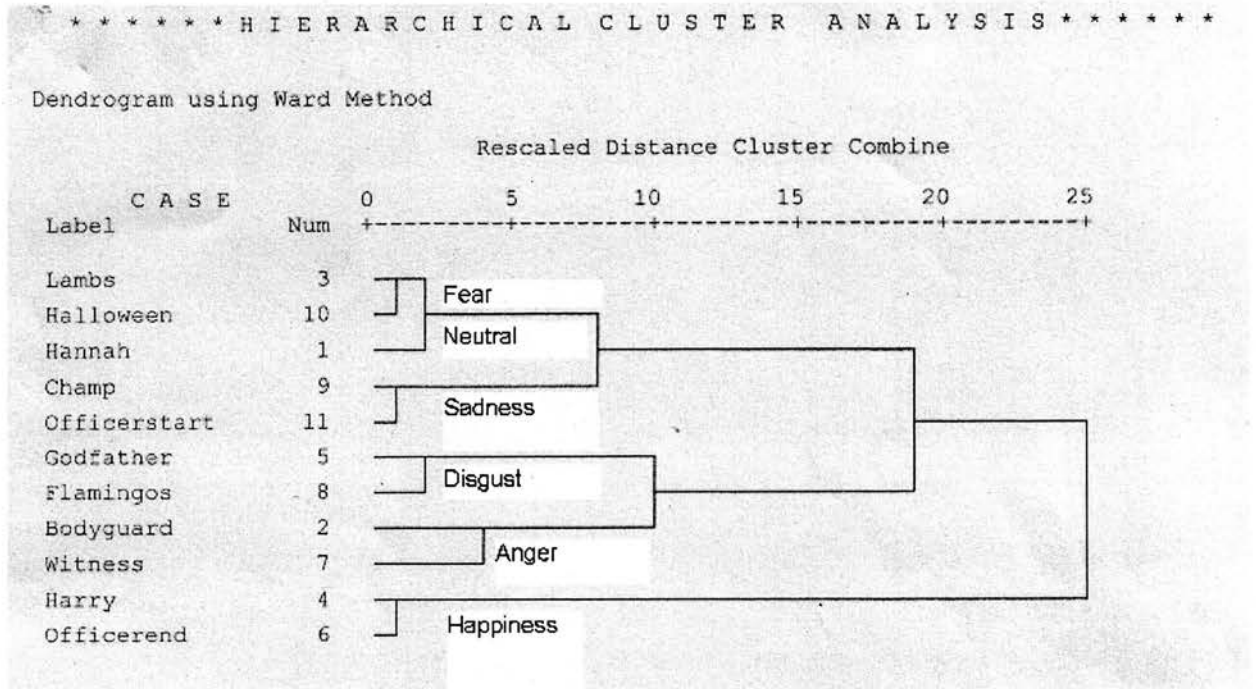
too difficult to induce in the laboratory with film clips, as for its induction a strong personal investment is required for its elicitation. This remains an empirical question.

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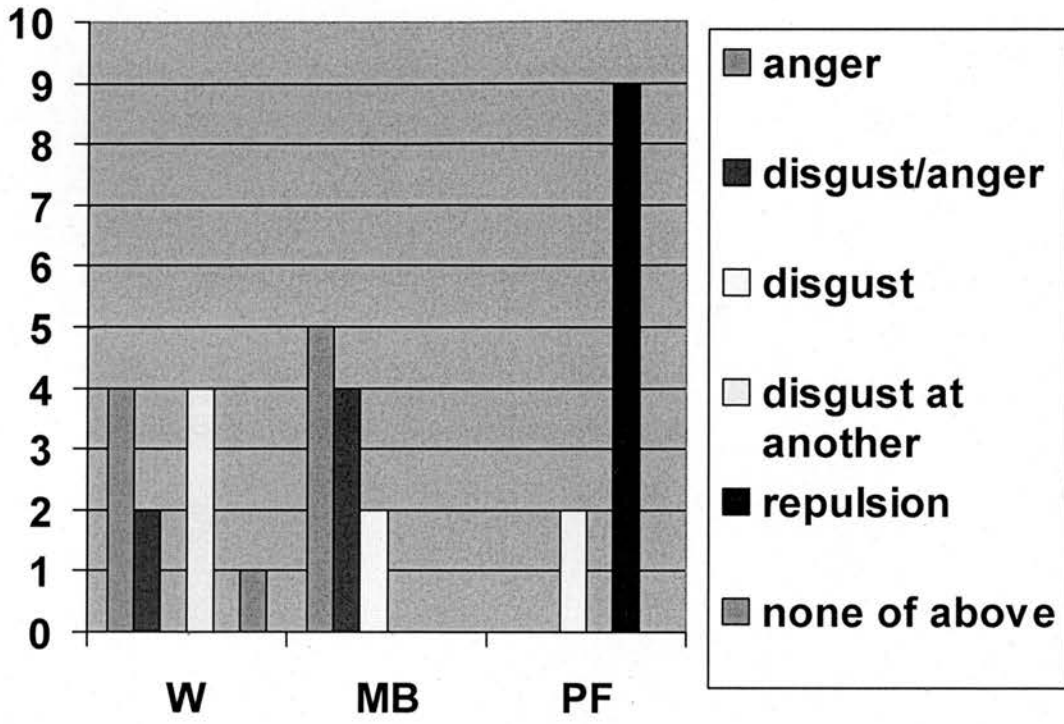
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**Figure 1**



Graph 1



**Legend of Figures**

**Figure 1:** Dendrogram of the cluster analysis on the film clips using the Ward Method

**Legend for Graphs**

**Graph 1:** Participant's interpretation of emotional labels used in this study.



**Appendix 14: The order and instructions for the Experimental Stage of the Study presented chapter 6.**

1. After settling the participant down, give them the time 1 questionnaires (please randomly give the questionnaires to the participants to avoid order effects). These are the following:
  - Staxi-2
  - Both disgust questionnaires
  - BSS
  
2. Please administer the WAIS III digit symbol. The instructions are as follows. Tell each participant that the legend on the top gives the symbol for each number. The participant has to work as quickly as possible within a two minute time limit. They have seven sample items to practice, and for you to check that they have understood the instructions. Once they have completed the seven practice items, and you are satisfied that they are know what to do. Start the timed exercise. Each participant has 2 minutes. It is important to remind each participant that hardly anyone finishes this task.
  
3. Once they have completed the digit symbol task. Set up the Witness video clip and give the following instructions to the participant.

**INSTRUCTIONS GIVEN TO PARTICIPANT PRIOR TO WATCHING FILM CLIP(S)**

You are about to watch a short clip which will be shown in silence. The clip you are about to watch has been taken from a commercial feature film and consequently may have been seen

prior to participating in this study. Do not worry about this, as it will not affect your results on the task.

Participants are asked to pay close attention to the presentation throughout its duration.

4. Once they have watched the clip, give them the instructions for the second part of the mood induction. These are:

### **INSTRUCTIONS FOR DIRECTED RECALL TASK**

Now, please try to recall from memory one event from your past that have made you angry, writing down a description of the event once it has come to mind. Try to remember the event as vividly as when it happened before writing it down, including how you felt at the time. Please write down on the paper how angry you feel out of 10 now. Your responses will be kept strictly confidential.

5. Once they have completed the mood induction, give them the time 2 questionnaires (please randomly give the questionnaires to the participants to avoid order effects). These are the following:
  - Staxi-2
  - The disgust questionnaire
  - BSS
6. Once they have completed the questionnaires, please debrief the participant and check that they are OK before they go.

***Appendix 15: The sheet for participants in the study presented in chapter 6 to write about the incidents that made them angry.***

**Please give a brief outline of the event that has made you feel angry (only if you are comfortable to do so).**

How angry do you currently feel?

/10

***Appendix 16 – Examples of the scenarios that participants used to induce anger in the study reported in Chapter 6.***

Please write below details of an experience that has made you angry. Try to put yourself back in the mind-set that you were in at the time, what you were thinking and how it felt. Your response will be kept confidential.

My boyfriend likes me to have long hair but it is very thin and grows slowly so has never been really long since we've been together (~6 1/2 years). It was in bad condition and I was fed up so went to the hairdresser's and got it cut. I was really pleased with it afterwards and phoned him that evening to tell him (we don't live together). He was immediately very angry with me for taking the action and also, for not consulting with him first. He said that he would no longer find me attractive until it re-grew. I had only had a few inches cut off and it was actually the length it had been when we'd first met. I felt so insulted, upset, 'knocked down' in confidence and extremely angry. He hung up on the phone call and we didn't see each other for a week but emailed each day, arguing the matter. After seeing a therapist, I took a different perspective and worked through the problem. As I remember it, my anger is now at about 7/10.

Please write below details of an experience that has made you angry. Try to put yourself back in the mind-set that you were in at the time, what you were thinking and how it felt. Your response will be kept confidential.

It was at the end of a really bad week, when I had been really unhappy for various reasons to do with my boyfriend and my housemates. I went on a night out for someone's birthday, to somewhere I wouldn't usually go. The place itself made me angry. It was called 'I love sex', and there were loads of scantily clad women on the stage, and loads of horrible chavvy boys leering at them, but loads of girls there who seemed to think it was ok too. Eventually I decided to leave, and when queuing for my coat in the cloakroom, there were some boys in front of me who were accusing the black cloakroom attendant of stealing their coats. It made me angry then I have felt in a long time, and because I was a bit drunk and generally annoyed anyway, I just snapped and started screaming at them, accusing them of being racist (which may or may not have been the case), and just hurling general abuse. Then I just ran away and burst into hysterical tears.

Anger rating 9/10

***Appendix 17 – Copies of the published papers that have arisen out of the work presented in this thesis.***



# The Relation of Anger to Disgust: The Potential Role of Coupled Emotions within Eating Pathology

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**Objective:** difficulties with anger and disgust have been highlighted within females with eating pathology (FEP). However, research has not investigated whether FEP experience greater levels of anger compared to controls or how these two emotions may interact in FEP. It was predicted that FEP would show significantly higher levels of state anger and this would also lead to a significant increase in disgust for FEP. **Method:** the experimental group ( $n = 25$ ) had significant levels of eating pathology. Data from the State-Trait Anger Expression Inventory-2 and a disgust measure was collected before and after the induction of an angry state. **Results:** the bulimic group, in comparison to normal controls, demonstrated a significant increase in the state anger scores at time 2 and on the Disgust Sensitivity Scale. **Conclusion:** the findings demonstrate that the emotions of anger and disgust may be 'coupled', and disgust may be used to manage the 'egodystonic' emotion of anger in people with eating pathology. Copyright © 2008 John Wiley & Sons, Ltd.

## INTRODUCTION

Recent research has started to propose that eating disorder symptomology, in particular bulimic symptomology, has the function of helping the self escape from aversive self-awareness and emotional distress (Heatherton & Baumeister, 1991). This research has a number of theoretical links with Grilo and Schiffman (1994), who described a model where binge eating was predicted by cognitive state. Root, Fallon, and Friedrich (1986) also discussed how binge eating had the function of helping the self to deal with or dissociate from 'painful' or negative thoughts and feelings. Building on this empirical basis, Cooper, Wells, and Todd (2004) developed a model of bulimia nervosa that

postulated the presence of positive beliefs about eating/bingeing, as bingeing helps the self to dissociate from the emotional distress caused by the triggering of beliefs/schemas about the self as 'not being acceptable'. However, distress is caused by the presence of negative beliefs about eating (e.g., eating will make me fat). This provokes a conflict within the individual, creating cognitive dissonance (Festinger, 1957), which is subsequently reduced by having beliefs that their eating is out of their control. Although this model is a useful start in highlighting the emotional function of bulimic symptomology, it is not clear whether there is difficulty with managing everyday emotions or if an individual with bulimic symptoms actually experiences significantly more negative emotions.

A drawback of the Cooper model is that it overly focuses on the cognitions surrounding the emotion, and thus it says nothing about which emotions are of key importance in underlying bulimic symptomology. There is now a growing body of research that has started to demonstrate that the emotions of anger and disgust may be important. Waller

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et al. (2003) reported that women diagnosed with a DSM-IV (APA, 1994) eating disorder had higher levels of state anger and anger suppression compared to a control group. Higher trait anger scores were associated with bingeing and vomiting and anger suppression was associated with laxative use. Geller, Cocknell, Hewitt, Goldner, and Flett (2000) reported that women with a DSM-IV diagnosis of anorexia had higher levels of silencing the self-schemas and suppressed anger compared to controls. These results were interpreted as evidence that negative emotions are suppressed in order to protect interpersonal relationships around the person with anorexia nervosa. Geller et al. also found evidence for the complexity in the expression of emotions, as they found that inhibited expression of emotions was related to body dissatisfaction. Related to Geller et al.'s results, Hayaki, Friedman, and Brownell (2002) found that limited emotional expression predicted body dissatisfaction in an analogue sample (when Body Mass Index, non-assertiveness and depressive symptoms were controlled for in their analysis). In emotional terms, it is a significant drawback that neither of these authors considered the emotional underpinning to body dissatisfaction. Miller (1997) discussed how the emotion of disgust is associated with the rejection of foodstuffs or undesirable personal characteristics. It would seem that the most fitting emotion behind body dissatisfaction would be disgust. Indeed, there is sufficient clinical evidence of patients with eating disorders discussing their disgust towards their own bodies. In keeping with this point, Troop, Treasure, and Serpell (2002) found that people who were symptomatic of an eating disorder were more sensitive to disgust than the controls (comparing ill, remitted and control participants within their methodology). Interestingly, this disgust sensitivity was particularly pertinent for the human body and of certain foodstuffs. Schienle et al. (2004) undertook an interesting study that looked at disgust sensitivity within bulimia nervosa using fMRI methodology. They found that participants with bulimia nervosa did not significantly differ from controls on subjective accounts of distress to disgust-eliciting photos (with the one exception of poor hygiene photos); nor did they differ on brain activation patterns. A closer look at the stimulus presented to the participants revealed that there were not any stimuli that focused upon either body shape or food within this study. The findings of Troop et al.'s study suggest that it was an omission not to include body and food stimuli, and it is possible that self-disgust

emotions may have differing brain activation patterns when compared to general disgust.

The growing evidence that the emotions of anger and disgust may be valenced within people with eating disorders has not, so far, been considered within the eating disorder research literature. Within this literature, emotions have tended to be considered in isolation, which has prevented a real development in a theoretical analysis of emotions within eating disorders. It is argued that for this advancement to occur, the eating disorder field needs to consider theory from the study of normal emotional processes. One such model of emotional processing that may be useful is the SPAARS model (the letters act as a mnemonic to the different levels of representation in the model, Schematic, Propositional, Associative and Analogical; Power & Dalgleish, 1997, 1999). This model argued that emotions are generated via two cognitive levels, with one route being an appraisal route where emotions are generated in response to a person's processing of internal or external stimuli. The second pathway to emotions is a direct route where emotional responses to certain stimuli can become automatic, such as a spider phobic's reaction to a spider. (For a fuller discussion of the SPAARS model, please see Power & Dalgleish, 1997, 1999).

Importantly, the SPAARS model argued that emotional processing occurs across five basic emotions (sadness, anger, disgust, happiness and fear), and our emotional experiences are made up from these basic emotions. According to the model, the principal appraisal route can also adopt a central executive function within SPAARS, as it monitors the output of emotions and, it is argued, this monitoring decides whether certain emotions are deemed acceptable or 'ego syntonic' to the self (due to the person's socio-emotive learning history). As a consequence, certain emotions may become coupled with another emotion, where one emotion is used to facilitate or inhibit a 'toxic' emotion. This coupling of emotions can also account for common co-morbid symptom patterns. For example, Power and Dalgleish (1997, 1999) argued that depression is a combination of the basic emotions of sadness and self-disgust, while disgust has shown (as discussed above) to be an important emotion in eating pathology. Research has also consistently shown that there is a high co-morbidity between depression and eating disorders (e.g., Brewerton et al., 1995; Geist, Davies, & Heinman, 1998; Halmi, 1995; O'Brien & Vincent, 2003; Rastam, 1992) and thus, it is theoretically possible that the primed disgust

module is underpinning both depression and eating disorders. This type of approach to understanding eating disorders has been lacking in the literature, as research has considered depression and eating disorders as entirely separate disorders and thereby potentially overlooking common psychological/emotional processes.

It is argued that the emotions of anger and disgust may act in a 'coupled' way within females with eating pathology (FEP) for the reason outlined above. It would appear that considering the salience of anger and disgust in isolation for individuals with eating disorders, particularly bulimia nervosa, has been too simplistic, and it has neglected the theoretical advancements in understanding emotions and their regulation. Furthermore, the lack of consideration of co-morbid difficulties (especially anxiety and depression) within a covariate analysis in the research on emotions in eating disorders has prevented the investigation of whether certain basic emotions (e.g., disgust) potentially underpin eating disorders and other co-morbid disorders (e.g., depression). These points form the research questions for this study.

### *Aims/Hypotheses*

This study has three aims. First, to investigate whether FEP have a propensity to experience greater levels of state anger (as measured by the State Anger Scale from the State-Trait Anger Expression Inventory-2 [STAXI]; Spielberger, 1996) in comparison to matched controls. The second aim for this study was to investigate whether a rise in the emotion of anger (again measured by the State Anger Scale from the STAXI) would lead to a significant increase in the emotion of disgust (as measured by the Disgust Sensitivity Scale; Haidt, McCauley, & Rozin, 1994) in FEP when compared to matched controls. In keeping with the above discussion on covariance, the secondary aim of this study was to investigate the potential impact of depression and anxiety on the above anger and disgust hypotheses (as measured by the Hospital Anxiety and Depression Scale [HADS]; Zigmond & Snaith, 1983).

The final aim was to investigate whether FEP express the emotion of anger by using the STAXI at time 1 within the study.<sup>1</sup> This measure (as detailed

below) measures the expression of anger towards other people or objects, the suppression of anger within the self, the ability to control the outward expression of anger and the ability to control the expression of anger within a short time frame.

## METHOD

### *Participants*

#### *Screening Stage*

Study participants were approached via an e-mail within the University of Manchester's e-mail system. Potential participants who were interested in taking part in this research project were directed, via a web link, to a web site that contained the screening questionnaires and a consent form to take part in the second stage of the research. These questionnaires contained the Eating Attitudes Test (EAT-26) (Garner & Garfinkel, 1979) and a brief screening questionnaire for bulimic symptoms (for a fuller discussion on the EAT-26, please see below). These questions asked whether the participant had ever gone on eating binges where they felt that they may not be able to stop, or if they had ever been sick (vomited) to control their weight or shape, or if they had ever used laxatives, diet pills or diuretics (water pills) to control their weight or shape and, finally, if the study participants had ever been treated for an eating disorder. Previous research has demonstrated that scores above 20 on the EAT-26 tend to suggest that there is a significant likelihood of eating pathology, especially if this presented with significant eating disorders symptoms (e.g., Garner & Garfinkel, 1979). Within the screening stage, 321 students from the University of Manchester responded to the e-mail and filled out the above questionnaires. The mean age was 20.35 (Standard Deviation [SD] = 3.13).

#### *Experimental Stage*

For the experimental stage, 25 female participants with eating pathology (FEP) were selected for this study. As detailed above, the FEP group all scored above 20 on the EAT-26 (Garner & Garfinkel, 1979) and they all indicated that they had symptoms of either bingeing, vomiting or abusing laxatives. A control group of 25 participants was formed from participants scoring below 4 with bulimic behaviours absent. This cut-off was chosen as it ensured that females recruited in the control arm of this study would have very little eating disorder cognitions or behaviours. It has been noted by many authors that a significant pro-

<sup>1</sup>It was felt that there were no theoretical reasons why patterns of expression of anger would change between time 1 and time 2 in the study.

Table 1. Shows the scores for EAT-26, participant eating disorder symptoms levels and Body Mass Index (BMI) mean scores for each participant group

|   | Mean (SD)<br>FEP<br><i>n</i> = 25 | Mean (SD)<br>control group<br><i>n</i> = 25 | Probability      |
|---|-----------------------------------|---|------------------|
| Age   | 20.28<br>(2.71)                   | 21.24<br>(5.40)                             | <i>p</i> > 0.05  |
| EAT-26  | 29.52<br>(8.59)                   | 1.88<br>(1.39)                              | <i>p</i> < 0.001 |
| BMI   | 21.94<br>(5.56)                   | 21.09<br>(2.15)                             | <i>p</i> > 0.05  |
| Number of participants that reported bingeing in the last 6 months  | 22                                | 0   |                  |
| Number of participants that reported vomiting in the last 6 months  | 17                                | 0   |                  |
| Number of participants that reported using laxatives in the last 6 months                                   | 9                                 | 0   |                  |
| Number of participants that reported ever seeking help from a healthcare provider for their eating disorder | 5                                 | 0   |                  |

SD = Standard Deviation. FEP = females with eating pathology. EAT-26 = Eating Attitudes Test.

portion of young females demonstrate some problematic eating behaviours or cognitions (e.g., body dissatisfaction; Grogan, 1999), and it was decided that allowing some score on the EAT-26 would prevent an overexclusion of potential participants. The descriptive data from these two participant groups is shown in Table 1.

### Questionnaires and Other Instructions

#### EAT-26 (Garner & Garfinkel, 1979)

The EAT-26 is a self-report measure designed to assess symptoms and attitudes that have been shown to be present in individuals with eating disorders. It is an extensively used and standardized measure. The EAT-26 is not a scale that can diagnose an eating disorder by itself, but it is an excellent screening tool that has been shown to detect probable cases of eating disorders, especially when used with a brief symptom checklist. As discussed above, this type of symptom checklist was incorporated into this study (i.e., binge, purge or the use of laxatives).

#### STAXI (Spielberger, 1996)

The STAXI is a 44-item self-report questionnaire used as a tool for measuring five different types of anger or anger-related behaviours. As with the EAT-26, this is a widely used scale and it has been extensively used in published research. The State Anger Scale assesses the 'here and now' intensity of anger, while the Trait Anger Scale measures how often a person generally feels angry.

The Anger Expression and Anger Control Scales assess four different anger-related traits, which are: (1) the expression of anger towards other people and objects (anger expression-out); (2) holding in or suppressing angry feelings (anger expression-in); (3) controlling angry feelings by preventing the expression of anger towards other persons or objects in the environment (anger control-out) and controlling suppressed angry feelings by calming down or cooling off (anger control-in). The fifth sub-scale is the anger expression index, which provides a measure of anger based on the anger expression and anger control scales.

#### HADS (Zigmond & Snaitch, 1983)

This HADS questionnaire consists of seven items relating to anxiety symptoms and seven items pertaining to depressive symptoms. It is a widely used and validated measure of depression and anxiety.

#### Disgust Sensitivity Scale (Haidt, McCauley, & Rozin, 1994)

This is a 32-item scale designed to assess sensitivity to items of potential disgust. Participants are presented with statements about potential disgust-eliciting items such as 'It would bother me to be in a science class and see a human hand preserved in a jar'. The questionnaire is split into two parts. In the first 16 questions, the participant indicates true or false responses. The second set of questions asks how disgusting specific situations, actions etc. are to the respondent (e.g., a friend offers you a piece of chocolate shaped like dog poo). There are also



eight sub-scales within the questionnaire, each containing four items. The sub-scales are animals, body products, death, envelope violations, hygiene, food, magical thinking and sex.

#### *Modified Velten Mood Induction Technique (Velten, 1968)*

The Velten technique was developed to induce a specific mood using 60 statements written in the first person. The participant reads the statements and is asked to feel a mood similar to the one they have just read in the statement. Based on this methodology, participants were asked to recall an event that happened to them recently that made them feel angry. For each participant, they were asked to think about what happened, the people involved, what it was that made them feel angry and to remember how angry they felt at the time of the event. This took place in silence over the space of 3 minutes. After the anger induction, it was checked that all the participants had managed to recall a recent example of being angry and that it had induced anger within them.

This methodology was preferred to the original Velten mood induction technique, as it has a significant benefit of enabling participants to have ecologically valid emotions that are similar to their naturally occurring emotions. The main drawback from this methodology is that it lacks the internal reliability and validity of knowing the stimuli and hence ensuring that the emotions are accurate and valid. However, all the students were recruited from the same school in the university and all had similar pressures and expectations for their work and were all approximately the same age. Consequently, it was felt that there were no *a priori* reasons why either group should have encountered more anger-eliciting situations than the other group (this point is considered further in the discussion).

#### *Interference Task*

This was formed from 10 lists, each containing seven items. The participant is asked to indicate which item does not belong in the list. The correct response is the item that does not fit into the same category as the other six items. For example, 'cushion' would be the item that does not fit in a list containing six other items that are colours. This task was used to allow participants to complete a non-emotive, low-difficulty task that would prevent them from remembering their questionnaire responses. Interference tasks have been

shown to significantly impact upon levels of forgetting (e.g., Lustig & Hasher, 2001).

#### *Procedure*

For the experimental stage, participants undertook the study in groups of five. They were asked to sit at a distance from one other to avoid distractions. At time 1, participants completed the 22-item STAXI, the Disgust Sensitivity Scale and the HADS. Participants were then asked to complete the interference task, followed by the modified Velten technique. Once in an angry mood, participants were readministered the STAXI and the Disgust Sensitivity Scale.

#### *Data Analysis*

All statistical analyses were conducted using SPSS version 11 for Windows. As the design for this study was a mixed design, the principal analysis undertaken were mixed-design Analysis of Covariance (ANCOVAs), with anxiety and depression scores entered into the analysis as covariates.

## RESULTS

### *STAXI—State Anger*

The principal hypothesis was whether FEP have significantly higher levels of anger, following the induction of anger, when compared to individuals without any eating disorder symptoms. The means and SDs for the state anger scores are presented in Table 2.

State anger scores were evaluated according to a two-factorial model (group  $\times$  condition), and these data were analysed by a mixed-model ANCOVA, as the analysis covaried anxiety and depression scores (taken from the HADS). As detailed earlier, each group (FEP and control) undertook the anger-induction task, and each group was assessed at time 1 (prior to the induction) and at time 2 (post-induction). This part of the design represented the repeated measures aspect of this study. Where appropriate, further univariate analyses were undertaken to locate the statistical effect within the analyses. Analyses indicated a significant main effect for group,  $f = 6.87$  (degrees of freedom [df] = 1),  $p = 0.012$ , as well as a significant group  $\times$  condition interaction effect,  $f = 8.29$  (df = 1),  $p = 0.006$ . The covariate analyses indicated that HADS anxiety (HADS-A) scores did not have a significant

Table 2. Means and Standard Deviations (SDs) for the state anger scores for both conditions across the participant groups

|                                   | Control condition<br>(SD) | FEP<br>(SD)      | Probability<br>( <i>t</i> -test) |
|-----------------------------------|---------------------------|------------------|----------------------------------|
| Time 1<br>(Prior to manipulation) | 16.80<br>(4.04)           | 17.88<br>(3.14)  | $p < 0.05^*$                     |
| Time 2<br>(Post-manipulation)     | 19.40<br>(5.90)           | 27.64<br>(13.19) | $p < 0.05^*$                     |

\*Denotes significance.

FEP = females with eating pathology.

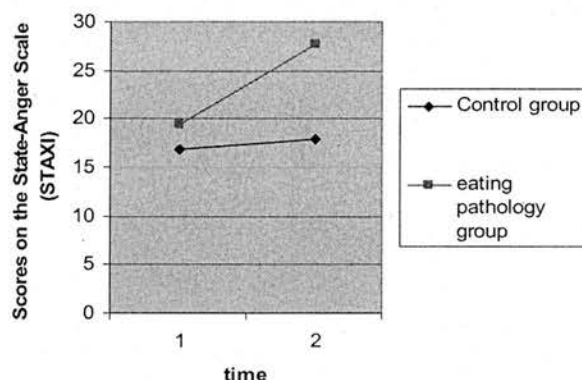


Figure 1. The mean scores for the State Anger Scales for each participant group before and after the anger induction  
STAXI = State-Trait Anger Expression Inventory-2.

statistical effect on the anger results,  $f = 2.195$  ( $df = 1$ );  $p = 0.145$ , while HADS depression (HADS-D) scores did have a significant statistical effect upon the anger results,  $f = 10.743$  ( $df = 1$ );  $p = 0.002$ . Due to the heterogeneity in the multivariate analyses, these results were confirmed by univariate analyses. The group  $\times$  condition interaction is illustrated in Figure 1.

The results from both the univariate and multivariate analyses allow for the acceptance of the first hypothesis, in that the participants in the FEP group showed significantly higher state anger, following the anger induction, than the control group. The significant effect of depression scores in this analysis will be considered in the discussion below.

### Disgust Sensitivity Scale

The second principal hypothesis was whether the FEP group has significantly higher levels of disgust sensitivity, following the manipulation of anger,

when compared to individuals without any eating disorder symptom. The means and SDs for the Disgust Sensitivity Scale scores are presented in Table 3.

As has been shown in the above table, the FEP group scored significantly higher than the control group on the Disgust Sensitivity Scale. This result highlights that the FEP group was significantly more sensitive to the emotion of disgust than the control group prior to any anger induction.

Disgust sensitivity scores were evaluated according to a two-factorial model (group  $\times$  condition), and this data was analysed by a mixed model ANCOVA. Analyses indicated a significant main effect for group,  $F = 8.57$  ( $df = 1$ ),  $p < 0.001$ , as well as a significant group  $\times$  condition interaction effect,  $F = 10.49$  ( $df = 1$ ),  $p < 0.001$ . The covariate analyses indicated that HADS-A scores did not have a significant statistical effect on the disgust results,  $f = 0.250$  ( $df = 1$ );  $p = 0.619$ , while HADS-D scores did have a significant statistical effect upon the disgust results,  $f = 4.423$  ( $df = 1$ );  $p = 0.041$ . Analyses revealed that there was homogeneity of variance between the groups, which confirmed that the multivariate analyses were reliable. The group  $\times$  condition interaction is illustrated in Figure 2.

The results from the ANCOVA analyses allow for the acceptance of the second hypothesis, in that the participants in the FEP group showed significantly higher disgust sensitivity scores, following the anger induction, than the control group. The significant effect of the depression scores in this analysis will be considered in the discussion below.

### STAXI—Expression of Anger

As detailed in the hypotheses section, exploratory univariate analyses were undertaken on the data at time 1. It was felt that this it sufficient to undertake simple univariate analyses, as the expression of

Table 3. Means and Standard Deviations (SDs) for the Disgust Sensitivity Scale scores for both conditions across the participant groups

|                                   | Control condition<br>(SD) | FEP<br>(SD)     | Probability<br>( <i>t</i> -test) |
|-----------------------------------|---------------------------|-----------------|----------------------------------|
| Time 1<br>(Prior to manipulation) | 14.38<br>(5.13)           | 17.90<br>(4.68) | $p < 0.05^*$                     |
| Time 2<br>(Post-manipulation)     | 14.96<br>(5.29)           | 19.88<br>(5.46) | $p < 0.05^*$                     |

\*Denotes significance.

FEP = females with eating pathology.

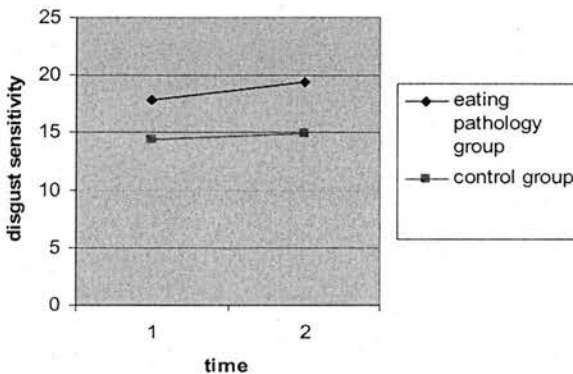


Figure 2. The mean scores for the Disgust Sensitivity Scale for each participant group before and after the anger induction

anger sub-scales measure behavioural responses to anger that are unlikely to be affected in such a short-term experimental study. It was felt that these analyses would be able to suggest which type of behavioural manifestations of anger is relevant for each group of participants. This was regarded as an important exploratory analysis, as the first multivariate analysis confirmed that the FEP group was experiencing significantly higher levels of state anger following the anger induction.

As can be seen in Table 4, significant differences were observed between the participant groups on the anger expression-in scale, where the FEP group reported significantly higher scores on the anger expression-in scale. As detailed in the STAXI manual, this scale is associated with intense angry feelings, which are suppressed by the individual. Significant differences were also found on the anger control-in scale, where the control group reported significantly higher scores on this scale. Again, within the STAXI manual, it is discussed that this

scale is associated with an ability to 'cool off' or reduce their anger as soon as possible. Finally, the FEP group reported a significantly higher anger expression index score, which confirms the emerging picture from the above findings, as it suggests that the participants in the FEP group are experiencing more intense anger feelings, but as shown above, have a tendency to suppress their angry feelings.

## DISCUSSION

As has been detailed in the results section, the hypotheses of this study have been confirmed. First, the FEP group showed significantly higher levels of state anger following the emotional induction than the control group. For the second hypothesis, the FEP group demonstrated significantly higher levels of disgust sensitivity than the control group at time 1, and disgust sensitivity was also shown to increase significantly, compared to the control group, after the anger induction. Finally, the FEP group demonstrated a pattern of anger expression on the STAXI that showed that FEP reported a tendency to experience intense angry feelings but suppress these emotions. This result is in keeping with the findings from previous research, such as those of Waller et al. (2003) and Geller et al. (2000).

These results are very interesting as they do provide experimental evidence that the FEP group exhibits significantly higher levels of state anger than matched controls. In fact, a closer look at the results highlights the size of the difference. The FEP group demonstrated a mean increase in the STAXI state anger score of 8.24. Equally, the significance of the HADS-D covariate results in the anger analysis highlights the role of depression in the elevated anger scores, and the theoretical underpinnings of this finding will be considered below.



Table 4. Means and Standard Deviations (SDs) for the four anger expression scale scores and the Anger Expression Index score for the participant groups prior to the experimental manipulation of the emotion of anger

|                        | Control group<br>(SD)<br>N = 25 | FEP group<br>(SD)<br>N = 25 | Prob.<br>( <i>t</i> -test) |
|------------------------|---------------------------------|-----------------------------|----------------------------|
| Anger expression out   | 16.12<br>(3.82)                 | 17.08<br>(3.67)             | $p > 0.05$                 |
| Anger expression in    | 16.90<br>(4.66)                 | 22.76<br>(4.45)             | $p < 0.01^*$               |
| Anger control out      | 22.04<br>(5.86)                 | 21.24<br>(4.60)             | $p > 0.05$                 |
| Anger control in       | 22.52<br>(7.88)                 | 18.72<br>(4.19)             | $p < 0.05^*$               |
| Anger expression index | 37.92<br>(14.37)                | 47.08<br>(10.40)            | $p < 0.05^*$               |

\*Denotes significance at 0.05.

For the emotion of disgust, there was a significant difference between the control groups and the FEP group at time 1. This result is in keeping with the previous findings of Troop and colleagues (Troop et al., 2002), and it suggests that FEP have a significant sensitivity to the emotion of disgust. The finding that disgust showed a significant increase at time 2, in comparison with the control group, is a potentially important finding, as the results suggest that there are different emotional processes occurring in the FEP group, where the emotion of anger is valenced with the emotion of disgust. These results are even more striking when it is considered that the Disgust Sensitivity Scale was designed as a trait measure of disgust, and therefore, it could have been predicted that there would be no difference between time 1 and time 2 for each group. Indeed, the size of the difference between the scores on the Disgust Sensitivity Scale for the control group is extremely small. The significant effect, highlighted via the co-variate analysis, of the depression scores on the disgust effect in this study is a very interesting finding, and this will be discussed more fully below.

The other main finding from this study shows that FEP have a tendency not to express their anger, but they experience it as quite an intense emotion. Given that this study's other results highlight how FEP experience significantly higher levels of anger, it is perhaps not surprising that they report intense angry feelings when they become angry. This result does offer some confirmatory evidence for the findings of other studies, such as those of Waller et al. (2003) and Geller et al. (2000). The combined effect of these results suggests that people with bulimic symptoms experience significantly higher levels of

anger when induced but have a greater difficulty in expressing this anger. These results offer some supporting evidence to the Cooper et al. (2004) model that proposed that bulimic symptoms are used to reduce emotional distress.

These findings fit with an emerging picture of the differences in the way that people with eating disorders experience and manage their emotions. As discussed in the introduction, previous research has found evidence that anger is often suppressed and that the limited expression of emotion is related to poor body satisfaction (e.g., Geller et al., 2000; Hayaki et al., 2002). When these results are considered in light of this study's results, the emotion of disgust may well be a more 'acceptable' or a less 'toxic' emotion than anger for people with eating disorders. This then translates to disgust towards the body and food. Although these theoretical ideas would need to be confirmed by further empirical research, they are in keeping with the findings of Troop and colleagues (e.g., Troop et al., 2002). This notion of 'toxic emotions' and coupled emotions fit with some of the ideas present in the SPAARS model (Power & Dalgleish, 1997, 1999). Leahy (2003) also discussed how emotional disorders can develop when emotions are viewed as being dangerous towards the individual. Power and Dalgleish (1999) also argue that an individual's learning history could lead them to believe that certain emotions are ego dystonic and coupling can occur due to the use of another less threatening emotion being used to manage an ego dystonic emotion.

This study has found some evidence that depression was significantly contributing to the effects found in both analyses (i.e., anger and disgust). This

finding raises some potential important theoretical points about the relation of depression, anger and disgust. Freud (1917/1963) argued that depression originated from a mixture of anger and sadness at the loss of a significant other, while in their review of the relationship between depression and anger, DiGiuseppe and Tafrate (2007) argued that there is some evidence that suggests that depression can be a product of an inability to express anger (e.g., Mook, Van Der Ploeg, & Kleijn, 1990). In light of the results of this study, it is proposed that anger is perceived as a toxic emotion that is inhibited by the coupled emotion of disgust. It is argued that the augmentation of disgust and the inhibition of anger lead not only to the development of eating disorder symptoms, but may also play a role in the development of co-morbid depression. As discussed in the introduction, a SPAARS perspective would argue that depression is constituted of the basic emotions of sadness and disgust (self), and self-disgust has been shown in this study and others (e.g., Troop et al., 2002) to be an important emotion in eating disorders symptoms. The first author is currently working on a model of eating disorders that incorporates these theoretical interactions between disgust, anger and sadness (Fox & Power, in preparation).

There are a few criticisms of this study, with the main one concerning the modified Velten technique. As was discussed in the methodology section, the use of autobiographical memories has a number of potential confounds that need to be considered. The main potential problem centres upon the lack of control of the actual anger stimuli, and as such, we do not know whether the levels of anger-inducing stimuli were comparable in each group. Although this is a significant point, it is important to say that the groups were well matched on demographics, and there is no apparent *a priori* reason why there should be a difference between the groups in their experience of anger-eliciting situations. In future research, it would be important to control for this confound variable by actually recording the content of the anger-eliciting autobiographical memory.

Another potential confound in this study concerns the actual participants. Although the people enlisted into the FEP group are highly likely to have a diagnosis of bulimia nervosa (please see Table 1), a diagnosis was not confirmed by either interview or specialist service. Likewise, the numbers for the groups are relatively small. In retrospect, it was an omission not to have included a scale on body perceptions, so that the relationship

between disgust and the perceptions of one's body could have been investigated. This is now part of an ongoing project.

In conclusion, this study has found some evidence that the emotions of anger and disgust are valenced for FEP. Within the recent research and clinical literature, it has been theoretically proposed that people use certain eating disorder symptoms (especially bingeing) to manage overwhelming negative affect. The results of this study do suggest that FEP experience much higher levels of anger than people without bulimia. Furthermore, disgust may well be used to manage the 'toxic' emotion of anger, and this may represent the coupling of the anger and disgust. Naturally, these results need to be confirmed by further research. However, the application of the SPAARS model (Power & Dalgleish, 1997, 1999) looks promising in helping to theoretically understand these emotional mechanisms.

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# Eating Disorders: A Basic Emotion Perspective

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Recent research and theory have started to highlight how eating disorder symptoms are often used to regulate painful emotions. However, there has not been one study that has looked at the contributory effect of all the basic emotions onto disordered eating patterns. This study was designed to address this gap within the literature with a detailed examination of the five basic emotions (anger, sadness, disgust, fear and happiness) in relation to disordered eating patterns. This study used the Basic Emotions Scale and the Hospital Anxiety and Depression Scale to explore levels of emotions within 53 female participants with disordered eating patterns who were recruited from the B-EAT research database. The results showed strong correlations between disordered eating and the four negative emotions, but only anger and sadness were left as significant contributors to disordered eating within the regression analysis. These findings were discussed in relation to the literature, with particular reference being made to the new Schematic Propositional Analogical Associative Representation System for Eating Disorders (SPAARS-ED) model. Copyright © 2009 John Wiley & Sons, Ltd.

## Key Practitioner Message:

- Anger and disgust appear to be pivotal emotions in eating disorders.

**Keywords:** Basic Emotions, Eating Disorders, SPAARS-ED

## INTRODUCTION

Over recent years, the significant role emotions play within eating disorders has been identified (Fox & Harrison, 2008; Geller, Cockell, Hewitt, Goldner, & Flett, 2000; Waller et al., 2003). Cooper (2005) discussed how cognitive-behavioural therapy for eating disorders has gone through a number of recent developments, which she coined as a second generation cognitive model. The commonality

between these models is that all discuss how eating disorder symptoms, such as bingeing and vomiting, act as an emotion suppressor (e.g., Cooper, Wells, & Todd, 2004; Fairburn, Cooper, & Shafran, 2003; Waller et al., 2007b). However, despite these theoretical developments, the term emotion has been used generally, without defining which specific emotions are significant. This has been complicated by the well-established finding that eating disorders often present with comorbid depression (Lewinsohn, Striegel-Moore, & Seeley, 2000; Santos, Richards, & Bleckley, 2007; Zaider, Johnson, & Cockell, 2000) and/or anxiety disorders (e.g., Paller & Waller, 2008), meaning that the nature of the relationship between eating disorders and

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emotions is poorly understood. Finally, the literature on emotions within eating disorders has not incorporated the theoretical and empirical findings from the literature on normal emotional processes, and, it is argued, this has compromised the theoretical integrity of the current models of eating disorders. So before considering the application of emotional theory to eating disorders, a general overview will be given of the debates and theories of normal emotional processing. This will allow for a much more careful consideration of emotional processing within the eating disorders and also point out the theoretical underpinnings for this current study.

In recent years, there has been a broad debate in the literature on whether emotion can be understood as being comprised of and built from a core group of basic emotions (e.g., Ekman, 1982; Izard, 1971; Oatley & Johnson-Laird, 1987; Plutchik, 1962, 1990). According to this view, a small number of basic emotions act as building blocks for more complex emotions. Despite the development of a basic emotions theory, there has been no agreement between different theorists about what such a list might be and the proposal itself has not been without its critics (e.g., Ortony & Turner, 1990). Despite these criticisms, there is a building consensus of a minimum set of basic emotions, which would include anger, disgust, anxiety, happiness and sadness (Oatley & Johnson-Laird, 1987; Power & Dalgleish, 1997). In keeping with the above discussion on the role of basic emotions within more complex emotions, it is proposed that complex emotions can be derived from these either through 'cognitive elaboration' of the relevant basic emotion (e.g., 'irritation' or 'annoyance' when derived from the basic emotion of 'anger'; see Johnson-Laird and Oatley, 1989) or through combinations of basic emotions (e.g., 'nostalgia' derived from the basic emotions of 'sadness' and 'happiness'). According to contemporary models of emotional process, such as the Schematic Propositional Analogical Associative Representation System (SPAARS) model (Power & Dalgleish, 2008), each basic emotion state is linked to an appraisal of an event, which results in the generation of a particular emotion as a means of signalling to an individual into action. For example, the experience of blocking a goal leads to the emotion of anger, as it leaves the individual with a propensity to remove the obstacles towards a goal. Likewise, the experience of food being seen as bad, noxious or toxic creates the emotion of disgust, which leaves the individual with a very strong propensity to keep a physical and psychological distance between the self and the object of disgust.

Power and Tarsia (2007) pointed out that the relation between the experience of normal emotions and psychopathology has only recently been explored within the literature and most models and theories of normal emotion functioning occur without any mention of emotional disorders. Within the field of eating disorders, there is often conceptual confusion where diagnostic labels, such as anxiety and depression, are used as emotions in their own right. It is argued that these two disorders are made up of different 'blends' of basic emotions. For example, Power and Tarsia (2007) undertook a study that looked at emotions in depression and anxiety. They used four groups in their study, where they compared depressed, anxious, depressed and anxious, and controls. They found that, using the Basic Emotions Scale (BES; Power, 2006), the Beck Depression Scores (BDI-II; Beck et al., 1996) were predicted by sadness, disgust, fear and happiness (entered in the regression model in this order), whilst state anxiety scores were predicted by fear and then sadness. Overton, Markland, Taggart, Bagshaw, and Simpson (2008) supported these results and found that self-disgust was a key emotion in depression.

Within the eating disorders literature, the relative contribution of each of the basic emotions, has not been investigated, as per Power and Tarsia (2007). However, there have been a number of studies that have looked at the relevance of certain emotional states within eating disorders. Anger has been seen to be a particularly difficult emotion, with a number of studies demonstrating that people with eating disorders experience both higher levels of anger, but also demonstrate higher levels of anger suppression (Geller et al., 2000; Waller et al., 2003). However, in an analogue study by Fox and Harrison (2008). But, following an anger induction procedure, the participants demonstrated a significant increase in anger scores compared with the control group. These data suggest that people with eating disorders may not necessarily have perpetually high levels of anger, but may be prone to experience high levels of anger, once it has been triggered by an event. In a review, Fox and Power (2009) argue that particular early life experiences may leave individuals with a sense of unfairness about the world and are therefore more prone to experience elevated anger within interpersonal situations. However, due to a perception that experiencing anger is dangerous, it is inhibited. This may leave these individuals vulnerable to the development of eating disordered symptoms as a means of coping with the 'threatening emotion'. Geller

et al. (2000) found, when they compared people with anorexia nervosa with control participants, the females with anorexia nervosa had inhibited anger and this was related to suppression of need. The authors argued that their data suggested that they suppressed their anger in order to 'protect' the interpersonal relationships around them. In a recent study, Ioannou and Fox (2009) found that reduced emotional expression was predicted, in part, by anger being perceived as threatening. This result was supported by Fox (2009), who found in his qualitative data, that participants discussed that anger was 'threatening', 'toxic' and 'dangerous'. Moreover, in support of Geller, participants also discussed that they suppressed their anger which they perceived would prevent damage to relationships around them.

For disgust, the evidence has been a bit more mixed, with the majority of studies finding that self-disgust (in particular, in relation to food and body shape) being of importance in eating disorders (e.g., Troop, Treasure, & Serpell, 2002). A number of authors have started to propose that the disgust found in eating disorders is actually accounted for by anxiety (e.g., Davey, & Chapman, 2009). Likewise, the role of disgust has been suggested to be pivotal in the more complex emotion of shame, and shame has been shown to be of importance in eating disorders (e.g., Goss & Gilbert, 2002). Fear has been regarded as a hallmark emotion of eating disorders, and some authors have labelled this as a 'morbid fear of fatness' (Russell, 1979). Often the literature discusses fear within the label of anxiety, and the findings of Power and Tarsia (2007) suggest that this may be confused conceptually as other emotions may be in play. When the actual functionality of the individual emotions is considered, the relation between anxiety and disgust becomes clearer. For example, Uher et al. (2005) found that measures of anxiety and disgust often correlate highly (+0.7) and it could be argued that they both have the function of distancing oneself from a feared object or outcome.

Fox and Power (2009), in line with the above research, have proposed a new emotions-based model of eating disorders, based upon the SPAARS model of emotion (SPAARS-ED; Fox & Power, 2009). This model postulates that as a result of developmental factors, anger becomes modularized and ego-dystonic, whilst as a result of 'over-learning' and 'preparedness', disgust becomes an automatic emotion. The coupling of the two emotions creates a 'locking' of the emotional

representation system, a 'default mode' of operating where disgust becomes a dominant emotion elicited as to 'suppress' or 'redirect' ego-dystonic feelings of anger. The results of Fox and Harrison (2008) suggested that following the anger induction procedure, in those participants with bulimic symptoms, disgust scores were impacted by levels of depression, which is consistent with a transdiagnostic emotional approach. That is, the same emotions underpin different symptoms within a person's clinical presentation (e.g., eating disorder symptoms and depression). Fox and Power (2009) argue that the emotions of disgust and sadness, and to a lesser degree anger, underpin both eating disorders and depression.

Given the lack of research that has examined the potential role of individual emotions within disordered eating, the aim of this current paper was to examine the contributory effects of the five basic emotions on levels of disordered eating, whilst controlling for depression and anxiety within the analysis. This analysis of emotions data for an eating disorder participant group would allow for an examination of the SPAARS-ED model, as it would predict that both sadness and anger would significantly contribute to levels of disordered eating (as measured by the Eating Attitudes Test [EAT-26]).

## METHODOLOGY

### *Design of this Study*

The study utilized a cross-sectional design that utilized two analytical strategies, correlational (with associated partialling out of variables) and regression analyses. These two strategies were chosen so that the contributory effects can be clearly seen in the results.

### *Participants*

The participant group were recruited from B-EAT, a non-statutory organization providing support to people with an eating disorder in the UK. Only females were included in the analysis, as exploring gender differences in emotional experience was beyond the scope of the current paper and there is some research which suggests eating disorders in males may be dependent on different psychological processes (Fernandez-Aranda et al., 2004). Respondents were only included in the analysis if EAT-26 scores were greater than 20 and this

figure strongly suggests that those in the eating disorders (ED) group were experiencing symptoms of a clinically relevant disorder. Although it was possible to ensure probable caseness, it was impossible to distinguish between different diagnostic groups of eating disorders (e.g., bulimia nervosa versus anorexia nervosa).

Included in the analysis were 53 participants (mean age = 31.74, Standard Deviation = 10.6). In terms of psychopathology, the mean EAT score for the participants was 41.3 (SD = 13.8), the mean hospital anxiety and depression scale-anxiety subscale (HADS-A) was 15.45 (SD = 3.9), the mean (hospital anxiety and depression scale-depression subscale (HADS-D) was 11.30 (SD = 3.8) and the mean BMI was 18.8 (SD = 3.9). As can be seen from these data, all the participants had clinically elevated scores on the EAT-26 and on both of the subscales of the Hospital Anxiety and Depression Scale (HADS).

### Measures

*EAT-26 (Garner, Olmsted, Bohr, & Garfinkel, 1982)*

The EAT-26 is a well-established measure, made up of 26 statements which respondents are asked to rate on a six-point Likert Scale and covers 'symptoms and concerns, characteristic of eating disorders' (Garner, 1997, p. 175). A score is derived between 0 and 78, with higher scores representing more disordered eating. The authors present this research which suggests that a cut-off score of 20 differentiates between individuals who have eating disordered attitudes and behaviours and those who do not, and is used to confirm whether participants in the ED group, are displaying clinically significant symptoms. The measure includes items around current height and weight, which enables calculation of body mass index (BMI).

*HADS (Zigmond & Snaith, 1983)*

This questionnaire consists of seven items relating to anxiety symptoms, and seven pertaining to depressive symptoms. A score of 8 or above out of a possible 21 on both the depression and anxiety subscales detects 80% of cases (Bjelland, Dahl, Haugh, & Neckelmann, 2002).

*BES (Power, 2006)*

This is a three-part scale constructed from 20 emotional terms which relate to the five basic emotions of anger, disgust, fear, happiness and sadness. Analyses have suggested a high degree of internal consistency with Cronbach's alpha

ranging from 0.79 to 0.84 on the individual subscales. Participants were asked to rate each of the items on a Likert Scale depending on how they had been feeling over the last week, with 1 indicating that they had not felt like this at all and 7 indicating that they had felt like this all the time, enabling a measure of each emotional state. Although the BES has a trait and coping subscale, these were not included in this study's analysis.

### Procedure

Participants completed the measures detailed above. They were sent a pack of questionnaires in the post, along with a memo advising that they had been contacted via B-EAT, a covering letter from the researcher explaining the purpose of the study and the participant information sheet, and a stamped addressed envelope in which to return the measures.

## RESULTS

### Statistical Strategy

In line with the research aims of this study, the analyses were conducted in two stages. First, the emotion variables were correlated with the total score for the EAT-26. This was followed by a further correlational analysis of the relation between the EAT-26 and the four negative emotions, where depression and anxiety were partialled out respectively. Finally, a regression analysis was undertaken to look at which of the four negative emotions predicted disordered eating, as measured by the EAT-26.

### Correlation Analysis—BES and EAT-26

#### *Correlation Analysis without Depression or Anxiety being Partialled Out of the Equation*

As can be seen in Table 1, the four negative emotions (as measured by the BES) correlated significantly with the EAT-26. However, the largest correlations were found between state disgust and EAT-26, and state sadness and EAT-26.

### Partial Correlation Analysis (Co-variate—Depression)

As can be seen within this table, with the exception of state fear, all the subscales remained significantly correlated with EAT-26 scores, although the



Table 1. Shows the correlations between the five basic emotions, as measured by the (Basic Emotions Scale) BES and the Eating Attitudes Test (EAT-26)

| <i>n</i> = 52      | State anger | State sad | State disgust | State fear | State happy |
|--------------------|-------------|-----------|---------------|------------|-------------|
| Total EAT-26 score | 0.480**     | 0.587**   | 0.599**       | 0.460**    | -0.421**    |

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

Table 2. Shows the correlations between the four negative emotions and disordered eating, with depression partialled out of the analysis

| <i>n</i> = 52       | State anger | State sad | State disgust | State fear | State happiness |
|---------------------|-------------|-----------|---------------|------------|-----------------|
| Total EAT-26 scores | 0.378**     | 0.398**   | 0.438**       | 0.210      | -0.242          |

Co-variate: HADS-D.

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

EAT-26 = Eating Attitudes Test.

size of the correlation was much reduced. Disgust still came out with the largest correlation with the EAT-26 (see Table 2).

### Partial Correlation Analysis (Co-Variate—Anxiety)

As can be seen in Table 3, the HADS-A scores had a small impact upon the size of the correlation between EAT-26 scores and the four negative basic emotions. The results from this analysis continued with the pattern of results from the above two correlation analyses, in that, disgust was the largest correlation, but there was not much between the size of the correlation between EAT-26 and anger, sadness and disgust. Interestingly, it was fear that showed a smaller correlation with EAT-26 scores, and this finding is very much in keeping with the above results.

### REGRESSION ANALYSIS

The second part of the analysis was a multiple hierarchical regression. The process of deciding which variables were entered into the regression analysis was governed by sample limitations, the above correlation analysis and background literature. Due to

Table 3. Shows the correlations between the four negative emotions and disordered eating, with anxiety partialled out of the analysis

| <i>n</i> = 52       | State anger | State sad | State disgust | State fear | State happiness |
|---------------------|-------------|-----------|---------------|------------|-----------------|
| Total EAT-26 Scores | 0.361**     | 0.445**   | 0.464**       | 0.340**    | -0.064          |

Co-variate: HADS-A.

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

EAT-26 = Eating Attitudes Test.

the small sample size, consideration was given to the issue of statistical power for this analysis. With statistical power being set at 0.8 (Cohen, 1988) and alpha was set at 0.05 (as per convention), a sample size of 40 to 45 was felt to be sufficient (predicting a large effect), using guidelines from Miles and Shelvin (2005). Furthermore, it was decided that only four variables would be entered into the regression model to ensure stability and to prevent the ratio of participants to variables not dropping below 10:1.

As neither depression nor anxiety appeared to have a large effect upon the correlations between the EAT-26 and the four negative emotions, they were not included in the regression model. Also, because the correlation between EAT-26 and happiness reduced to a non-significant level after depression and anxiety were partialled out of the correlation, it was not included in the regression analysis. The remaining four negative emotions were entered into the equation in a step-wise fashion. The order of entry into the model was based upon the literature review and the results of the correlation analyses (see Table 4).

As can be seen from the regression analysis, the final model consisted of state sadness and state anger, and these two variables combined accounted for nearly 50% of the variance within the analysis. However, due to the small number of participants (in regression terms), the findings from step 3 cannot be entirely ruled out. All the variables were significant and the overall variance accounted for model was just over 42% (adjusted  $R^2 = 0.423$ ).

### DISCUSSION

This study sought to investigate the relation of the individual emotions to disordered eating patterns. The first finding was that eating disorder symp-

Table 4. Shows both the  $R^2$  and the adjusted  $R^2$  for each stage of the regression analysis. Also, it provides the significance of each variable entered into the regression equation, at each stage of the analysis

| Variable<br><i>n</i> = 52 | $R^2$ | Adjusted $R^2$ | Significance |
|---------------------------|-------|----------------|--------------|
| Step 1                    | 0.36  | 0.35           |              |
| State disgust             |       |                | 0.001*       |
| Step 2                    | 0.40  | 0.38           |              |
| State disgust             |       |                | 0.001*       |
| State fear                |       |                | 0.068        |
| Step 3                    | 0.48  | 0.42           |              |
| State disgust             |       |                | 0.021*       |
| State fear                |       |                | 0.030*       |
| State anger               |       |                | 0.033*       |
| Step 4                    | 0.52  | 0.48           |              |
| State disgust             |       |                | 0.190        |
| State fear                |       |                | 0.113        |
| State anger               |       |                | 0.029*       |
| State sadness             |       |                | 0.017*       |

toms correlated strongly with the four 'negative emotions', with disgust and sadness demonstrating very large correlations. These correlations were maintained, even when depression and anxiety were partialled out of the analysis. Depression did have some impact on the size of the correlations between disordered eating and the four emotions, but only fear reduced to a non-significant level. Indeed, as discussed by Cohen (1988) a correlation can also be regarded as an effect size, with correlations less than 0.3 can be interpreted as a small effect, between 0.3 and 0.5 as a medium effect and over 0.5 as a large effect. Therefore, according to Cohen (1988), with the exception of fear, all of the partial correlations (with depression) would be regarded as a medium effect. Interestingly, given the predominance of anxiety in the current theoretical models (e.g., Pallister & Waller, 2008), both anxiety and the emotion of fear seemed to be of lesser significance in the correlation analysis, and removal of depression in the first set of partial correlations reduced the correlation between disordered eating and fear to a non-significant level. In considering the correlation between anger and EAT-26 scores, it was interesting that the relationship was a positive relationship, when there is some evidence that anger is suppressed for people with eating disorders (e.g., Waller et al, 2003), and therefore, it may have been expected that anger would negatively correlate with eating disorder scores. However, this finding of increased anger for

people with eating disorders fits with the finding from Fox and Harrison (2008) where there were increased levels of the actual emotion of anger in people with bulimia nervosa, but the same participants also demonstrated an increase in anger suppression scores.

The regression analyses examined the contributory effect of each of the emotions on disordered eating, and the results were, as predicted, with anger and sadness uniquely predicting nearly 50% of the variance in the analysis. For the emotion of anger, this finding is very much in keeping with the previous research by Waller et al. (2003), Geller et al. (2000), Fox and Harrison (2008), Fox (2009) and Ioannou and Fox (2009). This study's data and the previous literature suggest that people with eating disorders experience both higher levels of anger and also experience this emotion as being overwhelming. As discussed by Waller et al. (2007), the key point in these situations is that the emotion is suppressed once it enters consciousness, and is often related to more bulimic symptom patterns. Fox (2009) found within a qualitative study that individuals with eating disorders had experienced a high level of anger whilst they were growing up. Fox found within his data that increased anger appeared to be associated with an increased propensity to binge and vomit. In other words, the experience of increased anger led the individual to use strategies to 'manage' or 'suppress' the emotions from the sense of self. The results from the initial correlation analysis and the regression analysis highlighted how disgust initially appeared to be an important emotion for eating disorders, but once sadness and anger were entered into the model, the unique effect of disgust disappeared. This suggests that whilst the experience of disgust may be heightened in individuals with eating disorders, it may be linked to other relevant emotions such as anger or sadness rather than being an independent risk factor for symptoms. This finding fits with the results of Fox and Harrison (2008) on how anger and disgust may be 'coupled' within people with disordered eating, in particular, people with bulimic symptomatology. This study's findings on the potential role of disgust in eating disorders may help to explain some of the inconsistencies of the research on disgust. However, an alternative interpretation could be that the effect of disgust on disordered eating disappeared because of the low sample size. Given the strong correlations between disgust and eating disorders, it is quite possible that the predictive value of disgust would increase with a larger sample size. In saying this,

it is noteworthy that disgust has been shown to be an emotion that is quite complex in the study of eating disorders, and other authors have shown that it often has a relation to other emotions (e.g., Davey, & Chapman, 2009). This is an area that certainly would benefit from further studies with larger sample sizes.

The finding that sadness predicted disordered eating patterns was an interesting finding, as this is the first time that this emotion has been found to be significant for people with eating disorders. Fox and Power's SPAARS-ED model discussed that sadness was a key emotion for eating disorders, and Fox (2009) discussed how participants with a diagnosis of anorexia nervosa often felt that experiencing and expressing the emotion of sadness was a sign of 'weakness' and 'damaging to close family or friends'. Some of the participants in this study discussed how they had developed strategies that allowed them to express their emotions in a more 'appropriate manner', for example, choosing a 'weepy film'. The limited expression of sadness was felt to be related to the actual eating disorder, and this study offers further evidence supporting this relationship. As discussed by Power and Tarsia (2007), sadness was the strongest predictor of depression, shortly followed by disgust. Given this study's data, it may well be that sadness and disgust are important emotions in understanding the high levels of comorbidity of disordered eating symptoms and depression.

As with all research, this study is not without its drawbacks. The participants in this study did not undertake a formal assessment of their eating disorder (e.g., Eating Disorders Examination; Cooper, Cooper, & Fairburn, 1989), so it is impossible to conclude that all the participants in this study met diagnostic criteria for an eating disorder. Despite this lack of formal interview assessment, all the participants reported high levels of eating pathology on the EAT-26 and felt able to place themselves on a research volunteer list via a national eating disorders charity, B-EAT. The second point to reflect upon within this study is how the data is of cross-sectional nature. In other words, causality cannot be inferred from this study's findings. It may well be that the actual eating disorder creates these emotions within the sufferer, and this was what was picked upon within the results. Although this is a very real possibility, the available evidence would suggest that this is not the case. For example, Fox (2009) found a similar pattern in his qualitative data that stems back through someone's own developmental history. These findings are also in

keeping with the pioneering work of Hilde Bruch (1962, 1973 and 1978) and her analysis of many different cases that she had worked with over a number of years.

In conclusion, this study has found that it is a fruitful avenue of research to explore the contributory nature of emotions to eating disorders. The regression analysis found that anger and sadness uniquely predicted disordered eating, which supports the prediction of the new SPAARS-ED model (Fox and Power, 2009) and the previous work of Waller et al. (2003) and Geller et al. (2000). However, it may be that role of disgust would become a significant predictor in the regression model when the sample size was larger.

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# *A Qualitative Exploration of the Perception of Emotions in Anorexia Nervosa: A Basic Emotion and Developmental Perspective*

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Difficulties in emotional processing have long been regarded as a core difficulty within anorexia nervosa. Recent research and theory have started to highlight how eating disorder symptoms are often used to regulate painful emotions. However, there has been a lack of theoretical sophistication in how emotions have been considered within the eating disorders. This study was designed to use qualitative methodologies to address these inadequacies and provide a richer, more thorough account of emotions within anorexia nervosa. It used a grounded theory methodology to gather and analyse interview data from 11 participants who had a diagnosis of anorexia nervosa, being seen at a regional eating disorder service (both inpatient and day patient). The results highlighted two main overarching themes regarding the perception and management of emotions within anorexia nervosa: (1) development of poor meta-emotional skills; and (2) perception and management of emotion in anorexia nervosa. These two categories comprised of a significant number of components from the qualitative analysis, including difficulties with anger, meta-emotional skills and poverty of emotional environments while growing up. Once the data had been collected and analysed, links were made between the findings of this research and the current literature base. Copyright © 2009 John Wiley & Sons, Ltd.

## **Key Practitioner Message:**

- Practitioners need to consider the importance of poor meta-emotional skills within anorexia nervosa. These meta skills appear to be more complicated than the simplistic notion of alexithymia.
- The routes to these difficulties in emotion appear to be drawn from a complicated developmental picture.
- The role of anger needs to be considered more fully in the psychotherapeutic work with people with anorexia nervosa. This study's findings suggest that increasing levels of anger may play a role in increased eating disorder symptomatology, especially vomiting.

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**Keywords:** Anorexia Nervosa, Anger Within, Sadness, Meta-emotional Skills, Emotion Suppression

## INTRODUCTION

The explicit consideration of emotions within psychopathology has long been a neglected area for both theorists and researchers (e.g., Holland, 2003). However, recent research, theory and clinical initiatives have started to formulate a clearer role for emotion within psychopathology (e.g., Hayes, Strosahl, & Wilson, 1999). Within eating disorders, it has been noted by many authors that people with anorexia often present as if they are devoid of emotions, and they appear, at first sight, to be very confused and unsure about their own emotional status (e.g., Bruch, 1978). This uncertainty of emotion has been given the term alexithymia (Stefanos, 1973), which refers to the person's difficulty in describing, recognizing and expressing their own emotional states. A number of studies have found high degrees of alexithymia, typically assessed by the Toronto Alexithymia Scale (TAS; Bagby, Parker, & Taylor, 1994), within the main eating disorders (e.g., Pinaquy, Chabrol, Simon, Louvet, & Barber, 2003; Schmidt, Jiwany, & Treasure, 1993). Although it could be argued that these sets of findings highlight a relatively robust construct in understanding eating disorders, alexithymia within anorexia nervosa is not without its critics. As alluded to above, alexithymia research is almost totally reliant on the TAS, and it could be regarded as poor science to have a literature almost based on one measure. Likewise, the construct itself has a confused conceptual underpinning, in that some authors refer to it as a trait phenomenon (Taylor, Bagby, & Parker, 1997), while others use it as a state construct (Honkalampi, Hintikka, Laukkanen, Lehtonen, & Viinamäki, 2001). Other researchers have suggested that alexithymia may actually be more related to mood than the actual eating disorder. For example, research has highlighted a close relationship between alexithymia and measures of anxiety and depression (Bydlowski et al., 2005), while Eizaguirrea et al. (2004) found that depression actually accounted for the majority of the alexithymia in people with eating disorders. One of the most significant criticisms of this construct comes from a broader consideration of the literature, where other authors have found difficulties with specific emotional states, such as anger or fear (e.g., Fox & Harrison, 2008; Geller, Cockell, Hewitt, Goldner, & Flett, 2000; Harvey, Troop, Treasure, & Murphy, 2002). It could be

argued that it is incompatible to have a literature that proposes that people with eating disorders cannot distinguish between their emotional states, while having another literature that highlights how people with eating disorders appear to have difficulty with identified individual emotions (e.g., anger). The notion of exploring this apparent contradiction in the literature was an aim of this study, as there has been a dearth of studies that have taken an in-depth investigation of emotions within eating disorders.

Over the recent years, there has been much discussion in the literature about how the actual symptoms of eating disorders operate as a means of escaping painful affect. For example, Cooper, Wells and Todd (2004) propose a model that postulated the presence of positive beliefs about eating/bingeing, as bingeing helps the self to dissociate from the emotional distress caused by the presence of negative beliefs. However, further distress is caused by the presence of negative beliefs about eating (e.g., eating will make me fat). This provokes a conflict within the individual, creating cognitive dissonance (Festinger, 1957), which is subsequently reduced by having beliefs that their eating is out of their control. Waller, Kennerley and Ohanian (2007) also proposed a model that attempted to explain why there are two types of eating disorder symptoms. According to the model, restriction of food is a primary avoider of emotion, in other words, it is used to prevent the feeling of emotion, while bingeing and vomiting (as with Cooper et al., 2004) suppresses the negative emotion once it has been activated. Although these models are a useful start to consider how emotions relate to eating disorder symptomology, they tell us very little about the actual emotions in play within these disorders or the associated beliefs and interpretations of these states. As discussed above, research has highlighted how people with eating disorders appear to have difficulty with certain emotional states. Geller et al. (2000) found that people with anorexia nervosa suppressed anger much more than controls, and the suppression of 'negative emotion' predicted body dissatisfaction. Waller et al. (2003) found that women with a diagnosed eating disorder had higher state anger scores and anger suppression scores than controls. The reasons for why anger is a difficult emotion remain unclear, although Geller et al. (2000) found some evidence that this suppression of emotion may

be related to protecting the participant's relationships. Other researchers have found higher levels of other emotions within eating disorders, such as fear/ anxiety (e.g., Bulik, Sullivan, Fear, & Joyce, 1997; Swinbourne & Touyz, 2007) and disgust (e.g., Fox & Harrison, 2008; Troop, Murphy, Bramon, & Treasure, 2000; Troop, Treasure, & Serpell, 2002). For disgust, Troop and colleagues found that there was increased disgust sensitivity for people with eating disorders, but only for their bodies and food (e.g., Troop et al., 2002). Empirical questions remained after this study about the nature of disgust in eating disorders, and whether this does map directly on to the marked body dissatisfaction that is seen in all the eating disorders (Fairburn & Harrison, 2003). As can be seen from the above discussion, the research has identified that certain emotions may be important in understanding eating disorders. However, through this previous research, emotions have tended to be considered in isolation, which has prevented real development in the theoretical analysis of emotions within eating disorders. It is argued that for this advancement to occur, the eating disorders field needs to consider theory from the study of normal emotional processes. One such model of emotional processing that may be useful is the SPAARS model (the letters act as a mnemonic to the different levels of representation in the model: Schematic, Propositional, Associative, Analogical, Representational Systems; Power & Dalgleish, 2008). This model argued that emotions are generated via two cognitive levels, with one route being an appraisal route where emotions are generated in response to a person's processing of internal or external stimuli. The second pathway to emotions is a direct route where emotional responses to certain stimuli can become automatic (e.g., as with an automatic fear reaction to spiders for someone with a spider phobia). This model considers emotions from a basic emotions perspective (i.e., sadness, anger, fear, disgust and happiness), and it argues that emotions can become coupled with each other, in either a facilitatory or inhibitory manner (for a fuller discussion of the SPAARS model, see Power & Dalgleish, 2008). Fox and Harrison (2008), using a SPAARS perspective, found evidence that anger and disgust may be coupled in people with bulimic symptomatology. One of the key aspects of the SPAARS model is that it proposes that people can have different relationships with their individual emotions, due to their learning histories, and it is for this reason that this theory is regarded as being relevant for this study.

As discussed by the SPAARS model, early life experiences are of key importance to understanding how an individual relates and manages their own emotions. Corstorphine (2006), within the spirit of the above discussion, proposed a cognitive-affective model of eating disorders that was broadly based upon dialectical behavioural therapy (DBT; Linehan, 1993). The main points of this model are that individuals learn in their childhoods that certain emotions and individual traits are not tolerated by their caregivers. Therefore, the young females who are destined to develop eating disorders grow up learning that certain emotions are not 'acceptable' and/or are 'dangerous'. In keeping with the other cognitive-affective models discussed above, bingeing-purging/restriction is used to distance or prevent an emotion from occurring, however, the avoidance of a primary emotion is then related to the emergence of a secondary emotion. For example, feeling angry at a betrayal (primary emotion), which is suppressed, the individual then develops guilt at having experienced anger (secondary emotion). Corstorphine (2006) argued that it is the secondary emotion that causes much of the distress that is present in eating disorders. This model, although very interesting, has not been tested via research and it also lacks a comprehensive theory of emotional processing within eating disorders. Indeed, it sidesteps the whole literature on how caregiver's empathy is related to early attunement to emotional states in the self and others (e.g., Valiente et al., 2004). For example, Barnett, Howard, King and Dino (1980) found evidence of how parental empathy and affection were related to high and low empathy in the participants. Following on from this research, Eisenberg, Cumberland and Spinrad (1998) and Eisenberg et al. (2001) found that parental responses to children's emotions had a powerful effect on the child's ability to perceive, express and regulate their own emotions. Linehan (1993) also discussed the role of 'invalidating environments', where the principal caregiver rejected and dismissed emotional expression by the child. Krause, Mendelson and Lynch (2003), using a structural modelling approach, found that emotional inhibition mediated the relationship between childhood emotional invalidation (as per Linehan, 1993) and acute psychological distress in adulthood. Within their study, Krause et al. (2003) found that perceived parental distress was the most significant contributor to emotional inhibition. The authors postulated that it was the complex emotion of guilt within the child (e.g., feeling guilt for 'hurting'



the parent in some way with their emotion) that helped to explain the significant effect of parental distress. These pointers from the literature have not been fully considered within a study that has examined eating disorders, especially anorexia nervosa. This examination forms a key aim of this study. Over this review, the studies discussed have used a small set of methodologies, which has limited the opportunities for a detailed exploration of individual emotions in eating disorders (as suggested by the SPAARS model). For all of these studies, the use of questionnaires and standardized measures has prevented a fuller investigation of what makes certain emotions difficult for people with eating disorders. It is argued that this field needs an inductive methodology that allows participants to discuss their emotional states and to explore their understanding and meanings that they attach to them. This inductive methodology would also allow the researcher to consider theory and its explicit development, as this would assist in the broader understanding of the role of emotion in the eating disorders. It is for these reasons that this study has adopted a qualitative methodological approach.

## STUDY AIMS

The above review of the literature has highlighted how emotional inhibition is now starting to be recognized as an important construct within the development and maintenance of eating disorders, especially anorexia nervosa. However, despite the recent advances in understanding emotional inhibition, there has been a lack of consideration of basic emotion processes (e.g., Oatley & Johnson-Laird, 1987; Power & Dalgleish, 1997). Given that there is a growing consensus in the emotions literature that emotions are the product of modularized, goal-directed cognitive processes (e.g., Oatley & Johnson-Laird, 1987; Power & Dalgleish 2008), this is a significant omission in the research and theoretical understanding of eating disorders. Moreover, there is little discussion in the literature about the subjective experience of inhibiting emotions in eating disorders, which leaves questions, such as how do people account for their difficulties with their emotions and what is the developmental pathway for these emotional processes, remain unanswered. The work of Eisenburg et al. (1998; 2001) and Krause et al. (2003) has highlighted a need to understand emotional inhibition from a developmental perspective, and the role of parental responses (especially parental

distress) to children's expressed emotions appears to be important. However, it is not known what pathways (if any) are important in the eating disorders, and it is for this reason that it is argued that deductive methodologies are limiting the research in this field.

The study presented here aims to examine accounts of individuals with a current diagnosis of anorexia. It was designed to focus on their experiences of emotion and their management from a basic emotions and developmental perspective. As discussed by Elliott, Fischer and Rennie (1999), exploratory qualitative methods are recommended for research areas where there are significant gaps in the knowledge base of a particular issue or problem. This methodology is particularly useful in attempting to understand particular phenomena from the perspective of interviewees (Hodgetts & Wright, 2007). Qualitative methodology also has the distinct advantage of employing an inductive approach, which explores the subject matter in as much detail as possible while preserving the subtlety and ambiguity of the issue or problem under study (e.g., Elliott et al., 1999). Although there are a number of potential qualitative approaches that could have been used, a grounded theory perspective was chosen due to the current theoretical limitations in understanding emotional inhibition in eating disorders. It is hoped that this choice of methodology will aid further theoretical development around emotional inhibition, which will hopefully lead to further research and study of this subject area.

## METHODOLOGY

### *Version of Grounded Theory Used*

Since the inception of grounded theory in 1967 by Glaser and Strauss, there have been many differing interpretations of the key analytic principles (Glaser & Strauss, 1967). Glaser himself disagreed with the publication of Strauss and Corbin's (1990) work, where he argued that Strauss and Corbin were bringing quantitative methods in to grounded theory because they were attempting to 'force' data into a theory rather than letting a theory emerge with no preconceptions (Coyne & Cowley, 2006). Within this study, grounded theory is being used in an abbreviated, descriptive form in order to represent systematically the participants' experiences and understand their perceptions and experience of emotions within anorexia nervosa. The process of grounded theory involves the recognition of

the role of the researcher in the analysis of the data (Strauss & Corbin, 1990), which also draws on social constructionist ideas (Charmaz, 1990). This perspective on the analysis was a crucial aspect of the treatment of the results, because it was felt that the researcher's perspective on how the emotions were displayed and acknowledged by the participant would need to be interpreted by the researcher. This acknowledgement of the researcher's perspective has been regarded as a vital component to data analysis and theory generation, and it is in keeping with Charmaz's point that 'any theoretical rendering offers an *interpretative* portrayal of the studied world, not an exact picture of it' (Charmaz, 2006, p. 10).

### *Reflexivity*

In keeping with the theoretical background described above, the term reflexivity refers to the need of the grounded theorist to acknowledge his or her own philosophical and conceptual stance of the world and how this interacts with their own knowledge base and the interview with the participants. The researcher in this study is a 38-year-old male clinical psychologist. He is married and could be regarded as being middle class. He has been qualified as a clinical psychologist for 6 years and has spent the majority of his qualified life working with adult women with eating disorders. It is acknowledged that this clinical experience will have had an impact upon the analysis, but it is the contention of this paper that this experience would have facilitated the analysis and allowed for improved theoretical development. His interest in the topic of emotional processes in eating disorders was directly born out of his clinical experiences, where it seemed that difficulties with emotions lay at the centre of his clients' clinical formulations.

### DATA COLLECTION

The data were collected and analysed over 2006 prior to any significant reading or writing of papers. It was intended that this would prevent any undue bias influencing the data collection and analysis. Data were collected from a regional eating disorder unit. This unit offers both inpatient and day treatments, and the researcher, at the time of data collection, did not work clinically at the unit. However, the researcher had a good working relationship with the lead consultant at the unit and he actively supported recruitment into this project. The unit had 28 inpatient beds and approximately 30 places in their day service.

### *Participants and Recruitment Process*

#### *Participants*

Ethical approval was first granted from the Local National Health Service ethics committee and research governance was sought from the hospital research and development committee (R&D). Once approval was gained, the researcher went to a number of community meetings where patients met with staff to discuss issues that pertain to the ward. The inpatient unit was split into two sections: intensive care (ITU) and acute. The ITU's patients were typically very low weight and were often on non-solid diet and used nasal gastric tubes for refeeding, while the acute patients were much more physically stable. There were 15 beds on the ITU and 13 beds on the acute. In conversations with the consultant, it was decided that the researcher should focus on acute and day patients, because the ITU patients would not be physically able to engage. The researcher was mindful of this externally placed restriction on the study, and this was reflected upon throughout the Results section. The researcher provided information about the study and gave out participant information sheets. Patients were then left to decide whether they would like to take part and, if they decided to take part, they informed nursing staff, who informed the researcher of their decision. The day service was run in a similar vein to the inpatient unit, with an emphasis on supported eating. Patients in the day unit tended to need longer term, more intensive support and were still symptomatic. There were approximately 30 places at the day service. For the day service, the same procedure was followed because the researcher attended the community meeting with patients and gave out participant information sheets. Patients who were interested in taking part gave their signed consent forms to the nursing staff. Data collection and first stage analysis was undertaken over a 7-month period (January 2006 to July 2006).

Within this stage of the study, 30 participant information sheets were given out and 17 people expressed an interest in taking part. One person was excluded because he was a male patient. Five changed their minds or were discharged before the interview could be arranged, and 11 consented to participate. Five people were inpatients at the time of the interview, and the remaining six were taken from the day service. All the participants had a diagnosis of anorexia nervosa and this was confirmed by the consultant psychiatrist on the unit, who used the International Classification of Diseases-10 criteria to diagnose the eating

Table 1. Demographic data for the 11 participants

| Participant number | Age | Diagnosis | BMI at admittance | BMI at interview |
|--------------------|-----|-----------|-------------------|------------------|
| 1                  | 26  | AN-R      | 12.8              | 15.0             |
| 2                  | 51  | AN-B/P    | 14.3              | 16.2             |
| 3                  | 18  | AN-R      | 12.8              | 17.0             |
| 4                  | 42  | AN-B/P    | 15.3              | 17.1             |
| 5                  | 36  | AN-B/P    | 14.3              | 16.9             |
| 6                  | 21  | AN-R      | 13                | 16.3             |
| 7                  | 46  | AN-B/P    | 17.5              | 20.1             |
| 8                  | 46  | AN-B/P    | 16.3              | 17.0             |
| 9                  | 24  | AN-R      | 12.2              | 15.1             |
| 10                 | 32  | AN-B/P    | 10.9              | 13.3             |
| 11                 | 19  | AN-R      | 14.9              | 16.6             |

AN-R = anorexia nervosa restricting sub-type. AN-B/P = anorexia nervosa-binge-purge sub-type. BMI = body mass index.

Table 2. Questions used in the semi-structured interview

|   |
|---|
| 'Could you tell me about your eating disorder?' (e.g., symptoms, duration of the disorder etc.)   |
| 'What do you understand about emotions?' (check out if this is distinguished from drives, such as sex, hunger etc.)   |
| 'How do you express these emotions? (be mindful of non-verbal communication, such as behavioural expressions); Do you ever feel angry? Examples   |
| Sad? Examples? (This was done for each basic emotion)   |
| If the person denies feeling any of the emotions ask, what would it be like to experience—emotions?   |
| Do you think that it would be comfortable to express these emotions?  |
| Would they be overwhelming?   |
| 'Was your family an emotional family? Did they show their emotions? (If so, how?) (Be mindful about the respondent calling their family emotional, as they were always happy, sad etc.) |

disorder. Details of the 11 participants can be seen in Table 1.

Each participant was interviewed for approximately 60 minutes, and the interviews were undertaken by the author. All the interviews were recorded and they all took place in a private room at the hospital. All interviews were analysed using a qualitative data analysis software package (QSR NUD\*IST Vivo, QSR International Play Ltd., Melbourne, Australia) to facilitate organization of the data. Field notes were also made after each interview, alongside a research diary. Participants' awareness of how they understood and engaged with emotions differed. However, the 11 interviewees were aware on some level of their emotions and they could discuss their relationships with them. Therefore, although there was some inevitable inference drawn about the participant's relationships with their emotions, the researcher sought at all times to keep the analysis grounded within the data.

#### *Grounded Theory Interview Schedule*

Eleven participants were interviewed. Participants were aware that the focus of the study was

on the perception of emotions, having been introduced to the concept at the unit meeting and at the start of each interview. However, it was found that some participants had a better understanding and awareness of their own emotions as a process than others. With this in mind, an in-depth interview schedule was used to guide the researcher's questions during the interviews and capture the range of a participant's experiences, including beliefs about expression and developmental histories of emotional expression in the family. This was designed during discussion with colleagues and through reflection upon the researcher's clinical work. The researcher was conscious of using general questions that allowed the interviewee to access beliefs, ideas, etc. about their individual emotions (e.g., sadness, anger etc.). The questions asked about their current understanding and experience of emotions were based on the study aims. Specifically, questions included are in Table 2.

In line with grounded theory principles of theoretical sampling, the schedule was regularly reviewed and updated alongside emerging theories. This took place formally in discussion with colleagues after three interviews, where the ques-



tion 'what do you understand about emotions?' was removed, as all the participants had an understanding about their emotions and were able to distinguish and discuss these in the research interviews. Furthermore, questions were added that actually asked about mealtime experiences, to see if conflict occurred around mealtimes.

As will be seen within the Results section, there is a relationship between the overall themes and the interview schedule. To some extent, this is an inevitable outcome of asking each participant a similar set of questions. For example, based on the study aims, all participants were asked about their experiences of emotions in childhood; therefore, 'emotions in childhood' is a core category within the final results.

#### *Data Analysis and Grounded Theory Process*

Interview transcripts were analysed by the researcher using the principles of grounded theory (Glaser & Strauss, 1967), but, as discussed above, also incorporated a social construction element (e.g., Charmaz, 2006). A brief overview of the process of grounded theory follows:

- Data are first gathered (interviews) and transcribed from the audio tape.
- The transcripts are first analysed using a process called open coding. This involves going through each line, capturing meaning and comparing data instances for similarities and differences.
- While open coding is taking place and codes are being formed, new data are sampled in light of these codes. This means that data analysis takes place alongside data collection, and questions asked at interview change according to the findings of the open coding process. This is known as theoretical sampling.
- Throughout the whole process of analysis, the researcher writes memos. Memos are thoughts that arise regarding the analysis, for example, emerging concepts or links to existing theories.
- After the initial stage of open coding is complete, these codes are then compared, grouped and lifted into core categories, which attempt to capture what is happening in the data (i.e., 'axial coding'). Core categories are given conceptual definitions, therefore moving them beyond descriptive tools to analytic units. This process continues until no new relevant insights can be made, known as data saturation.

- Core categories are then built into conceptual models and theories by using memos made to link them to each other and the existing literature.
- Throughout the process, field notes were taken and were used to direct and guide the analysis.

(Charmaz, 2003; Henwood & Pidgeon, 2003)

While this process was taking place, emerging themes were reflected upon with conversations with colleagues, and this informed both interview schedule changes and decisions as to who to invite to interview (as much as possible). For example, a particularly consistent well-evidenced theme found midway through the analysis described challenging beliefs about anger being a 'toxic'/dangerous emotion. This led to a fuller discussion of anger occurring in the interviews. Where it was possible to engage in negative case analysis, this was done. Although, due to the pragmatic nature of recruitment, this case analysis was limited, contrasting cases occurred in the more advanced analysing and theorizing.

#### VALIDITY AND RELIABILITY

Recent qualitative validity and reliability guidelines published by Elliot et al. (1999) were followed. These included addressing subjectivity through situating the research and highlighting the authors' backgrounds, presenting results in an explicit and understandable way while providing direct interview quotes and checking credibility via a number of different methods. It also included auditing of analysis by two researchers separate from the research study, and triangulation of qualitative themes with quantitative results. The two separate researchers cross-checked two transcripts with their accompanying codes and memos. These two researchers were experienced clinical psychology qualitative researchers.

#### RESULTS

As detailed at the end of the Introduction, there were two principal aims of this study. The first was to consider the actual perception of emotional states from a basic emotions perspective, while the second was to investigate the socio-affective environment within which participants grew up. The Results section is organized around these two principal aims. The analysis revealed that the participants in this study witnessed and experi-

enced a significant amount of negative affect in their earlier lives. Furthermore, participants also discussed how these early emotional environments were paradoxically non-emotional and subdued. It became apparent through the analysis that the participants were often left feeling ill-equipped to deal with their emotions from these early histories, and these influences were organized under the heading of 'development of poor meta-emotional skills'.

**DEVELOPMENT OF POOR META-EMOTIONAL SKILLS**

*Overwhelming Affect*

Within this section of the study, participants appeared to discuss two broad themes, with one on the actual emotions generated over their childhood, and another on how the family of origin managed or exhibited emotions. In terms of the actual emotions generated over childhood, participants discussed a number of categories that related to specific experiences as they were growing up, and these fed

directly into the development of two overarching categories, which were (1) 'experiencing anger as overwhelming'; and (2) 'too much emotion'. It is important to say at this stage that these overarching categories were not discreet, as some of the lower order themes contributed to two or more categories in the analysis. This broad model has been represented diagrammatically in Figure 1. Each category was made up of a number of components, which will be discussed in more detail.

*Experiencing Anger as Overwhelming*

Although the interview schedule only used a broad question to ask about early history, it was striking how often the role of anger appeared to be present in interviewees' upbringing. A significant number of participants shared how they witnessed or experienced anger, which was often coupled with violence. The researcher was mindful of not only the words spoken but also the way participants talked about their experiences, for example, tone and speed of speech, laughter or affect change.

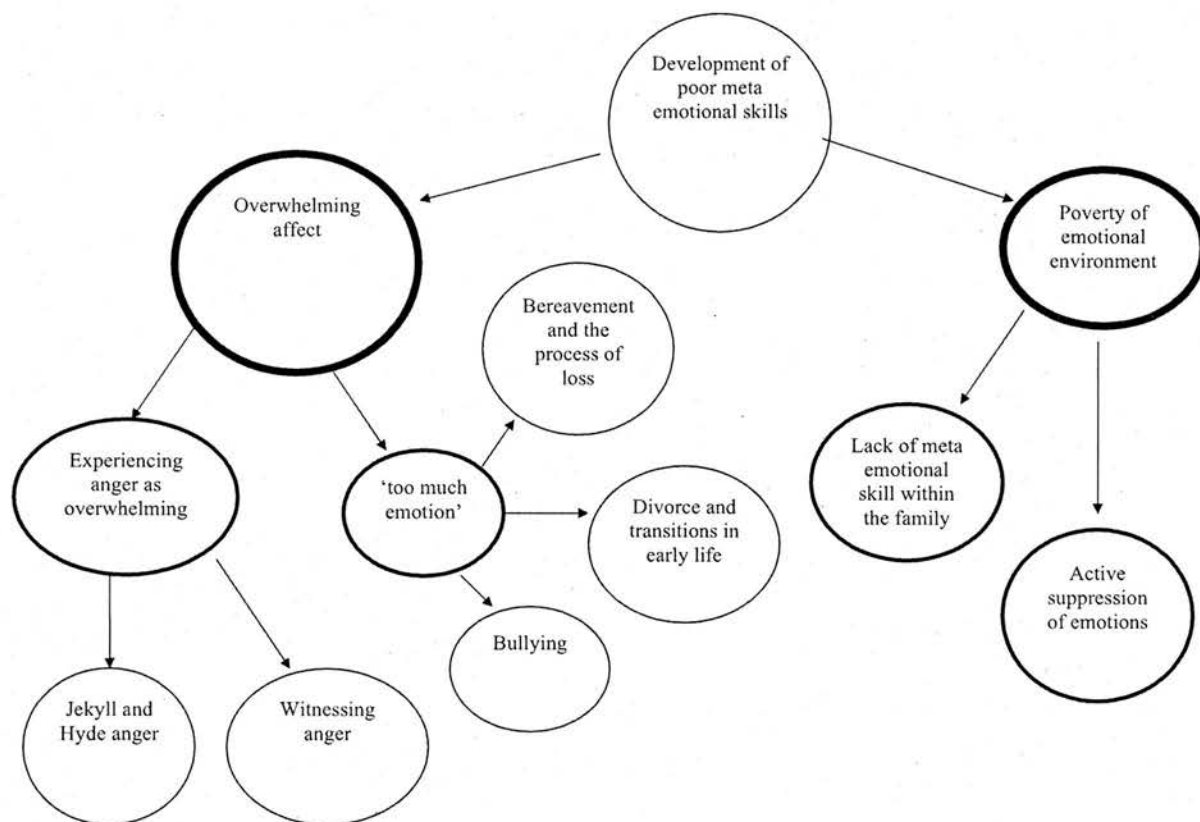


Figure 1. Shows the grounded theory for the development of poor meta-emotional skills.

Within the interview transcripts, the analysis revealed that two themes made up this overarching category, which were: 'Jekyll and Hyde anger' and 'witnessing violence'.

*'Jekyll and Hyde anger'*. A number of participants discussed how they lived with someone who was unpredictable and would often get angry at the 'drop of a hat'. For example, participant 10 discussed how her stepfather was a violent man:

P.10: *I didn't get on very well with my stepfather, he wasn't very nice*

Interviewer: *Why was that?*

P.10: *He was physically and verbally violent to my mother, he was nasty you know.*

On another occasion, participant 9 stated, 'I mean he were like Jekyll and Hyde, when he was nice, he were nice, and he was bad, he was bad'.

Participant 6 discussed how her father was very volatile and violent towards her mother and she was often scared to come home from school, as she did not know what 'type of mood' he would be having:

P.6: *It was very tense around my mum and dad, especially my dad. He was very jealous, very aggressive and you never knew what to expect. I was sometimes scared to come home from school and find out what mood he was in.*

For participant 6, she also discussed how she had been in a violent relationship, where she experienced repeated assaults and violence. The nature of these experiences coupled with her early life experience left participant 6 with the experience of anger as being overwhelming and dangerous.

The crucial part of this category appeared to be the unpredictability of the anger and how frightening it was for the participants. They almost seemed to be hyperaroused every time they went home. Even in the interview, both the participants seemed initially wary of talking to a male researcher (they were aware that the interviewer would be male prior to the interview). Although this will be discussed later in the Results, it appears that the participants learnt that anger was a scary and dangerous emotion that needed to be avoided.

*Witnessing anger*. Although related to the above category, this category was different in a number of key codes, as participants witnessed a wide array of what they perceived as being 'destructive' or 'damaging anger'. For a number of participants, they often witnessed the apparent futility of anger, in that it just caused distress and upset. For example, participant 4 discussed:

P.4: *... and then of the five children, there was one girl and one boy who were very angry and slammed doors, they'd express those sorts of emotions, erm, so yeah, that was expressed. Erm, but it never led anywhere, never got resolved, and basically it was not a good thing...*

P.4: *... you knew that expressing an emotion was not a good thing...*

Participant 4 discussed how there was a lot of conflict around mealtimes and did discuss how her eating disorder was not related to her experiences with her eating. For example, P.4: 'I don't think it has anything to do with my eating disorder, but there was massive, massive conflicts at meal times'. She continues, 'my brother lost the plot big time and mealtimes was time that they saw him, he would come and join us for tea, but he'd sit with his back to the table and he'd just be abusive to my parents'. It struck the interviewer that this was an interesting point in the interview, as participant 4 felt angry with her brother for ruining the meals, but could not say anything about it, for example: 'I could not express that I really hated it (participant 4 looks really angry in the interview), and ask why he was here and why can't we have our meals on our own...'. I was left with the sense that participant 4 just kept her head down and concentrated on her eating, while the anger and the row ensued. This concentration on her food was felt to be significant because eating appeared to help her cope with the experiences at mealtime. Participant 4 suffered from episodes of binge eating to manage her emotions.

Participant 3 also discussed how her family was largely 'without emotion', but alluded to two big arguments that left their mark upon her.

P.3: *... There was not much emotion in front of me, but I do remember one or two incidents where there's been like a big confrontation... Participant 3 looked visibly emotional as she discussed this point.*

Although this overarching theme only consisted of two categories, it was striking in the interviews that strong displays of anger were perceived to be very damaging to the child. They often felt afraid and alone, and a number (approximately half of the participants) seemed to develop a narrative



about anger being an overwhelming and almost toxic emotion that needed to be avoided at all costs. This belief about anger being overwhelming appears to be particularly challenging, as a number of participants also discussed feeling a lot of anger as a child, at events that occurred around them.

#### *'Too Much Emotion'*

One branch of the analysis revealed how participants discussed a sense of loss in their early life. This sense of loss seemed to interface with a sense of how participants, as children, felt that they had not had their own care needs addressed by their own caregivers. Therefore, this sense of loss and perceived lack of care seemed to create a high level of emotion in the participants, which appeared to centre on the feelings of sadness and anger. Within the discussions with the participants, it was apparent that there was only minimal mention of frank abuse (e.g., sexual and physical), and the participants often appeared confused by the lack of an event or series of events that they could 'blame' for having an apparent high level of 'trapped emotion' that could not be let out. Within this section, the results will be presented around the key events and themes that seemed to emerge from the data, which included: 'bereavement and the process of grief'; 'divorce/'transition and loss'; and 'bullying'.

*'Bereavement and the process of grief'*. About a quarter of the participants discussed how they had lost a close family member. Participant 8 discussed losing her father and her baby in a 3-year period, when she was a teenager.

Interviewer: *when did your dad pass away?*

P.8: *erm, he was only 45, so 1976, I was 16'*

Interviewer: *that must have been a difficult time?*

P.8: *Oh God, yeah, yeah, definitely!!*

Participant 8 also disclosed how she had lost a baby at the age of 19.

P.8: *... and then, when I was 19, erm, I had a baby, which lived then died so, you know it's like I had a lots of issues to deal with it.*

Participant 8 discussed how she did not manage her emotions from these events until much later in her life.

P.8: *I didn't really admit to my self till I was 30, when I was on my knees, that I had a problem with how I was feeling.*

Although, participant 8 did not verbally state which emotions she had felt in response to her losses, she appeared to alternate between being very sad (quite tearful) and being quite angry in the interview. Interestingly, participant 8 also discussed how she had a number of health issues as a child that prevented her from expressing her emotion (especially anger), as it would provoke her asthma and/or eczema. For example:

Interviewer: *As a child if you would become angry?*

P.8: *Erm, more than likely I'd have an asthma attack as a child.*

Another example of interplay between emotion and loss was shared by participant 10. As discussed above, participant 10 had a stepfather who was violent and aggressive towards her mother. This participant's parents separated when she was 10 and she discussed how her life was quite idyllic before her parents split up. Once participant 10's mother remarried, life appeared to change for the worse and she seemed to be quite angry and frightened by this transition. However, she stated that she was very close to her mother and she felt very angry with her stepfather about how he treated her. For example:

P.10: *He was physically and verbally violent to my mother, not me, he was nasty, you know, like a disgusting fella, he really angered me.*

In the interviewer's memos after the interview, it was postulated that participant 10 felt anger about her mum and dad splitting and ruining her idyllic life. However, she could not tell her mum how she felt. When we considered care more generally in the interview, she appeared to have some entitlement beliefs about deserving care from people around her. For example:

Interviewer: *When was the last time you felt angry about something?*

P.10: *About some treatment I was having here, I didn't feel that I was getting the right treatment, so I got quite emotional and angry.*

Although the researcher did not request the information, staff volunteered how they found her to be an angry woman, especially if they did not meet her requests promptly. When discussing her relationship with her mother, she shared how close she

felt they were and how she was the only one who she could share her emotions to. However, in her late teens, her mother became ill with cancer and died. Even here, we discussed how she suppressed her emotions to nurse her mother and she would not let her stepfather be involved in her care or the subsequent funeral.

P.10: *I didn't want my step dad to arrange or do anything. I did it all, I looked after my mum while she was poorly in the house.*

She continued later in the conversation, 'sadness is a difficult emotion, and I'd think, well, I'm ok now, you know, put on a smile and get on with things, like looking after mum'. Interestingly, she discussed how she started to restrict her eating once her mother had died.

All through the interviews with participants who had experienced the loss of loved ones was a sense of anger and sadness at their loss. As has been discussed, these emotions were strong within the participants. These emotions were not seen favourably and were often suppressed for a variety of reasons. This will be explored in later sections of the Results.

*Divorce and transitions in early life.* As with the above category, about a quarter of the participants discussed how their parents split up and their early life involved many transitions and changes. Some participants discussed openly that they felt resentful and angry for the changes that were forced upon as a result of their parent's divorce. For example, participant 6 stated that: 'my mum and dad divorced when I was 5, and then I like lived with me dad till I was probably about 8, as my mum did not have any where to live, so she lived with her parents'. She continued by stating that there were two or three further moves and her father met a new partner. She then said, 'I found it hard to tell my dad that I wanted to live with my mum, and my sister took the place of my mum for a bit. I felt quite resentful and angry about all of this, and it did cause problems with my sister later on.'

At the age of 8, participant 6 moved back with her mum, but was not able to see much of her, as she worked and left her with babysitters. This caused a lot of anger for her, but she felt unable to say anything to her mother:

P.6: *When I lived with my mother, I stayed at the cottage for a while, we didn't spend much time with her and we, like, with babysitters and nannies a lot. I could not tell my mum I was not*

*happy and resentful, as I was so grateful to be living with her again.*

Another example of how divorce and transition had an impact upon levels of affect came from participant 1, who stated that:

*there was lots of upset in my life, like my parents divorced and we used to move around a lot, so I changed school quite a few times, so I was quite emotional and angry about that and I was not really settled until I moved to where I live now when I was about 7 or 8.*

For participants, the experience of change and transition following both bereavements and divorce appeared to be very challenging. It often left them feeling very angry with the situation the change had left them in, and feeling angry at the loss of a loved one. At the same time, the changes left participants feeling sad for their loss. These emotions were often perceived to be wrong and they were often suppressed. Significantly, for all the examples offered above, the start of the eating disorder could almost be pinned to these critical events in their lives.

*Bullying.* The last category that appeared to contribute to the overarching theme of 'too much emotion' was one of 'bullying'. Participants discussed how being bullied by other children left them feeling very sad and alone, fearful, disgusted with their own body and feeling very angry with how they were treated. For example, participant 11 discussed how one girl had made her feel all of these emotions, but in particular, anger and disgust:

P.11: *One girl commented on how I looked and she described me as like, chubby with spots and just not pretty, and this girl came up to me laughing, I could have said something really funny, but I just stood there.*

Later, she became angry in the interview, 'I think now I'd probably tell her, or go up to the other girl and given her a good smack now to be honest. I'd love to find her today and tell her, look what the bloody hell you have done to me, you know, it makes me really upset (interpreted as angry) such like bitchy comments and stuff like that . . .'

Participant 1 discussed how bullying was both verbal and physical, and she struggled at school due to this bullying. Across this bullying was how it affected her sense of self. For example:

Interviewer: *Did the bullying have an impact?*

P.1: *Definitely! Cos I was always criticised, it was always about me that I was criticised, so I did take it on board, took it all to heart and then criticised myself.*

Interviewer: *(Interviewee was quite animated in the interview) You sound like you became angry with yourself, you turned it inwards?*

P.1: *Yeah, yeah.*

### Summary of Overwhelming Affect

Almost all the participants described their socio-emotional environments as being challenging while they were growing up. Throughout the analysis of the interviews, it was apparent that the emotion of anger was a difficult emotion for the participants, because they had often experienced anger as being overwhelming and dangerous from people around them. In comparison, a number of participants also discussed how events had significantly increased their levels of emotions, in particular, anger and sadness, which were often suppressed in order to protect them or another key individual in their life. With the exception of two of the participants discussed above, all the other interviewees who experienced overwhelming affect and/or witnessed this high level of emotion either binged and/or vomited. Although this will be covered later in the Results section, it was apparent that the use of bingeing and vomiting was a powerful strategy to suppress the apparent high level of affect present in these participants. This dynamic of too much emotion, which was unable to be expressed, was a key construct in the analysis and it will be returned to throughout the Results section.

### Poverty of Emotional Environments

Within this section of the study, participant's appeared to discuss two broad themes, which were 'low level emotions in family' and 'denial of emotion'. This overarching category, at first sight, may seem to be in conflict with the above category of 'overwhelming emotions'. However, this conflict shows the complexity of the data for this participant group. Interviewees who experienced high levels of emotions often had an emotional backdrop of little or no emotions being expressed/shared. Within the memos, it was reflected that this contrast in the experience of emotions was poten-

tially the most toxic of them all. A good example of this emotional dynamic was shared by participant 3, who witnessed two big angry confrontations, but for the rest of the time, her home life was largely devoid of emotion.

### Lack of Meta-Emotions Skill within the Family

A significant proportion of the participants described their families as either having low level or no emotions while they were growing up. This lack of emotion did not feel like an active process within the family, because it appeared to be almost the default mode for the families of participants. Four participants discussed how they felt that their fathers were totally unable to discuss anything emotional. This seemed to be highly significant to the development of a poor emotional environment for these participants as a child. Given these apparent difficulties with how families managed and expressed their emotion, it was interesting in the interviews that some participants struggled to find the language to describe the emotional environment as they were growing up. For example, participant 3 stated:

P.3: *I don't think that emotions weren't something what we talked about really, they're not, it was just like, it was something we didn't talk about really, we don't talk things through we just, if you've got any problems just keep them to yourself kind of thing.*

In considering the principle theme of this category, participants discussed how their fathers often appeared not to have the skills to express or manage their own emotional states. For example:

P.11: *... I think he has been really sad about like how I'm feeling upset about it, and I don't know, but he kind of never showed it, he's just silent, but I know what that means that he just doesn't know what to say and that he's upset and. . .*

For participant 11, her father was almost without any expression of emotion, while participant 9 discussed quite sadly how her father did not show any emotions, even after the death of one of his friends:

P.9: *a friend that we always sat with at football, he died recently, like quite suddenly, and I just thought, you're not, he didn't seem to show any emotion and I think it was his way of just dealing with it.*

The difficulties were not solely related to fathers, because participant 3 discussed how her mother struggled to express her emotions. It was felt within the analysis that it was significant that participant 3's mother had a number of mental health problems (mainly depression, with some anxiety), and these seemed to impact directly her emotional life and her ability to share her emotions or to facilitate emotional expression within the family. For example:

*P.3: I suppose my mum wasn't like she should be really, she were scared of going out sometimes she wouldn't answer the door, erm, she had various like bad like low points really and there was a lot of upset really.*

Later on in the interview, participant 3 said the following:

*Interviewer: Did that have a bearing on how emotions were expressed at home?*

*P.3: Yeah, probably, cos she kept a lot like bottled up I think and just I think we didn't really understand what was going on because she'd never talk to us about what was happening, it was just a lot of her keeping herself to herself basically I think.*

As discussed above, participant 3's family did not share emotions with each other, and it felt that the environment must have been devoid of emotions. As will be seen later, participant 3 had marked beliefs about the toxicity of certain emotions.

#### *Denial of Emotions*

In contrast to the above category, this category was felt to be an active process whereby families actively suppress the expression of emotions. A decision was made at the analysis stage about which type of poor expression of emotion was due to poor meta-emotional skills versus a denial of emotion. It could be argued that these two categories are overlapping, which may well be true of the data. However, it was felt that there were different emphases between these categories, and it is for these reasons that they have been kept separate and not collapsed together.

Denial of emotion appeared to be relevant to almost all of the participants, but especially relevant to four participants. These interviewees felt that even their own emotions were often denied by family members and this caused a lot of confusion

for them. It was considered within the analysis to split the category between 'denial of emotion within family' and 'family denial of emotion within the self', but the overlap between the two constructs was too high and hence, it was decided to keep them together.

This category really speaks for itself, in that the family effectively denied that they were experiencing any emotions, even though they were clearly present. For example, participant 5 stated very clearly how emotions were denied in the family.

*P.5: this is just my take on it, is that I was brought up in a family where, again it's so clichéd but it's so true, where you didn't have emotions, you didn't have feelings, and if you did, if they were happy emotions, that's quite acceptable, but if you had any er, obscure, feeling about anything that you aired, it would be ignored or dismissed, so there was cheerfulness, happiness, but it was all obviously unreal and superficial, but that's how the family dealt with everything.*

This striking example, taken from the interview transcription, highlights how emotions were actively denied or 'covered up', especially true when traumatic events were going on within the family. For example, participant 5 discusses: 'there was drink in the family, there was violence, there was sexual abuse, and lots of secrets about the older members of the family, my aunt lives next door, which I think she knew what went on because I've had close contact with my aunt and been able to unravel some of the stuff, some of the family dynamics and why, I'm, I'm the way I am . . . '.

As highlighted above, participant 4 had two siblings who expressed a high level of anger, especially around mealtimes. For participant 4, however, her parents responded with anger to her brother, but this use of anger did not resolve the situation, it appeared that it would continue. In the interview, it was discussed how the family did their best to limit the amount of emotion being expressed by negative means, such as ridicule or anger. For example:

*P.4: there was one girl and one boy who were very angry and slammed doors, they'd express those sorts of emotions, erm, so yeah, that was expressed. Erm, but it never led anywhere, never got resolved, and basically it wasn't a good thing, because when I cried I would be laughed at and when the other two used to slam doors and shout,*



*they'd be told off, so you knew that expressing emotions wasn't good, not worth the effort.*

In another part of the interview, participant 4 shared how she learnt that emotions were bad and to be avoided by witnessing and experiencing her parents' reactions:

*P.4: Well it's what I saw, if you express your anger that's bad, you're naughty. If you cry, you're a fool, you're silly, cos everybody else doesn't cry, it's wrong, and best is to be my like my parents, or you could be happy.*

The vast array of experiences that seemed to lead to the same place is demonstrated quite clearly by the experiences of participant 8. She grew up in an overtly emotional environment where it was reported that her family expressed their emotions normally. However, in contrast to this environment, participant 8 described her upbringing as being 'cosseted' because of her physical health difficulties, especially her asthma. This can be seen in the next quote:

*P.8: Erm, I was cosseted a lot as well, erm, so I kind of say, I mean I would imagine that rest of them showed normal emotions, you know it weren't, I mean I'm not saying it were the Waltons, but it weren't abusive or, but as I say I tend to get cosseted cos there was always something up with me.*

However, this cossetting prevented participant 8 from learning about her own emotions and she was actively prevented from expressing any difficult emotion, such as anger:

*P.8: I don't think I had the chance to really express myself properly, cos it were you know, you can't do this and you'll not be able to do that, and what have you, so, I suppose that's been part of me not being able to, know my own emotions really as well.*

Participant 8 went on to explain that she avoided situations that led to arguments, for example, 'I'm not one for confrontation or, so I can't, it takes a lot for me to lose me temper, you know fight.' The interviewer then asked, 'What do you think would have happened, as a child, if you would have become angry?', to which participant 8 responded, 'Erm, more than likely I'd have had an asthma attack as a child'.

### **Summary of Development of Poor Meta-Emotional Skills**

Across this part of the analysis, it was apparent that the participants were often brought up in environments where there was a conflict between too much emotion and environments that were devoid of emotional expression. A number of participants witnessed a high level of anger and this appeared to have a profound effect upon them. For others, there were apparent difficulties for the caregivers in managing their own emotions. Certain interviewees had some initial difficulty finding the language to express their emotions, but all were able to engage in this discussion after a little prompting; at first sight, participants may have been labelled alexithymic, but with careful interviewing, they all were able to discuss their emotions. As shall be seen later in the Results section, all of the participants had self-confessed difficulties in their experience, expression and beliefs about emotions.

## **PERCEPTION AND MANAGEMENT OF EMOTION**

As discussed at the end of the Introduction, the second main aim of this study was to investigate the actual perceptions of emotional states and how the participants managed them within their life. The analysis revealed that the results for this section of the study revolved around four principal categories, namely, 'inhibition of emotion', 'meta-emotional skills', 'facilitation of emotion' and 'use of symptoms to suppress emotions'. In keeping with a grounded theory tradition, each of these categories was made up of subordinate categories. As with the above analysis, all aspects of the interview were used to facilitate the data analysis, including presentation and apparent emotion in the interview (Figure 2).

### **'Inhibition of Emotion'**

This category is made up of two principal emotions being inhibited within the participants, anger and sadness. All the participants discussed how they inhibit either or both anger and/or sadness within their emotions. This can be seen in the following quote, which was a typical answer to the question about expressing emotions.

*Interviewer: how do you express emotions?*

*P.1: I find it hard to talk about them, erm, if I'm upset I do cry a lot (laugh), erm, again, I generally*

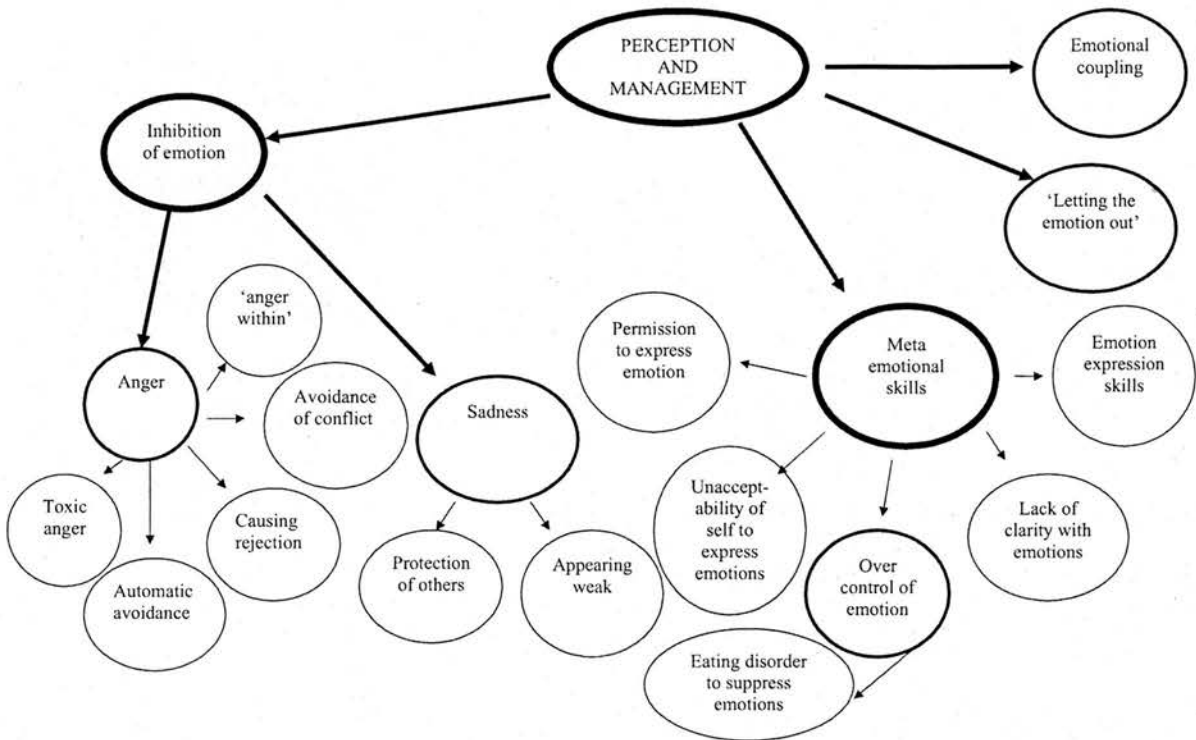


Figure 2. Shows the grounded theory for how people with a diagnosis of anorexia nervosa perceive and manage their emotional states.

*don't express my emotions very much, erm, I keep them to myself a lot.*

#### 'Anger'

This category is made up of five subordinate categories that highlight the views and beliefs participants held about the emotion of anger. With the exception of two subordinate categories, the participants discussed how their inhibition of anger was related to interpersonal factors, such as not being rejected by loved ones, or not engaging in conflict. These theoretical points will be considered in more detail at the end of the section.

'Toxicity of anger'. With the exception of two participants, everyone in this study discussed how the actual emotion seemed dangerous and almost toxic to them and people around them, and it was to be avoided at all costs. In many ways, this category was a core category for the inhibition of anger, because the beliefs about anger appeared to fuel the overarching belief that anger was a toxic emotion. For example, participant 3 stated: 'I don't like being angry at people, because it makes people feel

bad, it feels as if you are responsible. It's like it's transferred. Like it's kind of like you're if you feel bad (anger) then you're like spreading that to other people.' In a later part of the conversation, participant 3 shared her view that having a negative emotion was fundamentally wrong and she was a bad person for having something that could be spread to other people. Significantly, she felt the need to punish herself for having that emotion, by not eating. This is clearly demonstrated in the following quote: participant 3: 'well you kind of pull yourself, keep it quite, don't say anything, cos then you might affect people like, and like you kind of you keep it to yourself, like, you tell yourself off kind of thing, inside your head, and like you don't, I suppose like I don't eat comes into it, like you punish yourself, like if you've done something wrong.' As discussed in the above section, participant 2 witnessed her own mother struggle with depression and it seemed within the analysis that this did play a significant role in the development of the beliefs about the toxicity of sharing emotions, such as anger. A very similar discussion occurred with participant 2, when she stated that, 'I would never knowingly upset another person, because I'm, probably



because I know how equally upset I am, I would avoid upsetting other people because when I'm upset (anger) I find it such a distressing way to be.' Again, it is argued that this demonstrates how the emotion of anger appears to be dangerous and distressing, and the participants have 'no right to share this emotion' with other people.

'Causing rejection'. Four participants discussed how they believed that the expression of anger would ultimately lead to being rejected by those people closest to them. Participant 2 stated: 'part of the reason that I don't er, express anger very often at home with my husband is erm, because I'm afraid that he would leave me'.

As discussed earlier, participant 5 was angry at her parents after they split up, and at one point, she explained that she became angry and this had a consequence for her, as it caused difficulties in her relationship with her father. Participant 5: 'I felt quite angry towards my stepmum at one point, but when I did actually express that once, but then it kind of, like had consequences, like so then I have always like felt a bit worried about doing that again.' This statement from participant 5 was interesting, as it highlighted how her upbringing led her to feel angry (as discussed before), but when she attempted to express it, it caused more problems than it solved. This thereby led to further inhibition of this emotion.

'Automatic avoidance'. Across the data, there was repeated mention of an almost automatic avoidance of emotion, but in particular, anger. For example, participant 8 discusses how she has virtually no recollection of anger being avoided until it has already happened:

... Every time I feel angry or what have you, or life's not being fair to me, that I'm not going to eat, because then, it just clicks in so quick you know that, and then you go down again, and start all over again. . . .

This is an interesting example of how participant 8 automatically blocks her anger emotion and this is directly linked to restriction of food, a point that is covered later in this part of the Results. When considering this theme within the data, the interviewer hypothesized how these processes seem to occur outside of conscious awareness, however, participant 9 discussed how she was aware of her emotion, but did not express it. Indeed, she reported how she changed the emotion into sadness:

I feel angry, like I like everyone to be on time and things like that, so I get angry if they were late or my mum said she was coming and she didn't come, but I wouldn't say anything, just like get a bit sad, and that would be it.

This relation of sadness to anger was felt to be a significant theoretical point, and it was reflected upon within the research memos. The researcher considered whether this relation between sadness and anger could start to account for the high comorbidity between eating disorders and depression. Likewise, the relation between anger and restriction could suggest that there are couplings occurring at an emotional level that fuel the eating disorder.

*Avoidance of conflict.* Through the analysis, there was repeated mention that participants would avoid conflict with other people. Some participants discussed how they did not believe that their view or emotion was legitimate. For example, participant 8 stated: 'I feel sometimes I have trouble er with my opinion being worthy, even though I know it is, but a lot of the time if simply wont because it's erm, it's like I don't want the confrontation, so I just pooh pooh it . . .'. Participant 2 discussed how she would avoid conflict at almost any cost, and, indeed, suppressed her own view/need in order to prevent conflict, 'I would have, erm, I erm, avoid conflict almost at any cost with another person, even if I know that they have been in the wrong and I really don't want to'.

*The anger within.* A significant feature of the analysis that arose from the data was how a significant proportion of the participants kept their anger within themselves, and this caused a significant amount of difficulty for them. Not only was this anger apparently challenging to experience as it was perceived as being toxic (as discussed above), it was also directly related to eating disorder symptoms for a number of participants. This category felt to be another core category within the anger category because it highlighted a direct emotional link between the experience of an emotion and the eating disorder symptoms. For example, participant 2 discussed how she used vomiting to release her anger:

P.2: but certainly if I'm upset or angry or both then it does affect my eating, erm, both because if I'm upset and angry I don't feel that I can eat, physically, but also erm, that yeah I can get my anger out by erm, by not eating but also

*particularly with inducing vomiting, I do that when I'm angry.*

Participant 6 discussed how her eating disorder was a way of managing her anger in a way that did not require it being expressed, and participant 8 described how 'toxic' her anger was to herself, and how it provoked and maintained her anorexic restricting. What was very interesting from participant 8's account was another potential dynamic between anger and the need for control over oneself. It was noted in the research memos that anger was seen as unpredictable and uncontrollable, which also adds to the perceived toxicity of this emotion. For example:

*P.8: if your anorexic, eating disorder, it's, the longer you internalise it (anger) the more you starve, because you get your own power and control from starving yourself.*

Lastly, participant 11 discussed very succinctly that the experience of coming into the hospital for her eating disorder was associated with a high level of anger and then sadness. Again, in the interview memos, the researcher reflected upon how coming into hospital removes the powerful way an eating disorder suppresses emotions, and it seemed for participant 11 that this had led to her experiencing a markedly increased amount of emotion that was being experienced:

*P.11: . . . Well in my first admission, erm, I was just angry, erm, all the time, like and then a few weeks on I just got really upset because I felt like my college, like my A levels and everything were just like slipping away and I was, wasn't going to get anywhere, so I was just upset about that. . . .*

Difficulties with the emotion of anger were one of the most salient categories in the analysis. Participants spoke about how it was the most challenging emotion which was to be avoided at all costs. The interviewer was struck both by its apparent toxicity to the participants, how this was directly related to both restriction and vomiting, and how it appeared it could be coupled with other emotions. Again, it was reflected upon in the memos that although sadness was a challenging emotion, it was less challenging than anger. It was hypothesized that the dynamic of coupling may well be a process in eating disorders where toxic emotions are managed. This hypothesis was returned to throughout the analysis, and it will be discussed further.

### 'Sadness'

This category was the second inhibited emotion that emerged from the analysis. It was a much smaller category, but, nevertheless, it was still deemed to be a significant inhibited emotion for the majority of participants. In terms of it being the principal emotion avoided, two participants spoke quite candidly about how sadness was the toughest emotion to feel and express, while others spoke about sadness being an ever present emotion, but not feeling comfortable to share this emotion with other people. The analysis of sadness would be incomplete if it did not include some discussion of depression. Almost all of the participants discussed how they had struggled with low mood, both prior to and during their eating disorder. For example, participant 11 stated that she felt like she had been depressed for a long time: '*I think, sadness was important for me because I'd realised that it's kind of like because I was being sad well probably depressed for so long and just by being like this and not being comfortable with myself that being what I feel crappy and sad . . .*'. However, the majority of participants were well aware of how restriction played a role in the lowering of mood, although most participants were never really sure whether the low mood came first or prior to the eating disorder. For example, participant 6 discussed: '*. . . I was never sure whether it started like with being depressed and then, but I didn't, I think I got, I tend to get more depressed when I cut back on my eating because I think I actually lose more weight, you do, and I had to be on anti-depressant, whenever I come off them, I've kind of gone downhill again . . .*'. It does appear that participant 6 was postulating that the antidepressants kept her mood stable, which in turn, protected her against her eating disorder. This dynamic of depression predating the anorexia certainly came through the data analysis, but it was a very 'cloudy' dynamic. In many ways, the complexity of the relation between depression and anorexia nervosa was demonstrated, as the data suggest that depression is both a precipitating and consequence of the anorexia nervosa. In terms of expressing sadness, this category broke down into two more subcategories, namely, 'protection of others' and 'appearing weak'.

*Protection of others.* This category related to the points raised by the participants about how they felt that sadness was a difficult emotion for others, especially loved ones, to see. Participant 4 discussed how she felt shame and guilt for how her emotions would affect her own family. Participant 4: '*I'm frightened erm my husband, that he'll, well just sort of*

realises how sad I am, and it'll think I've made him sad as well. And the children seeing how sad I am, would ruin their childhood . . .'. This theme was present in a number of participants' responses.

'Appearing weak/shame at expressing sadness'. This category was also felt to be tinged with shame. Participant 10 openly discussed how she viewed sadness and any expression of sadness as a sign of weakness. As was discussed previously, participant 10 grew up with a violent stepfather and she also cared for her mother while she was in the terminal stages of cancer. These seem to have a significant impact upon her beliefs about sadness being a sign of weakness, as the following quote implies:

P.10: *I just see it, if I start crying it's a sign of weakness and something that I don't like doing really.*

Participant 9 appeared to share a behavioural sign of shame of expressing sadness, as she discussed how she would hide herself away if she cried:

P.9: *Sadness, if it was really bad then I'd probably cry but, then I'd probably go away from people.*

This example of shame was also discussed by participant 1, '*... if I'm upset I'm crying, but I try and, I do that on my own, I don't really show it very much, unless I'm really upset ...*'. Participant 8 mentioned how context was often very important in allowing her to become sad and cry. She discussed an example of where crying is regarded as the norm: this allowed participant 9 to express her emotions in a non-interpersonal manner, and therefore not be so wary of allowing her emotions to be expressed.

P.8: *... if I feel sad about something or if I'm watching a weepy film, or something daft like that, at least you know I can let the tears fall now. ...*

As with the inhibited anger section above, it was striking within the analysis that there was a large amount of sadness, under the guise of depression (although this was not confirmed by clinical diagnostic interview). But this sadness was a largely inhibited emotion, as it was regarded as an emotion of weakness and shame, and hence, it could be portrayed as a trapped emotion. This, however,

did not appear to be as severe as for anger, as participants often discussed ways (whether it was intentional or not) of letting their sadness out. They spoke of being tearful on their own, or finding situations where they could cry without feeling shame or weakness.

### Meta-Emotional Skills

This overarching category relates to participants' sense of skill in managing their own emotional states. As discussed already, anger and sadness were the most challenging emotions for participants, and they often struggled to know how to manage them skilfully. Related to this point was how a number of participants did not feel that they had permission to express certain emotional states, which appeared to be related to the notion of whether their sense of self was acceptable as an emotional being. Permission to express their emotions was also related to whether they had somebody with whom they felt able to express their emotional states. Another category that emerged from the analysis on meta-emotional skills was on the actual skills to express emotions, as there was often confusion about the emotions they were feeling and apparent lack of knowledge in the best way to share emotions. Given the historical factors for the participants, it was not surprising that there was this lack of meta-emotional knowledge and skill. The final category that comes under the meta-emotional skills was one of emotional coupling. This was briefly discussed above, and it became apparent in the interviews that anger and disgust appeared to be connected in some way. This will be discussed more fully below.

### Permission to Express Emotions

The permission to express emotions appeared to be driven by two factors, one that centred upon the acceptability of the self as an emotional being, while another focused on having a person with whom the participant could be emotional. Only a few participants felt that they had someone with whom they could discuss their feelings with and, even in this situation, were still quite guarded. For participant 10, the issue of having a confidant to speak to about one's feelings was highly significant. Within the interview, she spoke of only being able to speak to her mother about how she was feeling and, as discussed above, then lost her mother, which triggered her eating disorder.



Other participants discussed how they needed other people to indicate that they had permission to express their emotions. For example, in the research memos, it was noted that participant 3 appeared to deny herself from being an emotional person and that other people needed to give her permission to share her emotions. This can be seen quite clearly in the following quote:

*P.3: I suppose I'm kind of like, I have strong views sometimes of that I shouldn't be emotional, but there's times when I'm annoyed when I think oh I shouldn't say that, I shouldn't be expressing my opinion, and I suppose sometimes, but most, erm, I feel like I shouldn't be like telling people what I feel, cos they don't want to know and they have not given me permission to share my emotions with them. . . .*

#### *Unacceptability of Self as an Emotional Being*

Participants both discussed and presented as individuals that were often without emotion, especially at the beginning of the interview. When this was explored further, interviewees described feeling that it was wrong to be an 'emotional person' and to share how they were feeling with other people. The most striking example of this was offered by participant 5:

*P.5: . . . I suppose to a certain extent, and erm, this is about me, I am not acceptable, if I have any kind of emotion, let's not share it with anyone. . . .*

#### *Emotion Expression Skills*

A lack of emotion skills seemed to be related to the lack of modelling of good emotion skills while growing up. Furthermore, the denial of emotion while growing up also appeared to relate to the confusion that often surrounded the experience of their emotions. This overarching category was made up of three categories, which were: emotional confusion, overcontrol of emotions and the use of eating disorder to express emotions.

#### *Lack of Clarity in Knowing One's Own Emotions*

In an interesting contradiction to the above on often frank and illuminating discussion on why sadness and anger were inhibited, participants often discussed how, in the past, they lacked clarity in what emotions they were feeling. For example:

*P.8: that you can't do this and you'll not be able to do that, and what have you, so, I suppose that's*

*been part of me not being able to, know my own emotions really as well.*

Participant 4, as discussed earlier, grew up within a loving, responsive family, but sadly, she had two significant traumas in her teenage life. She described how she suppressed her emotions because of physical health problems. At no time in the interview did she give the impression of being unable to identify her emotions and, indeed, spoke of her anger and sorrow at certain events in her life. Through the analysis, the interviewer was left with a sense of how participants were often unsure about their emotional states, but this was not the same as not knowing their emotional states. During data collection, the interviewer was careful in assisting participants to feel safe in their discussion, and this seemed to assist in their opening up about their emotions.

*P.4: I don't know that I feel scared, or that I'm frightened sometimes, I just know I'm really stressed, or I'm really angry about something someone's done, but it doesn't occur to me at the time that behind all that is something really scared me. . . .*

The influences from growing up were hypothesized to have led to a lack of clarity about her emotions. However, even here, within the discussion, participant 4 was able to pinpoint emotions within her life, such as feeling anger at mealtimes because of her brother's behaviour.

#### *Overcontrol of Emotions*

As has been discussed on a number of occasions, all the participants shared how they 'over controlled' or suppressed their emotions, which they did using a range of strategies. The two principal strategies were the actual eating disorders and other, more behavioural techniques, such as 'masking', 'hiding away' and 'using other situations to facilitate emotional expression'.

A number of participants discussed how they would mask their emotions to stop them from being expressed/shown. Again, it was interesting how, upon reflection, participants spoke of how they did not have emotions, but then came to realize that they did, but just did not express them. For example, participant 11 stated:

*I suppose I was just sort of didn't have any emotions about, well I did, but I never showed them, never, I kind of masked it all and brushed it under the carpet. . . .*

Another common technique was to hide away from other people when feeling negative emotions. This isolation technique was discussed by participant 1:

*if I'm upset I'm crying, but I try and, I do that on my own, I don't really show it very much, unless I'm really upset, erm, but I don't talk about my emotions very much, I find that very difficult to do.*

Likewise, participant 9 discussed how she would hide herself away when upset.

*P.9: If I was upset, then I'd just go up to my room and just be in my room on my own, I wouldn't talk to anybody.*

Further evidence of participants acknowledging their emotions and trying to find ways of expressing them was revealed by participant 8. She discussed how she was aware of her own emotional state, but was not able to share it with anyone. Therefore, she chose to use a more 'acceptable' means of expressing her emotions.

*P.8: if I feel sad about something I'll watch a weepy film, or something daft like that, at least you know I can let the tears fall now.*

*Eating disorder symptoms used to suppress emotions.* The most striking example of the over-control of emotions came when the relationship between emotions and eating disorder symptoms was discussed. As has already been touched on already, participants were aware of this relationship to varying degrees, and were especially aware of how weight loss appeared to rob them of emotional experience. Within the memos, this feature of the results was reflected upon, and it was considered that this participant group was in a prime location to reflect upon these processes. They were still very close or in the midst of struggling with their eating disorder, but were sufficiently nourished not to have the blanket suppression effect of restricting food intake. It was the opinion of the researcher that this gave an important insight into the relationship between the symptoms and emotional regulation.

This total suppression of emotion, through weight loss and food restraint, was discussed by a number of participants, as the following quote illustrates:

*P.9: I feel really kind of like felt numb like some of the time, erm, like you're just focused on like food so nothing else really matters so it just feels you're like, so I didn't really feel anything.*

This type of emotional suppression/overcontrol was associated with a restricting subtype of anorexia, and it appeared to be a primary avoider of emotion. The interviewer was aware of the literature that discussed how restriction plays this role, and it seemed to fit with the data being discussed by interviewees. However, unlike the previous literature, participants helped to develop a new narrative about this primary avoidance of emotion, in that it appeared to be driven by a desire to inhibit anger and/or sadness (as discussed previously). For example, participant 2 discussed how restriction was induced by anger, but if there was any further anger, this was 'removed' by vomiting.

*P.2: ... I'm upset or angry or both then it does affect my eating, erm, both because if I'm angry and upset, I don't feel that I can eat, physically, but also erm, that yeah I can get my anger out by erm, by not eating but also with inducing vomiting, I do do that when I'm angry. ...*

This participant shared how, when there was too much anger, she was able to remove it by vomiting. This 'secondary avoidance' of anger was echoed by many of the participants and it appeared to be a common emotion regulation/suppression strategy, for people who vomited, when there was 'too much emotion'. As alluded to above, it was evident from the analysis that people who vomited often came from backgrounds that fluctuated between episodes of anger and lack of emotion.

The distinction between the primary and secondary avoidance of emotion (as discussed above) can be clearly seen by the following quote from participant 8. This participant was able to reflect upon the different narratives about emotion avoidance that often occurred for herself and her fellow clients in the group therapies at the eating disorders unit.

*P.8: ... it's like someone who's in the group who's bulimic, you know when she gets annoyed or frustrated she wants to binge and it works the same if your anorexic, eating disorder, it's, the longer you internalise it the more you starve, because you get your own power from bulimia, it's a case of the same thing but the opposite so that they binge and not starve. ...*

With regards to the other emotions, sadness, under the guise of depression, was another emotion 'managed' by eating disorder symptoms. Almost all of the participants discussed how depression and disordered eating were linked in a cause and effect way. However, the analysis also revealed how the participants often used restriction to feel better about themselves, and this appeared to be associated to a lack of disgust towards the body (to be explored later) and pride at the low body weight. Therefore, restriction appeared to be related both to a search for feeling better about one's body and having pride in 'successful' weight loss. This is shown in the following quote.

P.11: . . . all you can think about is food, so, yeah, sadness is like the big thing, when I was sad it's got to be restriction . . . .

Participant 4 discussed how she used restriction to feel better about herself:

P.4: It's more hopeless, more depressed. I used to get very high, well when I was dieting, eating on a diet, I used to feel a bit positive about life. . . .

### Emotional Coupling

Although the title of this category was a researcher-constructed title, the participants often alluded to managing their emotional states by using other, more acceptable, emotions to suppress or inhibit their emotions. Although as much as possible was grounded in the data, it was inevitable that some inference was taken from the data and how people presented in the actual research interviews. This process will be as transparent as possible so that the reader will be able to follow and understand the analysis for this section.

As has been discussed above, anger and sadness appeared to be directly related to the use of eating disorder symptoms to either avoid and/or suppress the particular emotion. Related across these discussions, either at the time or later in the interview, were how they disliked their body and they had a strong desire to lose weight. It became apparent in the interviews that this process almost seemed to happen in an automatic way, where the participant was becoming angry and then would resort to restriction and/or bingeing/purging. It is difficult to give quotes to support this process, but participant 9 appeared to demonstrate this automatic coupling within the dynamic of the interview:

Interviewer 1: *If something makes you angry for example, was that something you could express?*

P.9: *Erm, I could on somethings, yeah, erm, yeah I could get angry but erm, not about like, I don't know, I could get angry at anything but then any time anyone commented on like my appearance or something, I was just a bit upset and I suppose I was, not angry, but annoyed that I looked like I did in a way, and I wished I could just change how I looked completely.*

The context for this question was discussing anger in general and it was not related to her physical appearance. As can be seen in the above quote, it was striking that participant 9 quickly turned the conversation to her physical appearance, how angry she felt about herself and how this seemed to be linked to pathologically high body dissatisfaction. Within the memos, it was felt that this participant was alluding to how anger may well be coupled with disgust, and this would explain *in vivo* coupling that was apparent in the interview.

Other examples of emotional coupling were between anger and sadness. A number of participants discussed how, when they felt angry, this was turned into sadness so that they cry. Within the memos, the notion of where this anger was left was discussed, but this was not answered within the data for the study:

P.9: . . . *If get angry I wouldn't say anything, just like get sad, and that would be it. . . .*

Also, participant 1 said: *'Anger, I don't show that at all. I show that by being upset or crying or . . . , being moody. . . .*

It is hoped that the presentation of data in this category provides a feel for the interviews, where participants gave evidence, both in their answers to questions and in the dynamic of the interview, that they were coupling emotions.

### 'Letting the Emotions Out'

Over the interviews and through the analysis, it became apparent that certain emotions were regarded as being acceptable to be 'let out' or not suppressed. Within the spirit of this study, questions were asked about all the basic emotions, including disgust and fear. When asking participants about their perception and experience of disgust, it became apparent that there was some confusion in the use of the term disgust, as it is a



term often used in a colloquial way to state anger at an object or person (e.g., 'I am disgusted that s/he acted in that way'). Therefore, within this study, the interviewer defined the emotion disgust within the interview by asking about disgust/repulsion as an emotion. This did seem to clarify the discussion in the interviews. Within this section of the results, the principal emotion that participants were able to express was disgust, towards themselves and their bodies. Participants discussed how they 'hated their bodies' and this often made them feel disgusted, as the following quotes highlight:

P.11: . . . I suppose, that's part of it like, I'm just disgusted with my body before, you know, before I started losing weight, like hated my bum, my legs were just like horrible, I hated em, and like if I could have like chopped them off and had someone else's I would have done, and erm, I hated how, I hated my face, I hated how, I just hated how I looked all around, I just you know, I just, yep, just hated myself, there was nothing that I really liked, the only thing I had that I liked were my arms and the top, and from like there to there, that was the only part of my body that I liked, the rest of me I just hated. . . .

P.2: . . . when I weighed 10 stone, when I didn't like how I looked, I suppose I was perhaps disgusted really because I never had weighed so much, it wasn't erm, wasn't just how my body shape looked, but that I had allowed myself in the first place to get to that way. I wasn't fearful of it at all, and I wasn't angry about it, and I wasn't sad about it, but yeah I suppose having said that I was very disgusted towards my body. . . .

Participant 2 was able to go through the emotions and be sure that she was feeling disgusted with her body, and this was acceptable. Within the analysis and the associated memos, it reflected upon this elevated emotion of disgust towards the body, and how this fits with the functional view of the emotion of disgust. According to the literature (e.g., Oatley & Johnson-Laird, 1987), disgust is regarded as the emotion that creates a psychological (and physical) distance between the self and the object of disgust. It became apparent in the interviews that the emotion of disgust was often an important driver for avoiding food and for dieting (as with participants 2 and 11). It was hypothesized that this was the actual process of creating distance from the object(s) of disgust. Participant 9 discussed how she felt 'weak' when this distance was traversed (i.e., she ate some food):

Interviewer: *What about the emotion of disgust/repulsion?*

P.9: *I felt it with myself sometimes. . . .*

Interviewer: *How do you mean?*

P.9: . . . *Just like if I'd eaten something that I didn't intend to eat or something, felt like I was weak and disgusting. . . .*

In the interview, the emotion of fear was specifically asked about, as it has been regarded as an important emotion for the eating disorders. All of the participants discussed having fear in their lives, and for some, there was a clear developmental pathway for having increased fear in their lives. For example, participant 4 discussed how her past with a violent ex-husband had left her feeling very fearful.

P.4: . . . *my husband broke my nose and put me in hospital and I think from there it really just went downhill. I was already frightened of him anyway because he beat me, but now I was petrified. . . .*

However, most of the participants described how fear had developed in their lives because of the eating disorder. They mentioned how they had a fear of becoming fat, or of food because it makes them fat. It was reflected upon in the memos, during conversations with colleagues and in the interviews that participants were actually fearful of having disgust towards food. This process can be seen in the following quotes.

P.1: . . . *fear, yeah, I feel that a lot, yeah. Especially this illness, there's a lot of fear with it.*

P.6: . . . *like say like fear and anxiety towards food, it kind of comes with it, I wouldn't say that I was like before. . . .*

P.9: . . . *Yeah, probably, a lot of it's to do with food. If I wasn't scared of eating and things then I wouldn't have started like fearing gaining weight and. . . .*

### **Summary of Perception and Management of Emotions within Anorexia Nervosa**

Across this section of the results, participants shared how they had a number of marked difficulties with certain emotional states, namely, anger and sadness. There were a number of beliefs that led to these difficulties and they appeared to result

in the interviewees being very guarded in their expression of these emotions. Indeed, the analysis revealed that this avoidance of emotions almost happened on an automatic basis, with the person realizing that the emotion had been experienced and then avoided once the eating disorder behaviour had 'kicked in'. The analysis also revealed a whole host of poor meta-emotional skills that prevented a healthy relationship with their own emotions.

## DISCUSSION

Data from this study on the perception and management of emotions appear to offer significant insights into understanding of emotional processing within anorexia nervosa. One of the most significant factors that came out of the analysis was that the participants were able to talk, discuss and reflect on their own relationship with their emotions. Given that the research has demonstrated alexithymic tendencies in people with eating disorders, this study appears to challenge the notion of monolithic alexithymic difficulties in this client group. Related to this point is how there has been a lack of a basic emotions perspective in the research and, in particular, within the theoretical understanding of anorexia nervosa. This study's findings demonstrated evidence of different relationships with each of the basic emotions within anorexia nervosa. Again, this finding is in keeping with Waller et al. (2003) and Geller et al. (2000), but this study's data highlight some of the particular difficulties attached to certain emotional states. The emotions of anger and, to a lesser degree, sadness were discussed as being toxic, shaming and were inhibited by the participants. Anger seemed to be particularly toxic, and it appeared to play a trigger role in the rise of eating disorder symptoms. However, there were differences in the beliefs about these emotions and why they should not be expressed. Anger was regarded as being 'toxic' and 'dangerous', and harmful to both the participant and other people, if it was allowed to be expressed. For sadness, the predominant belief was one of 'weakness'. The analysis highlighted how people with anorexia often did not regard themselves as entitled to be an 'emotional' human being, or that being 'emotional' would lead to rejection from significant others. This finding fits with the perspective of Geller et al. (2000), who argued that people with anorexia suppressed anger to protect interpersonal relationships. The analysis also revealed

how certain emotions were almost automatically suppressed by the eating disorder, providing evidence of a possible link between certain emotional states and eating disorder symptoms that works outside conscious cognition. An interesting aspect of the analysis was the category of coupled emotions. It seemed that for some participants, there was a relationship between anger and disgust, especially body disgust. Although data were collected and initially analysed before any significant related readings and involvement in other similar research, this study's findings are very much in keeping with a recent paper that potentially demonstrated a coupling effect between anger and disgust in bulimia nervosa (Fox & Harrison, 2008). It was argued within this paper that disgust towards the self is a much less toxic emotion, and, therefore, it was used to suppress the more ego-dystonic emotion of anger. Furthermore, this study highlighted how there appeared to be a significant amount of anger within the participants, and this was related to their own developmental histories. Again, this was in keeping with the findings of Fox and Harrison (2008), who found that participants with bulimic symptoms experienced significantly higher levels of anger than controls, post-anger induction. This study's findings suggest that this 'anger within' may well be present for anorexia nervosa as well. Indeed, many of the participants discussed how they would engage in their eating disorder behaviour when they felt anger.

The notion of certain emotions feeling toxic, dangerous and being ego-dystonic is in line with contemporary accounts within the emotions literature. The SPAARS model (Power & Dalgleish, 2008) (referred to in the Introduction) also discusses how each of the basic emotions may develop in a modularized manner (akin to many other cognitive constructs), and this development occurs in relation to environmental influences. According to the theory, when children experience events and interactions that lead them to view their emotions as being wrong, they split off and become ego-dystonic. Through this process, their emotions become alien and very frightening. This theory seems to have been supported by this study because participants were able to identify their emotions, but were scared of expressing anger and sadness (for the reasons identified above). It is also noteworthy that the data strongly revealed how their eating disorder was used to suppress emotions, and it became apparent in the analysis that the difficulties with feeling and identifying emotion were often experienced when people were at low

weight. This finding led to the hypothesis that alexithymia may be due to a more compromised cognitive functioning than an implicit difficulty with identifying emotions in anorexia nervosa. This finding is in keeping with the innovative study by Serpell and colleagues (Serpell, Treasure, Teasdale, & Sullivan, 1999), where she analysed 'friend or foe letters' from people with anorexia nervosa. One of the findings that came out of this study was how restriction could suppress painful emotions (a positive of anorexia nervosa), but it went too far because it suppressed everything and left the person without any feeling (a con of the anorexia nervosa).

When the emotion of disgust was investigated across the analysis, the data suggested that it was very salient for this group of participants. The ferocity of interviewees' disgust was startling, and participants were able to express this emotion quite freely in the actual interviews. The emotion of disgust was linked to body dissatisfaction, with fear coming in as a secondary emotion. The emotion of fear was clearly discussed as a product of the eating disorder, and this did seem to be related to the fear of being disgusted about themselves, their bodies and of food. Davey, Bickerstaffe and MacDonald (2006) found evidence for a facilitatory relationship between disgust and fear/anxiety, using an experimental methodology. They found that induced disgust led to an increase in negative interpretational bias, which maintained levels of anxiety in their participants, and these authors argued that this provides evidence for the causal role of disgust in anxiety psychopathologies. This confusion between fear/anxiety and disgust has the potential to be an important theoretical point in the understanding of eating disorders, because the long reported 'fear of food' or the 'fear of becoming fat' may actually be disgust reactions, and hence, may account for the high co-morbidity between anxiety and eating disorders, and this perspective would certainly fit with this study's data. Continuing within a co-morbidity perspective, Overton, Markland, Taggart and Bagshaw (2008), and Power and Tarsia (2007) found that disgust, in particular, self-disgust, played a significant role in depression. In light of this study's data, disgust may play a significant role in the co-morbidity between eating disorders, in particular, body dissatisfaction, and depression.

In the first section of the Results, the analysis revealed that participants felt that they were often brought up in an environment (home and/or school) that produced overwhelming emotion. For

the participants that grew up where anger was the most reported salient emotion, there appeared to be much more difficulty with emotions, in particular, anger. These participants tended to binge and vomit much more than the other participants. Theoretically, it is significant that participant 3 witnessed two angry confrontations in her family, but spoke much more of a non-emotional environment at home while she was growing up. This gave the researcher the sense that there was almost a dose effect, in that as overt levels of anger increase, so does the need for more extreme measures to cope with their emotions (which were postulated to be anger). Participant 10's apparent utility of anger to facilitate care on the unit was also interesting, as she seemed to be a very angry young woman (a view echoed by staff on the unit). In many ways, this anger seemed to be her way to protect against feelings of sadness and fear. However, in saying this, it was striking that she appeared to 'contain' a lot of anger about her stepfather, and it was hypothesized that she was also angry about the loss of her mum. Her mother was her main confidant and she spoke of her being the only person with whom she could share her emotions. Again, with this much suppressed emotion, it is highly significant that she started her bingeing-vomiting-restriction shortly after her mother died. These theoretical points do appear to allow for the further development of the model proposed by Waller and colleagues (e.g., Waller et al., 2007), where they discuss how restrictive eating is a primary avoider of emotion, while bingeing and vomiting is seen as a secondary avoider of emotion. According to this study's data, the key emotion appears to be anger that moves people between these two strategies.

The other main stray of overwhelming emotion was how events seemed to generate a significant amount of emotion for participants, which was not expressed or managed at the time. The key feature of this part of the analysis was how this emotion was 'too much' and, perhaps, developmentally inappropriate, as it was hypothesized within the memos that the participants were young when faced with challenging emotions. The most striking example of this was shared by participants 1 and 5 who were moved around a number of times as a young child and felt 'resentful'. As discussed above, it was felt to be significant, throughout the analysis, that this anger was maintained in the participants once they had reached adulthood.

The other main theoretical point that came out of the data was how the early environment seemed to be largely devoid of emotions. Even within



families where there was a high level of anger, the emotional backdrop was often emotionless. Most participants discussed how family members had poor meta-emotional skills, and it was hypothesized that these influences would have had a profound impact upon the development of these skills in the participants as children. Likewise, the use of active strategies to deny the experience of an emotion appears to have been particularly toxic for the developing child, as their emotions have not been validated. Therefore, it seemed that participants, while they were young, had a vast array of difficult and challenging experiences that left them with too much emotion (particularly anger and sadness), but were not taught the skills to manage and express these emotions. This study's findings on poor level of meta-emotional skill add further evidence to the literature that has discussed how a caregiver's empathy appears to be related to early attunement to emotional states in the self and others (e.g., Eisenberg et al., 1998, 2001; Valiente et al., 2004), and how emotional inhibition in childhood mediates the relationship between childhood emotional invalidation (as per Linehan, 1993) and acute psychological distress in adulthood (Krause et al., 2003). This development of emotional awareness through interactions with caregivers has been discussed fully in a number of classical theories, ranging from psychodynamic (e.g., Klein, 1952), modelling (e.g., Kugiumutzakis, Kokkinaki, Makrodimitraki, & Vitalaki, 2005) and attachment theory (e.g., Bowlby, 1969), and it is beyond the current scope of this paper to consider these large theories in detail. However, this study's findings are consistent with DBT's perspective on invalidating environments (Linehan, 2003) and the SPAARS idea of ego-dystonic emotion (Power & Dalgleish, 2008).

There are a number of potential limitations of this study that need to be highlighted. The main one concerns the participants. These individuals were recruited from one site and this may have led to a bias in the type of data collected. However, this site was deliberately chosen because it was the region's eating disorder unit and, hence, accepted people with severe eating disorders. It was felt that the findings from such a group of participants would have *theoretical* significance for the consideration of anorexia nervosa in general. As outlined above, there were a number of women who took part in this study who were quite a bit older than the expected age (e.g., in their 40s). This may have had a bearing on the results, but it was felt in the design that having an everyday clinical group was

important. Also, having a variety of participants at different stages of their 'illness' allowed for a fuller investigation of emotions in anorexia nervosa. Likewise, it could be argued that recruiting only 11 participants would have comprised the study's ability to achieve data saturation. This may be the case, and the recruitment of a few more participants may have extended the findings a little further. However, in keeping with Dey's (1999) point, qualitative studies rarely use exhaustive coding, and categories are *suggested* by data, rather than saturated. Dey proposes that qualitative studies should seek to have theoretical sufficiency, and this study certainly felt like it had sufficient data to allow for the development of a grounded theory. Finally, it could be argued that the researcher's clinical experience may have unduly influenced analysis of the data. It is true that the researcher used his knowledge within the analysis process, but the analysis was well grounded in the data. It is the contention of the researcher that this experience allowed for a much fuller analysis than otherwise could have been achieved, a point raised by Glaser and Strauss (1967), who argued that the researcher must have a perspective to analyse the data.

In conclusion, this study has examined the perception of the basic emotions within participants with anorexia nervosa. It has also looked at the socio-emotional environments within which the participants grew up. Anger and, to a lesser degree, sadness were identified as being problematic for participants, with both being connected to the actual eating disorder symptoms. Anger seemed to be a key emotion that appeared to act in a dose-like manner, in that the higher the levels of anger, the more likely there would be bingeing and vomiting. Disgust was identified as another key emotion and participants discussed a high level of disgust towards their bodies. Interestingly, fear was put as secondary to the eating disorder, and participants felt that fear and anxiety were a consequence of the eating disorder. Early history was marked with a poverty of emotion, while some participants experienced episodes of overwhelming emotion.

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# Eating Disorders and Multi-Level Models of Emotion: An Integrated Model

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This paper examines the relationship between emotions, depression and eating disorders. Initially, a review is undertaken of the current state of the research and clinical literature with regard to emotional factors in eating disorders. This literature is then integrated within a version of the multi-level model of emotion proposed by Power and Dalgleish. The aim of this paper is to incorporate a basic emotions, multi-modal perspective into developing a new emotions-based model that offers a theoretical understanding of psychological mechanisms in eating disorders. Within the new Schematic Propositional Analogical Associative Representation System model applied to eating disorders, it is argued that the emotions of anger and disgust are of importance in eating disorders and that the eating disorder itself operates as an inhibitor of emotions within the self. It is hoped that the development of a multi-levelled model of eating disorders will allow for the construction of number of specific testable hypotheses that are relevant to future research into the psychological treatment and understanding of eating disorders. Copyright © 2009 John Wiley & Sons, Ltd.

## Key Practitioner Message:

- The central importance of emotions in eating disorders, and these emotions can operate over a number of cognitive levels of processing.

**Keywords:** Eating Disorders, Cognitive Therapy, Schemas, Models of Emotion, Anger, Disgust

## INTRODUCTION

Cognitive theory of eating disorders, particularly anorexia nervosa (AN) and bulimia nervosa (BN), has shown significant developments in the last 10

years. The aim of this current paper is to review the theoretical developments that have taken place in the study of eating disorders. In agreement with Cooper (2005), this review will also look at the adequacy of the theoretical underpinnings of these approaches in eating disorders and how they dovetail with theory and research from more generic areas of clinical psychology. As will be seen across this paper, theory and research into eating disorders have largely taken a cognitive–affective route in the last 5–6 years, and this review will consider

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the most significant aspects of this literature base. In keeping with the above point, this paper will present a new cognitive-affective model of eating disorders that is based on both the current state of evidence in the eating disorder field and on recent theoretical developments in the emotions literature. In order to offer a comprehensive account of the emotional processes in eating disorders, this paper will utilize a basic emotions approach where the research for the five basic emotions is considered (i.e., anger, disgust, fear, sadness and happiness). As will be discussed later in this paper, it is acknowledged that there is debate about this number of basic emotions (e.g., Ekman, 1992a), but there is a consensus forming in the literature that states that these are the key five basic emotions for human beings (e.g., Power and Dalgleish, 1997, 2008). Implications for the future, including clinical practice and research, will also be discussed.

Although somewhat controversial, this paper, in keeping with recent developments in the eating disorders field, will adopt a transdiagnostic perspective (e.g., Fairburn, Cooper, & Shafran, 2003). According to Fairburn, the core elements of eating disorders are essentially the same (e.g., across AN, BN and eating disorders not otherwise specified [EDNOS]), because they both over-evaluate shape, weight and the control of eating. There is a striking similarity in the expression of similar attitudes and behaviour across both disorders; thus, according to Fairburn, '... patients with anorexia nervosa restrict their food intake in the same rigid and extreme way as patients with bulimia nervosa, and they too may vomit, misuse laxatives or diuretics, and over-exercise' (Fairburn et al., 2003, p. 519). In both disorders, there is marked body dissatisfaction and this plays a powerful maintaining role for both disorders (e.g., marked fear of being fat). Research has also demonstrated that binge eating does not distinguish the two disorders because there is a subgroup of patients with AN who also binge eat (with or without compensatory purging) (e.g., Casper, Eckert, Halmi, Goldberg, & Davis, 1980; Garfinkel, Moldofsky, & Garner, 1980). Fairburn and Harrison (2003) argue that the most compelling evidence for a transdiagnostic account of eating disorders comes from the longitudinal study of eating disorder diagnoses. Within their paper, they present evidence of how individuals will frequently move between the various eating disorder diagnoses. For example, Sullivan, Bulik, Carter, Gendell and Joyce (1996) demonstrated that in about a quarter of cases of BN, there have been episodes of AN. In a recent prospective study,

Milos and colleagues (Milos, Spindler, Schnyder, & Fairburn, 2005) found that stability in eating disorder diagnoses was low, with just a third of participants retaining their diagnoses over a 30-month period. Interestingly, these results were not due to remission rates, because remission was low for all the participants, so consequently, movement between the diagnoses happened in over half the cases in their study. This finding has been supported by a recent study that also demonstrated considerable diagnostic flux (Fichter & Quadflieg, 2007). In a recent conference paper, Fairburn (2007) makes the point that almost half of people seeking help with eating difficulties do not fulfil criteria for either BN or AN and are often given the diagnosis of EDNOS (Millar, 1998; Ricca et al., 2001). It is proposed that this group of patients share many of the characteristics of both BN and AN, but are not accounted for by the current diagnostic specific models. Likewise, a mixture of both bulimic and anorexic symptoms for almost half of presenting patients suggests that a transdiagnostic approach would be the best way to formulate and understand eating disorders (in keeping with the above discussion).

Therefore, the following discussion will not distinguish between the specific eating disorder diagnoses, but concentrate on how certain eating disorder symptoms act as affect regulation strategies. However, prior to the review of the literature, as it pertains to the role of basic emotions in eating disorders, a review will be undertaken of the relation of depression to eating disorders. It was felt that this was important as many of theories of eating disorders, either implicitly or explicitly, consider negative emotion and by reviewing the literature, this review will be able to comment on how well contemporary eating disorder theories account for this co-morbid relationship. It is also acknowledged that anxiety is often a co-morbid condition with eating disorders, however, this relation will be critically examined in the subsection on fear in eating disorders, later on in the paper. Following on from the review of depression, this paper will consider the new wave of theories and models of eating disorders, and developmental factors in eating disorders. Finally, the review of emotions and their relationship with eating disorders will be reviewed around the five emotions (sadness, happiness, anger, disgust and fear), with sadness being the first to be considered.

The search strategy within this review used all the main academic search engines, such as Medline and PsychInfo, and it used all the eating disorder

ders terms (e.g., AN and BN) and references to all the main emotions (e.g., anger, sadness etc.). As will be seen over the paper, time was also spent researching current cognitive models and main developmental factors in eating disorders. Finally, strategies were also used to search for research and theory pertaining to emotional functioning. Due to the size of this search strategy, a decision was made not to consider other 'co-morbid' disorders that often co-occur with eating disorders (e.g., obsessive-compulsive disorder, substance misuse), because these are not direct affective disorders, and hence, beyond the scope of this current paper.

## DEPRESSION AND EATING DISORDERS

Depression has long been documented as a significant co-morbid condition of eating disorders among females (Lewinsohn, Striegel-Moore, & Seeley, 2000; Santos, Richards, & Bleckley, 2007; Zaider, Johnson, & Cockell, 2000). In one study, Blinder, Cumella and Sanathara (2006) found that 46% of female inpatients with BN also met criteria for concurrent major depressive disorder. A focus within the literature has been upon the debate as to which disorder predates the other. One line of research has indicated that starvation may play a significant part in the development of depression within AN. Altemus and Gold (1992) demonstrated that starvation and/or protein malnutrition can lead to elevations in corticotrophin-releasing hormone, which may play a role in depression. A number of other studies have demonstrated that calorie-controlled diets lead to a reduction in 5-HT functioning, which may contribute to depressed mood (Cowen, Anderson, & Fairburn, 1992). In the seminal work by Keys, Brozek, Henschel, Mickelsen and Taylor (1950), it was found that 'psychologically robust' men who were placed on a 'semi-starvation diet' all had significant lowering of mood over the course of the study, which lasted for 6–12 months post-refeeding. Interestingly, Laessle, Platte, Schweiger and Pirke (1996) found some evidence that, in normal weight healthy controls, alternating a diet of restriction with unlimited eating was associated with a significant lowering of mood, feelings of loss of control and heightened irritability. In comparison with the Keys study, a significant proportion of participants started to binge and purge, and their mood deteriorated. Fluctuating eating patterns do seem to be related to a lowering of mood. However, in all of

these studies, it is not clear whether the lowering of mood ever reached clinical caseness levels. For example, in the Laessle et al. study, mood only deteriorated by a mean average of 10% between the dieting days and the unlimited intake days.

As pointed out by O'Brien and Vincent (2003), there is evidence to suggest that caloric deprivation may act as a contributor to depressive symptomatology within women with bulimia and anorexia, but it does not appear to account fully for the high level of co-morbidity. On this point, Levy and Dixon (1985), in their review, argued that the data suggested that the association between AN and depression is more complex than only being the result of starvation. Unfortunately, in their review, there are a number of methodological difficulties with the studies presented. However, these authors stated there is sufficient evidence to suggest that depression often predates the onset of the eating disorder and it often continues once the eating disorder has abated. Interestingly, they also discussed the fact that there is a high prevalence of depression in the relatives of people with an eating disorder and this may be a clue to the emotional environment and genetic transmission.

Stice (2001) undertook a sophisticated prospective study in which he tested his Dual Pathway model of BN. This model stated that both societal pressure for thinness and a thin-ideal internalization contributed to body dissatisfaction, which then predicted dieting and negative affect, which in turn, predicted bulimic symptoms. Furthermore, in keeping with research cited above, Stice proposed that dieting also had a significant effect upon the lowering of mood. In testing this model, Stice (2001) found that in a sample of 231 high school girls, the model was supported by the data. However, it is interesting that dieting only marginally predicted negative affect in the sample. Stice argued that this study presented evidence of how the social norms of thinness for woman, and the internalization of these norms, lead to marked body dissatisfaction, which played a direct role in the development of negative affect and dieting. In relation to the above discussion, this study gave evidence that negative affect is both a significant contributor and consequence of dieting and body dissatisfaction. However, this study has some important drawbacks; first, the dual pathway model only accounted for 23% of the variance from the data, and therefore, it is clear that other significant variables play a role in developing bulimic symptoms. Second, the model neither adequately accounts for why some women are particularly



prone to internalize the thin-ideal, nor does it explain the findings from Milos et al. (2005), who showed significant movement between the diagnoses. Recent research has demonstrated that the vast majority of women have significant levels of body dissatisfaction (e.g., Levine, Piran, & Stoddard, 1999); however, Stice's model does not help to explain why certain women develop pathological levels of body dissatisfaction and eating disorders, while others do not. Recent research has started to clarify these points a little, with Measelle, Stice and Hogansen (2006) finding that depressive symptoms predict eating disorders in 13–18-year-old girls over a 4-year period, but not the reverse. Furthermore, Burton, Stice, Bearman and Rohde (2007) found further evidence of the relationship between depressive symptoms and bulimic symptoms; when they developed an intervention for depression in eating disorders, they found a clinically significant improvement in the bulimic symptoms.

#### EATING DISORDERS: COGNITIVE-BEHAVIOURAL APPROACHES

Cooper (2005) discussed how the application of cognitive theory to eating disorders has gone through a number of significant developments over the last few years (for a full discussion of the cognitive theory in eating disorders, see Cooper, 2005). Previously, cognitive theory was broadly concerned with the role of behaviour and physiology in eating disorders, in particular, BN (Fairburn, Cooper, & Cooper, 1986). However, there have been a number of important theoretical advances over recent years. Cooper (2005) argued that second generation cognitive theories of eating disorders have postulated that the cognition-affect dimension is of central importance. These theoretical developments were built on research that revealed how eating disorder symptomatology appears to operate as an escape from aversive self-awareness and emotional distress (e.g., Heatherton & Baumeister, 1991; Root, Fallon, & Friedrich, 1986).

Building on this empirical basis, Cooper, Wells and Todd (2004) developed a model of BN that worked on the tenet that eating helps the self to dissociate from painful cognitions and negative affect. According to this model, external events activate negative self-beliefs which facilitate negative emotion. This triggering of negative emotions leads to bulimic symptoms, especially bingeing. The decision to binge is facilitated by positive beliefs

(e.g., 'eating will make the distress go away'), but is also accompanied by negative beliefs (e.g., 'eating will make me fat'). This leads to the triggering of permissible thoughts to reduce the subsequent cognitive dissonance that occurs between the negative and positive beliefs (e.g., 'I have no control of my eating'). Therefore, in this model, the beliefs that bingeing will help the self to dissociate from negative affect are central to understanding BN. In keeping with Cooper et al.'s model, Corstorphine, Mountford, Tomlinson, Waller and Meyer (2007) found further evidence that people with eating disorders avoid their emotions, and are intolerant of their negative emotions.

Waller, Kennerley and Ohanian (2007) propose a slightly different cognitive theory of eating disorders that is largely based on schema theory (Young, Klosko, & Weishaar, 2003). According to the broader theory, a schema is defined as a pervasive set of beliefs and emotions that a person has about himself/herself, others and the world. It is argued that these schemas originate from experiences in childhood (Young et al., 2003) and research has demonstrated that eating-disordered patients have more 'pathological schemas' when compared with normal participants and dieters (e.g., Cooper, 1997; Cooper & Hunt, 1998; Leung, Waller, & Thomas, 1999; Waller, Dickson, & Ohanian, 2002; Waller, Ohanian, Meyer, & Osman, 2000). The types of schemas that have been found to be important in eating disorders are the socially orientated schemas, such as abandonment, mistrust/abuse, defectiveness/shame (Meyer & Waller, 1999), while Cooper, Todd and Wells (1998) found evidence of higher levels of negative self-belief in people with eating disorders, which appeared to focus on themes of worthlessness, uselessness, failure, abandonment and being alone, when compared with a control group. On the basis of these results, Waller, Kennerley, et al. (2007) proposed a theory that attempted to account for the different symptom patterns within eating disorders (e.g., restriction versus bingeing-purging). Again, as with Cooper et al.'s model, Waller et al.'s model is essentially an affect regulation model as it proposed that food restriction is used as a strategy for primary avoidance of the distress associated with negative emotions and schemas, while bingeing is viewed as a strategy for secondary avoidance of the distress of triggered negative emotions and schemas.

Corstorphine (2006) building on the above models, proposed a cognitive-affective model of eating disorders that is broadly based upon dialectical behavioural therapy (DBT; Linehan, 1993).

The main points of this model are that individuals learn in their childhoods that certain emotions and individual traits are not tolerated by their caregivers. Therefore, the young females who are destined to develop eating disorders grow up learning that certain emotions are not 'acceptable' and/or are 'dangerous'. In keeping with the other cognitive-affective models discussed above, bingeing-purging/restriction is used to distance or prevent an emotion from occurring; however, the avoidance of a primary emotion is then related to the emergence of a secondary emotion. For example, feeling angry at a betrayal (primary emotion) which is suppressed, the individual then develops guilt at having experienced anger (secondary emotion). Corstorphine (2006) argued that it is the secondary emotion that causes much of the distress that is present in eating disorders.

For all three of these cognitive-affective theories, the emphasis is very much on the cognitive variables. The emotions discussed are often not specified, and it is not stated whether the emotion generated in the model is akin to depression, or whether it is something different. In the consideration of theoretical movements within the arena of affective disorders, the role of negative core beliefs and associated negative cognitions have long been shown to play an important role in depression (Beck, Rush, Shaw, & Emery, 1979). Although it remains an empirical question, the most parsimonious account of the negative emotion alluded to in these '2nd generation cognitive models' is that the high co-morbidity between depression and eating disorders can be formulated and understood. This question has received some empirical consideration. Waller and colleagues (Waller, Shah, Ohanian, & Elliott, 2001) compared severely depressed patients to moderately to severely depressed bulimic patients, and they found equivalent levels of core beliefs in each group. However, when they performed a discriminate analysis on their data, they found only failure beliefs could distinguish the depressed and the depressed bulimic groups. Unfortunately, there were a number of methodological problems with this study. For example, the patient groups have very small *n* sizes. Cooper and colleagues undertook an analogue study that attempted to address some of the methodological weaknesses of the Waller et al. study (Cooper, Rose, & Turner, 2006). They compared four groups of adolescent girls on a specific measure of self-beliefs within eating disorders, using the Eating Disorder Belief Questionnaire (EDBQ; Cooper, Cohen-Tovee, Todd,

Wells, & Tovee, 1997) and the Young Schema Questionnaire (YSQ; Young, 1998), in which they were classified according to their scores on the Beck Depression Inventory (BDI; Beck & Steer (1993) and the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979). These groups were 'healthy' (low BDI and low EAT scores), and with high BDI (with low EAT scores) and high EAT (with low BDI scores), and 'unhealthy' (high BDI and high EAT scores). They found that both measures could distinguish the 'healthy group' from the high BDI group, but could not distinguish the high EAT group from the 'healthy group'. Both the YSQ and EDBQ measures could not distinguish between the 'unhealthy group' and the high BDI group. Within a discriminate function analysis, Cooper et al. (2006) found that only two beliefs (as measured on the EDBQ) were specifically related to eating disorder symptoms. These were 'I'm stupid' and 'I'm ugly'. Although this study demonstrated that there were some differences in the core beliefs between the four conditions, it is hard to draw any definitive conclusions from this or from Waller's data. Both studies were cross-sectional, and the fact that failure seems to be a dominant theme may well be accounted for by the actual bulimia symptomatology. A feature of bulimia that has been discussed by other authors is that there is a strong desire to lose weight, but the person 'fails' due to the presence of physiological mechanisms (e.g., Fairburn, Marcus, & Wilson, 1993); it is perhaps not surprising that they feel like a 'failure'. This criticism is also potentially applicable to the belief of being 'ugly'. Within the Cooper et al. (2006) study, the group means were very low in comparison with clinical norms on the BDI and EAT. Therefore, it is hard to make any firm conclusions about the relevance of these results for clinical populations. Despite these criticisms, it does appear that there is preliminary evidence that suggests there is some commonality in the type of beliefs between people with eating disorders and people with depression. This is certainly an area that warrants further investigation.

Wonderlich, Mitchell, Peterson and Crow (2001) presented a model that attempts to integrate some of the above ideas on emotions and cognitions in their Integrated Cognitive-Affective Therapy (ICAT) model. According to this model, the person with BN has a discrepancy between the 'ideal self' and the 'perceived self', which creates negative emotion, which they argue could be regarded as depression or anxiety, within the individual. Once

this has been created, the person resorts to a 'self-directed style', where he/she engages in coping strategies that include cognitive (e.g., self-criticism, absence of self-acceptance) and behavioural (e.g., rigorous regimens of exercise, extreme dieting, or binge and purge behaviours) efforts. These strategies aimed at the self, would have the impact of reducing awareness of negative emotions through simple distraction or blocking, but may also represent motivated efforts to modify the actual self (i.e., lose weight). Wonderlich et al. (2008) published a paper that presented two studies that supported the ICAT model, as their data indicated that females with BN displayed higher levels of self-discrepancy and negative self-directed styles. They also found that negative mood states mediated relations between bulimic status and negative self-directed coping styles. This model also fits the data from Dunkley and Grilo (2007) who found that the relation between self-criticism and over-evaluation of weight and shape was partly mediated or explained by low self-esteem and depressive symptoms for people with binge eating disorder. Although this study's data refer to binge eating disorder, there are many similarities between binge-eating disorder and BN.

This model is a useful start in attempting to connect the body of research that has demonstrated that people with BN often have co-morbid depression and anxiety. The ICAT model starts to offer some of the cognitive constructs that would help to explain the co-morbidity and how they may well fuel the actual eating disorder. However, this model has neither a significant amount of detail about why people with BN resort to self-directed strategies, nor does it explain why the individual has to engage in bulimic symptoms, as opposed to just restriction (as in AN), or other emotion regulation strategies, such as self-harm. In other words, there appears to be a link missing that connects the low mood to the eating disorder. This model appears to suffer the same fate as Cooper et al. (2004) and Waller, Kennerley, Ohanian (2007), in that, it cannot actually account for the full array of eating disorder symptoms, such as the profound body dissatisfaction. Another criticism of these studies, and indeed, of many on the topic of eating disorders and emotions, is the reliance on self-report measures to collect data. Self-report measures are open to biases in recall and may not capture the real-time experience of the emotion.

Researchers from the USA have started to use alternative research methodologies, in order to bypass the reliance on self-report, which have

included laboratory techniques and the use of real-time recording techniques, such as palm pilots. An interesting lab study was completed by Agras and Telch (1998) where they examined the effects of calorie deprivation and negative mood on binge eating individuals. Within this study, people with binge eating disorder were randomly allocated to either a neutral mood induction or a negative mood induction. They found that negative mood, but not caloric deprivation, led to a significant increase in the loss of control over eating, as demonstrated by their eating behaviour at a buffet laid on by the researchers. Using hand-held technology, Engel et al. (2007) found that over a 7–29-day period, negative affect and altered states of awareness preceded binges in people with BN. The authors argued that this provides further evidence of the causal role that negative mood appears to have in bulimic symptomatology. Although these studies have given further support that bingeing has the function of managing affect, these results do not move the theoretical understanding of eating disorders a great deal. This lack of theoretical sophistication echoes the views of authors from other psychopathology field, who argue that the problems and limitations of current cognitive behavioural treatments may actually be due to the lack of explanatory power in contemporary models of eating disorders (e.g., Cooper, 2005; Grilo, Devlin, Cachelin, & Yanovski, 1997). In terms of accounting for the complex relationships between emotions that are present in eating disorders, the Corstorphine (2006) model and Wonderlich et al. (2001) make a good start in considering how beliefs about emotions are important in understanding eating disorders. However, as discussed above, they fail to incorporate contemporary emotion theory and they failed to explain co-morbidity with other affective disorders in an adequate fashion. None of the cognitive-affective models explain why eating disorders occur, in that why does a young woman choose eating to manage her emotions rather than some other method (e.g., substance use), or why does the eating disorder always come with pathological body dissatisfaction.

## DEVELOPMENTAL FACTORS IN EATING DISORDERS

### *Childhood Abuse*

The discussion of whether or not childhood abuse (e.g., sexual, physical, emotional) plays an aetiological role in eating pathology has attracted



much attention in recent years. Some authors have argued that there does appear to be a connection between bulimic symptomatology and childhood sexual abuse (Smolak & Levine, 2007), while other authors have stated that the relationship between childhood sexual abuse and eating pathology is overstated (e.g., Polivy & Herman, 2002). These authors discussed how childhood sexual abuse is also associated with depression and other psychological disturbances, and hence specific effects cannot be concluded. Smolak and Levine (2007) argued that there is sufficient evidence to link bulimic symptoms with a history of childhood sexual abuse, while it is still not clear for anorexia-restricting symptoms. Within their review, they also discussed how there is some evidence beginning to suggest that other forms of trauma (both in childhood and in adulthood) may well be related to eating/body image disturbance (e.g., Faravelli, Guigni, Salatori, & Ricca, 2004; Treuer, Koperdak, Rozsa, & Furedi, 2005).

In considering the nature of the relationship between childhood abuse and future psychopathology, Andrews (1995) demonstrated that body shame moderates the relationship between abusive experiences (both adult and child) and depression. In a follow-up study, Andrews (1997) demonstrated that the relationship between bulimic symptomatology and childhood abuse was moderated by bodily shame. Although depression was not measured in this study, the results are in keeping with the point already raised, in that Andrews has tried to develop more complex models of the relationship between abuse and symptomatology. This suggests that abuse may play a role in the development of bodily shame and any subsequent depression/eating pathology. Likewise, this depression may play a moderating role in the development of eating disorder symptomatology (as hypothesized by Wonderlich et al., 2001). The problem with this research is that it lacks any real theoretical underpinning on why bodily shame is significant for the development of both depression and an eating disorder in people who have been abused. This is important because the roles of particular emotions seem to be significant (e.g., sadness, disgust), and any theory would need to incorporate these emotional factors (please see later in the thesis). Interestingly, some researchers have suggested that one of the key factors in the abusive experiences is not just the act *per se*, but the emotional messages that are communicated both directly and indirectly, via the abuse. Kent and Waller (2000), on this issue, argued that the emotional environment in which

childhood abuse occurs moderates its impact upon the person, as these traumas often occur within relationships that are 'emotionally damaging'. It is well documented that experiences of sexual abuse may leave the victim vulnerable to shame towards their own body; these types of experiences may include sexual excitement resulting from the abuse, seeking abuse in order to avoid being rejected etc. (e.g., Ainscough & Toon, 2000). Briere (1996) proposed a model that goes some way to address the above points, as it is proposed that childhood abuse disrupts the development of self-identity and affects tolerance/regulation, where the individual often resorts to distractive coping strategies, such as bingeing and restriction to deal with overwhelming affect (e.g., Linehan, 1993).

### *Attachment Patterns*

As discussed at the end of the last section, Briere's model places an emphasis upon early attachment relationships, and these relationships shape the development of skills to regulate and tolerate negative affect. The importance of attachment figures has been the topic of researchers and theorists for decades and has included such notable writings by Bowlby (1969) and others. Within the eating disorders field, this is echoed by Bruch (1973) who argues that understanding attachment problems in eating disorders is crucial. Likewise, Cooper (2005) argued that a disturbance in the caregiver–infant relationship, where the caregiver responses are not in tune with the infant's internal state, results in ego deficits, which she describes as a disturbance of self-awareness and self-concept, which results in an inability to distinguish hunger and satiety from other needs and discomforts. Within this framework, it is adolescence that places the individual under stress, which reveals the inherent difficulties with self-identity and self-reflection.

Shoebri and Gowers (2000) found that mothers of children that go on to develop AN often report heightened anxiety during the prenatal and perinatal period. Moreover, they argue that this suggests that the mothers resort to being overcontrolling and overprotective throughout the child's development. Ward, Ramsay and Treasure (2000) and Ward et al. (2001) also found evidence of a dismissive attachment style, which was also associated with reduced emotional expression and deficits in emotional processing with people with AN and their parents.

There is a growing body of evidence that suggests that there may be problems with attachment

in the history of people with eating disorders, especially AN. As has been discussed above, early relationships have been regarded as the cornerstone of helping the child to learn affect regulation skills, and problems with these attachments may lead the child to develop alexithymia. According to Stefanos (1973), alexithymia can be regarded as a difficulty in identifying feelings, distinguishing feelings from bodily sensations of emotional arousal and describing feelings to other people. A number of research studies have identified a relationship between eating disorders symptomatology, in particular AN, and alexithymia (Carano et al., 2006; Troop, Schmidt, & Treasure, 1995; Zonneville-Bender, van Goozen, Cohen-Kettenis, van Engleland, 2002). Alexithymia will be discussed more fully below.

### *Family Environment*

Kent and Waller (2000) argue that emotional abuse has often been the 'elephant in the room' when the role of childhood abuse and eating disorders are discussed in the literature. Within their review, they point out that there appears to be a phenomenological link between childhood emotional abuse (CEA) and eating pathology, and this link may have a broader impact upon eating pathology than other types of trauma. Furthermore, they proposed that the relationship between childhood CEA and eating pathology is moderated by low self-esteem. According to these authors, CEA has a profound effect upon self-esteem, because its toxic effect cannot be easily attributed to external factors (e.g., the abuser). They argued that CEA operates as a generalized risk factor for both bulimic and restricting symptom patterns.

Drawing on DBT, Corstorphine (2006) argues that a key origin of emotional regulation difficulties often present in people with eating disorders is growing up in an environment that is perceived to be invalidating, where there is a discordance between the actual emotion being expressed and the responses from key individuals in the child's life (e.g., caregivers). According to Corstorphine (2006), this often means that emotions are either responded to negatively or ignored, and positive emotions are encouraged and are held in high esteem by the family. Some of the ideas from DBT are also reflected in the expressed emotions (EE) literature. The EE concept refers to the number of critical comments, hostility and emotion over involvement that occurs within the environment

and around the person with the disorder, and this has been extensively researched for many psychiatric disorders, including psychosis (e.g., Barrowclough, Tarrrier, & Johnston, 1996). The relation between emotional expressiveness in the family environment and a child's ability to identify and describe his/her feelings has been documented in the literature (Kench and Irwin, 2000). As was discussed with the Briere model, it may well be that the interrelation between inherited influences and the lack of skill in the parent in describing his/her feelings may explain these links. Related to this point, Espina (2003) found that parents of children with eating disorders reported significantly higher levels of alexithymia, as measured by the Toronto Alexithymia Scale (TAS), while Kyriacou, Treasure and Schmit (2008) have shown that parents of individuals with AN exhibited higher levels of expressed emotion (e.g., emotional over-involvement and criticism) when compared with normal controls. Waller, Corstorphine and Mountford (2007) argued that these 'invalidating environments' lead to the development of two principal emotional difficulties in adulthood, being chaotic-dissociative and detached-alexithymic presentations. The chaotic-dissociative presentation is hallmarked by an impulsive-bulimic presentation, where the individual experiences his/her emotions as overwhelming and terrifying, and is often engaged in behaviours to reduce or dissociate from his/her emotions. The detached-alexithymic presentation is where the person presents in a much more detached and 'emotionally cut off' manner. It is argued that the key difference between these presentations is the point at which the emotion is inhibited. In other words, in the chaotic-dissociative presentation, the emotion is inhibited once it enters consciousness, while for the detached-alexithymic presentation, the emotion is inhibited before the emotion is experienced consciously. These authors argued that this earlier inhibition is the reason why clients with this type of presentation often deny any emotional experience. This point is important in terms of theoretical development, because it fits with the schema approaches that Waller and colleagues (Waller, Kennerley, et al., 2007) have proposed, which were discussed above.

### *Summary of Developmental Factors*

It does appear that there is a growing consensus that emotional invalidation during upbringing is important in the development of emotional

difficulties in adulthood (e.g., Krause, Mendelson, & Lynch, 2003). The works of Waller and colleagues (Waller, Cordery, et al., 2007; Waller, Kennerley, et al., 2007) have highlighted how a potential key factor in delineating the eating disorders is when the emotional inhibition occurs and this can lead to markedly different presentations. However, there is a lack of theory in how this accounts for co-morbid depression and body dissatisfaction. Moreover, the theoretical consideration of emotions is very simplistic. There is no attempt to discuss which potential emotions may be effected by upbringing, as there is a suggestion from emotions theory that environmental responses to individual emotional states may actually create different relationships with different emotions. For example, the Schematic Propositional Analogical Associative Representation System (SPAARS) model (Power & Dalgleish, 1997, 2008) argues, from a basic emotions perspective, that emotions develop as semi-independent cognitive modules (in keeping with other domains of cognitive development, such as memory, or perception). Therefore, the external influences may 'invalidate' certain emotions by claiming that they are wrong or not allowed, and such, certain emotional states may become ego-dystonic and frightening to the sense of self, if they are evoked.

#### *Research on Emotional Factors in Eating Disorders*

As has been seen above, research has identified the role of emotional functioning in eating disorders, with the role of negative affect being of significance in the onset and maintenance of the eating disorders (e.g., Arnou, Kennedy, & Agras, 1995; Binford, Mussell, Peterson, & Crow 2004; Fairburn et al., 2003; Wegner et al., 2002). Although it remains an empirical question, there has been debate in the literature about the nature of affect in eating disorders, as it is not clear from contemporary models of eating disorders which is more important, the actual level of emotion (if it is, indeed, possible to measure quantity of emotion) or the ability to tolerate negative emotions. In an interesting analogue study by Anestis, Selby, Fink and Joiner (2007) with undergraduate students, it found that high scores on the distress intolerance scale (Simons & Garner, 2005) predicted bulimic symptomology, when they controlled for depression and anxiety symptoms. Also, within this analysis, the authors found that distress intolerance further mediated the relation-

ship between anxiety sensitivity (defined as the actual physical symptoms and their perceived consequences) and bulimic symptoms. Anestis et al. (2007) argued that it is not simply the presence of negative affect that predicts eating pathology, but whether the negative affect is perceived to be intolerable. Despite this finding, it still needs to be tested whether individuals with eating disorders experience significantly higher levels of emotion than control participants within situations where the triggering of an emotion can be controlled. In other words, this question needs to be addressed by the types of methodologies that induce emotion within the laboratory (e.g., Agras & Telch, 1998). This will be a feature of this paper. This section will now consider the research that has applied the five basic emotions to eating disorders. However, before this discussion can proceed, it is important to note that there has been a significant debate about the nature of emotions and whether there are dimensions of emotionality (e.g., negative affect) or distinct basic emotions. Furthermore, no consideration of emotion within eating disorders would be complete with an analysis of the issue of alexithymia within the eating disorders. These two topics will now be discussed.

#### *Basic Emotions or Dimensions of Emotionality?*

The issue of whether emotion can be understood as differences along two continuum of positive and negative affects (e.g., Watson & Clark, 1992) or as discreet, individual emotions (e.g., Arnold, 1960; Ekman, 1992a; Oatley & Johnson-Laird, 1987) has been the source of debate for many years in the study of emotion. Although it remains somewhat controversial, there is some agreement that there are a number of broadly distinct and separate basic emotions, namely, fear, disgust, anger, sadness and happiness. Power and Dalgleish (1997, 2008) argue that there are a number of sources of evidence for a basic emotions approach, including a conceptual argument for different appraisals across the different emotions (e.g., appraisal of loss in sadness), pan cultural awareness of different emotions (e.g., Ekman, 1973, 1992a, 1992b) and the linguistic analysis of emotional terms by Oatley and Johnson-Laird (Johnson-Laird & Oatley, 1989). Interestingly, research has started to highlight how there appears to be emotion-specific physiology, within autonomic arousal. This work is not without its critics, as some authors have argued that the



similarities between different types of arousal patterns outweigh any similarities (e.g., Stemmler, 1989). This debate is bound to continue; however, it is the perspective of this thesis that there is now enough evidence to argue for a basic emotions approach and this approach will be used across the rest of this thesis.

This debate about the primacy of particular basic emotions is missing from much of the literature of eating disorders. For instance, throughout this chapter, it has been shown that many theorists have argued that negative emotion causes bingeing (e.g., Cooper et al., 2004; Wonderlich et al., 2001, 2008) or the fear of negative emotion causes restriction (e.g., Corstorphine, 2006; Waller, Kennerley, et al., 2007). However, there is very little consideration of which emotions are important. Related to this literature on emotional processing, there is no account, within the eating disorder research, of the actual architecture of emotional processing such as the different types of regulation that can occur for an emotion over its time course (e.g., how fast an emotion returns to baseline after it has been activated).

### *Eating Disorders and Alexithymia*

As already been discussed in this paper, a number of authors have linked the adverse effects of childhood abuse and/or problematic dynamics within the family home to the development of problematic knowledge of the emotions within the self. These difficulties have been called alexithymia. This idea of a difficulty identifying, distinguishing and expressing emotions in eating disorders has a long history stemming back to Bruch (1962). Bruch (1962) felt that the main problem in anorexia was a difficulty in distinguishing and expressing emotions, and having a sense of total lack of control within one's life. As detailed earlier, a body of research has identified how people with eating disorders, especially AN, appear to have a high degree of alexithymia, with most of this research having used the TAS. Alexithymia has been shown to be an important issue for predicting outcome, as it has been shown to have negative impact upon prognosis (Speranza, Loas, Wallier, & Caros, 2007).

Sim and Zeman (2005), using an analogue study, found that the relation between body dissatisfaction and dysregulated eating was partly mediated by the frequency of negative emotional experience, poor emotional awareness and non-constructive coping with negative affect. There

have been several hypotheses about what this mediated relationship signified, with one hypothesis being that individuals with poor emotional recognition and coping skills may attribute their negative emotions to their body, via body dissatisfaction, and use disordered eating to reduce their uncomfortable level of arousal. Other hypotheses suggested that it could be the other way around, with body dissatisfaction compromising one's ability to identify and cope with negative affect, and therefore, using disordered eating to manage ambiguous emotional states. A related study that directly assessed the relation between body dissatisfaction and emotional expressiveness was conducted by Hayaki and colleagues (Hayaki, Friedman, & Brownell, 2002.). Within this analogue study, they found that poor emotional expression predicted body dissatisfaction, when depression and assertiveness were controlled.

Much of the research on alexithymia in eating disorders has tended to be rather simplistic in how it considers their relation, with recent research demonstrating that the role of low mood may be an important variable to consider. Bydlowski et al. (2005) and Kessler, Schwarze, Filipic, Traue and Wietersheim (2006) found that there is a close link between measures of anxiety and depression, and alexithymia. Moreover, Eizaguirrea, Saenz de Cabezo, Ochoa de Aldaa, Olariagab and Juaniza (2004) found that the relationship between eating pathology and alexithymia was moderated by levels of depression. What is interesting from these results is how they emphasize the apparent conceptual contradiction within analysis of alexithymia, and how it is possible for individuals who are unable to distinguish and name their emotional states, but are able to fill out measures about their own emotional status (e.g., mood measures etc.). Likewise, the construct itself has a confused conceptual underpinning, in that, some authors refer to it as a trait phenomena (Taylor, Bagby, & Parker, 1997), while others use it as a state construct (Honkalampi et al., 2001).

The majority of studies have not considered the meta-emotional skills that underpin alexithymia and it may be that certain emotion skills remain intact, while others are problematic. For example, it may be that people with eating disorders are able to acknowledge their own emotional states, but are too frightened to express this emotion. Within this view, certain emotional states are ego-dys-tonic, and hence, perceived to be overwhelming to the self. Related to this point is the fact that the majority of the studies on alexithymia are predom-

inantly correlational, and as such, the direction of causation is not clear between alexithymia and eating disorder symptomology. Keys et al. (1950), in their seminal study of the effects of starvation, found that reduced weight and food intake were associated with reduction in emotional expressiveness. It may well be that the noted effects from an extreme diet may actually account for the alexithymic presentation. There is only one study that has attempted to address this point; Schmidt, Jichwany and Treasure (1993) looked at TAS scores between bulimia and anorexia groups, and compared them with controls. This was also performed across two time points, and they found that improvement in symptoms (due to medication) was not related to improvement on the TAS. Although they argued that this suggests that alexithymia acts more as a trait-like construct, they did acknowledge that most of their participants at Time 2 still met clinical caseness levels. It was interesting, however, that body mass index (BMI) did not correlate with TAS, and they did state that this was evidence that alexithymia was not just a product of weight loss and malnourishment.

As has been discussed earlier in the chapter, the SPAARS model (Power and Dalgleish, 1997, 2008) proposed a model that suggests that different learning experiences, while growing up, lead the individual to have different relationships with each of their basic emotions. Therefore, it is theoretically possible that someone may have developed an emotion which is ego-dystonic and lost to the self, while other emotions are much more integrated with the sense of self. In this instance, it would be plausible for an individual to be alexithymic for certain emotions, while still be able to express and regulate the other basic emotions.

This section will now consider the five basic emotions in turn.

### Anger

Research over the last 5 years has demonstrated that anger is a particularly difficult emotion for people with both BN and AN. Waller et al. (2003) found that women with eating disorders, especially with bulimic symptoms, reported significantly higher state anger scores and significantly higher anger suppression scores when compared with university student controls. In other words, Waller et al. (2003) found that their participants had an increase in their levels of the emotion of anger, but were less likely to express this emotion. Interestingly these authors found that higher levels

of trait anger were associated with 'unhealthy core beliefs' in both groups, while the same core beliefs were only associated with anger inhibition in the eating disorder group. Within this paper, the authors discussed how their results could have implications for the treatment of eating disorders, as a feature of therapy could be to consider whether problem-solving strategies would assist the patient in making changes to his/her environment that either reduce the anger-eliciting components, or help in the expression of anger. Waller, Kennerley, et al. (2007) discussed the evidence of the relation between state anger and anger suppression, and these authors argued that binge eating served as an emotional-avoidance function (as discussed above). This finding was supported by Fox and Harrison (2008) when they found that females with bulimic symptoms had higher levels of state anger after an anger induction, when compared with a matched control group. These authors also found that the females with bulimic symptoms scored much higher on the anger suppression scales. In another recent study, Ioannou and Fox (2009) found that depression and the perception of threat from the emotion of anger predicted poor emotional expression in people with eating pathology, while Coggins and Fox (2009) found in a qualitative study of emotional inhibition that anger was the most difficult emotion to be experienced and this was linked directly, by the participants, to dieting and food restriction.

Within restricting eating disorders, Geller and colleagues (Geller, Cockell, Hewitt, Goldner, & Flett, 2000) found that people with a diagnosis of AN exhibited significantly higher levels of anger suppression, when compared with psychiatric and normal controls. Related to this anger suppression, Geller et al. (2000) also found that their participants endorsed more care and self-sacrifice schemas (i.e., putting the needs of others before their own) and silenced self-schemas (the inhibition of self-expression and action to avoid confrontation and interpersonal conflict).

Milligan, Waller and Andrews (2002) undertook a study that looked at the relationship between anger and disordered eating within a female prison population. These authors found that levels of probable eating disorders, as measured by the sick, control, one stone, fat, and food (SCOFF) (Morgan, Reid, & Lacey, 1999), were significantly higher than would be expected in the general population. In terms of difficulties with anger, these authors found that bulimic symptoms were associated with levels of trait anger, while restrict-

ing symptoms were associated with state anger. Therefore, these authors concluded that the restrictive environment (i.e., prison) prevents an outlet for anger, and the women regulated these emotions by using differing eating disorder symptomatology. This regulatory aspect of eating disorders controlling or inhibiting anger was also shown in a recent paper by Engel et al. (2007), in which these authors found that levels of anger predicted binge eating episodes and this relationship was moderated by levels of subjective impulsivity. Interestingly, this study used palm pilot technology to collect data from participants within their everyday life. Furthermore, Telch, Agras and Linehan (2001) undertook a trial of DBT, in group format, for people with binge eating disorder. They found that for the people who undertook DBT, the vast majority had stopped bingeing at the end of treatment (89%). Interestingly, the only measure that was reduced (apart from symptoms) was the urge to binge in response to anger. Although the authors do not discuss this finding in any real depth, it does appear to be an important finding because it could be interpreted that anger was the main driver for the binges, which was reduced via the DBT. These findings are very much in keeping with the models discussed above, such as Cooper et al. (2004) and Waller, Kennerley, et al. (2007).

A final point in attempting to detail the relationship of anger with eating disorders is the need to consider the research that has examined the relationship between anger and depression. As detailed above, the co-morbidity between depression and eating disorders is high and a number of theories have proposed that depression originates from difficulties with anger. Freud (1917/1963) argued that depression originated from a mixture of anger and sadness at the loss, for example, of a significant other. In their review of the relationship between depression and anger, DiGiuseppe and Tafrate (2007) argued that there was some evidence which suggested that depression can be a product of an inability to express anger (e.g., Mook, Van Der Ploeg, & Kleijn, 1990). However, they argued that these relationships may be different between populations. Keeping this in mind, the potential relationship between inhibited anger, eating disorders and depression is an important theoretical point that will be returned to later in this paper.

### *Sadness*

As has been discussed above, the literature on the role of sadness in eating disorders has not been

researched at all. In the literature search, not one single reference was identified that looked at the role of sadness in eating disorders. However, as detailed in the above section, the relation of depression to eating disorders has been extensively researched and the literature seems to be indicating that there is both a cause and a consequence of depression within disordered eating. Although there are potential conceptual problems with claiming that depression is a disorder of sadness, Power and Tarsia (2007), using the Basic Emotions Scale, found that one of the main emotions of depression (measured using the BDI) was sadness. These authors also found that the emotion of disgust was also important in depression, and it will be argued later in this thesis that this relationship between sadness, disgust and eating disorders is significant in understanding the co-morbidity between eating disorders and depression.

### *Happiness*

The overt consideration of happiness in eating disorders is still rather limited. As already detailed elsewhere in this paper, research has tended to focus on negative emotions and how these play a role in eating disorders. Research by Overton, Selway, Strongman and Houston (2005) highlighted how eating disorder symptoms can be used to regulate negative emotions, and importantly, facilitate the experience of pleasant emotion. Linked to this perspective is the work by Goss and Gilbert (2002) who have argued that eating disorders, in particular, restricting eating disorders, are often linked to pride. These authors, drawing on the work of Bruch (1973), argued that the eating disorder starts as a means of gaining acceptance, avoiding rejection and painful emotions, which results in pride. This pride becomes internalized and it becomes a source of internal pride with the self. In other words, this pride is used to defend against some of the more painful emotions (e.g., shame) and thoughts that were there prior to the start of the eating disorder. As with sadness and depression, there are a number of conceptual problems with linking pride with happiness, but it is suggestive of a link that warrants research. As detailed within a number of the second generation of cognitive-behavioural approaches to eating disorders, the person with the eating disorder has been shown to often experience both negative emotions and negative cognitions. It may be interesting to consider how the emotion of happiness is managed within these individuals because it may be incon-



gruous to their main emotional state and therefore suppressed or avoided.

### *Fear*

Within the Diagnostic and Statistical Manual (4th edition) (DSM IV; APA, 1994), fear is regarded as a key diagnostic feature of AN, especially in relation to the fear of becoming 'fat'. However, despite its apparent salience in eating disorders, it has not received a significant amount of attention within the eating disorders literature. In a recent article, Waller (2008) argued that next editions of the diagnostic systems (e.g., DSM and International Classification of Diseases (ICD)) should reframe eating disorders as a subset of anxiety because there is such a high co-morbidity of anxiety with eating disorders (e.g., Goddard, Flament, Perdereau, & Jeammet, 2002; Pallister & Waller, 2008). Furthermore, research has demonstrated that anxiety tends to precede eating concerns (e.g., Bulik, Sullivan, Fear, & Joyce, 1997; Swinbourne & Touyz, 2007). In a recent review paper by Pallister and Waller (2008), it is argued that the relationship between anxiety and eating disorders is an unclear one because the chronology between the two disorders is not clear. However, Pallister and Waller (2008) argued that it is possible to relate anxiety and eating disorders conceptually because they may share common aetiological factors and these factors can increase susceptibility to either disorder. In contrast to this paper, they take a traditional cognitive-behavioural view and argue that safety behaviours and vulnerability schemas are the main cognitive constructs behind these disorders (for a fuller discussion, see Pallister & Waller, 2008).

In a more direct experimental test of the effect of fear on eating behaviours, Heatherton, Herman and Polivy (1991) undertook a study in which they looked at the effects of the fear of threat (both physical and ego) on eating in restrained and unrestrained eaters. They found that ego threat (e.g., failing at an easy task), but not physical threat (e.g., electric shock), led to an increase in a restrained eater's eating, while unrestrained eaters showed no such increase in their eating. For the physical threat, the unrestrained eaters showed a significant reduction in their eating, but the restrained eaters showed no change in their eating levels. The authors argued that these findings highlight how fear of a more personal nature makes self-awareness more painful and the shift towards disinhibition helps the individual to 'escape from the self' (as discussed above).

In a study that looked directly at the effects of fear and disgust on eating attitudes, Harvey, Troop, Treasure and Murphy (2002) found that disgust was as equally important as fear in the avoidance of certain stimuli (high calorie foods and large body sizes). As discussed by Haidt, Rozin, McCauley and Imada (1997), disgust is often regarded as the emotion that has been used by humans to keep a distance between oneself and objects that would be hazardous to health if ingested. Uher et al. (2005) found that measures of anxiety and disgust often correlate highly (+0.7) and this may offer a position where it could be argued that they both have the function of distancing oneself from a feared object or outcome. It may be that disgust of one's body or of food may actually account for the 'fear' reaction towards perceived body weight within the eating disorders. Davey, Bickerstaffe and MacDonald (2006) found evidence for this type of relationship between disgust and fear/anxiety, using an experimental methodology. They found that induced disgust led to an increase in negative interpretational bias which maintained levels of anxiety in their participants, and these authors argued that this provides evidence for the causal role of disgust in anxiety psychopathologies. This confusion between fear/anxiety and disgust has the potential to be an important theoretical point in the understanding of eating disorders, because the long-reported 'fear of food' or the 'fear of becoming fat' may actually be disgust reactions, and hence, may account for the high co-morbidity between anxiety and eating disorders.

### *Disgust*

Davey (1994) defined disgust as 'a type of rejection response that is characterised by a specific facial expression, a desire to distance oneself from the object of disgust, a physiological manifestation of mild nausea'. Given that a common feature of eating disorders is the feeling of disgust towards the patient's own body, it is perhaps surprising that there has been so little research in this area. Nick Troop and colleagues found a mixed picture when they investigated disgust in eating disorders (Troop, Murphy, Bramon, & Treasure, 2000; Troop, Treasure, & Serpell, 2002). They hypothesized that eating disorders would be associated with an increased general sensitivity towards the emotion of disgust. Interestingly, they found that patients with a current eating disorder did demonstrate an increased sensitivity towards disgust

that was associated with body or food, but not with more general areas of disgust (e.g., sexual practices). In a similar study, Burney and Irwin demonstrated that shame towards the body and eating are uniquely predictive of eating pathology (Burney & Irwin, 2000). It has been discussed elsewhere that shame is a complex emotion that is derived from the basic emotion of disgust (e.g., Power and Dalglish, 1997, 2008). Indeed, a study by Marziller and Davey (2004) found evidence for primary and secondary disgust. It was argued that primary disgust was defined by the stimulus' ability to elicit fear of oral incorporation or stemming from an animal origin, while secondary disgust was defined by moral or social transgressions. In many ways, it appears that the secondary disgust, as proposed by Marziller and Davey (2004), is very much like the complex emotion of shame and fits with the Power and Dalglish (1997, 2008) notion of shame being a multifaceted and more complex version of disgust.

The Troop et al. findings (2000, 2002) are interesting for their potential theoretical implications. Some authors have argued that within AN, the feelings of anger towards an external object are unacceptable, and as a consequence, they are directed towards the self in terms of the physical body being perceived as 'fat' (Bruch, 1973, 1978). Although, Bruch does not talk about this perception of being 'fat' in disgust terms, it is alluded to. In other words, feelings of disgust towards the body could potentially work in a way to manage other more painful or 'ego dystonic' emotions, such as anger (as discussed above). This may help to explain why the participants in Troop et al.'s studies were more sensitive for disgust directed at their own bodies. Emerging from within the research literature, there is some preliminary evidence to support this hypothesis. Geller et al. (2000) found, in the study reported above, that inhibited expression of emotions was related to body dissatisfaction. This finding was reinforced by the findings from Hayaki et al. (2002) when they found that limited emotional expression predicted body dissatisfaction in an analogue sample (when BMI, non-assertiveness and depressive symptoms were controlled in their analysis). New data from Fox and Harrison (2008) found that females with bulimic symptoms reported significantly higher state anger and disgust sensitivity after an anger induction compared with controls. These authors interpreted this as evidence that anger and disgust are potentially acting in a coupled way within people with bulimic symptoms.

As described above, it is argued that shame is a complex version of disgust, and it has been shown to be of significance in eating disorders. Goss and Gilbert (2002) argued that shame is a central emotion in eating disorders and involves two forms of shame, internal (negative self-evaluation) and external (others looking down upon them). Frank (1991) highlighted that people with eating disorders have significantly higher shame and guilt about eating, when compared with depressed and control participants. Cook (1994) found that internal shame was significantly higher in eating disorders groups than in all other clinical comparison groups. On the issue of body shame, Swan and Andrews (2003) found that symptomatic and recovered females with eating disorders have significantly higher levels of body shame and shame about eating than controls, while Polivy and Herman (1993) and DeSilva (1995) found that binge eating can regulate shame affect in participants with eating disorders. In a qualitative study by Skarderud (2007), data were gathered that highlighted how people with AN feel shame over a number of domains, including shame for some of the emotions they are feeling (in keeping with the Corstorphine, 2006 cognitive-affective model), body shame, shame for not achieving more, shame for not controlling their behaviour and shame for having an eating disorder. Skardeerud (2007) also found evidence that an eating disorder can give someone pride in his/her life for keeping control within his/her life and maintaining thinness.

Some research has started to suggest that females are more predisposed to experience disgust and associated emotions (e.g., shame) than males. This particular point was addressed by Barrett and colleagues when they found that female children were more likely to react with shame when a toy broke (the participants withdrew from the broken toy), while male children appeared to react more with guilt (they attempted to fix the toy) (Barrett, Zahn-Waxler, & Cole, 1993).

As discussed above, there is a growing body of evidence that certain emotions are being inhibited and are 'managed' by other, more acceptable emotions. The theoretical treatment of disgust has highlighted how it is the emotion of rejection and is often behind the desire to distance oneself from the object of disgust (Davey, 1994), such as food or body shape (as seen in eating disorders). The picture that disgust and its derivative, shame, are being 'used' as a way of managing other emotional states is allowing the eating disorder literature to move away from simplistic models of maintenance

and 'pure cognition'. This is a key construct of this paper, in that, emotions can become connected and have either a facilitatory or inhibitory function to one other. In other words, experiencing disgust can be used to inhibit other more painful, ego-dystonic emotions from being expressed and/or experienced.

## SUMMARY AND CONCLUSIONS

The early cognitive accounts of eating disorders (e.g., Fairburn et al., 1986), in particular BN, proposed a maintenance level model that discussed how extreme dieting led to breakthrough bingeing and associated purging methods to avoid weight gain. This model led to the development of a manualized cognitive-behaviour therapy (CBT) for BN which had some success in treating bulimic symptoms in normal weight individuals. However, the therapy only accounted for a 50% improvement in patients and it was clear that there were gaps in the theory and the intervention. One of the main gaps in these early models was the explicit role of both cognitive and emotional triggers for eating disorder symptoms (e.g., Cooper et al., 1998; Cooper et al., 2006). Furthermore, these models offered no attempt to understand co-morbidity in the eating disorders, especially with depression. The works of Cooper et al. (2004), Waller, Kennerley, et al. (2007) and Wonderlich et al. (2001, 2008) have highlighted how certain eating disorder symptoms (e.g., bingeing-vomiting and restriction) are used to regulate and manage 'painful emotional states' and associated cognitions. These points highlight an important theoretical advancement in the understanding of eating disorders. However, the way that emotion is conceptualized is simplistic and does not take into account the research that has highlighted a more complex relationship between emotional expression and eating disorders. For example, it is not clear from these cognitive models why eating disorder symptoms are chosen as emotion regulation strategies, instead of other behaviours (e.g., self-harm). Moreover, there is a complete lack of consideration of the marked body dissatisfaction that is almost always present in eating disorders, with the works of Geller et al. (2000) and Hayaki et al. (2002) suggesting that there is an inverse relationship between the expression of emotion and body dissatisfaction. The nature of the emotions behind the eating disorder symptoms is also neglected because none of the models have attempted to incorporate the apparent difficulties with anger and disgust.

It is argued that these second generation cognitive models have allowed the theory to move beyond simple cognitive-behavioural accounts of eating disorders because they have highlighted the need to consider emotional factors. But, in keeping with Cooper's (2005) point, theoretical accounts of eating disorders need to be developed to account for the research on specific emotion functioning, the high level of body dissatisfaction and co-morbidity. In keeping with Fairburn and Harrison (2003), it is argued that where there are shared distinctive clinical features across diagnoses and there are significant movement of patients between different diagnostic states, clinical phenomena should be understood from a transdiagnostic perspective. As has been highlighted throughout this paper, patients nearly always present with co-morbid depression and anxiety, but the paucity of theory has limited our understanding of this potential transdiagnostic process.

Finally, cognitive-behavioural models of psychopathology have also come under criticism from a number of authors for only considering emotion-eliciting propositions within a verbal format (e.g., negative automatic thoughts) (e.g., Jones, 2001; Power and Dalgleish, 1997, 2008). There are a number of potential emotion-eliciting stimuli that could play a role in the generation of affect and it is clear from clinical work with people with eating disorders that there are potentially different schematic representations of emotions in eating disorders, for example, the disgust towards the body generated by the sensation of a pair of jeans being too tight, or the visual image of the self being 'fat' (e.g., Cooper, Deepak, Grocutt, & Bailey, 2007). It will be argued that these analogical representations are of specific importance in understanding emotions in the eating disorders, and this theoretical point is in keeping with other authors' observations in other psychological disorders, where it is argued that single level cognitive-behavioural models lack explanatory power, which compromise their ability to generate effective clinical interventions (Dalgleish, 2004; Jones, 2001).

## INTRODUCTION TO A NEW THEORY OF EATING DISORDERS—SPAARS MODEL APPLIED TO EATING DISORDERS (SPAARS-ED)

As can be seen in the review above, it is argued that a new model of eating disorders needs to account for the difficulties with certain basic



emotions (e.g., anger and disgust), and for the relationship between expression of emotion and body dissatisfaction, and the high level of co-morbidity between depression and anxiety. Furthermore, theoretical consideration needs to be given to the different representations of information that can elicit emotion.

Although a more comprehensive introduction to the SPAARS model will be given, its key points will be presented here to highlight how this model addresses the gaps in the literature and allows for the generation of a new model of eating disorders. Within the SPAARS model, it is argued that certain emotions can become 'coupled', where two emotions become linked and work together either in a facilitatory or inhibitory way. As will be seen below, this emotional process may help to explain the findings of the relationship between disgust and anger (Fox & Harrison, 2008) and low emotional expression and high body dissatisfaction (Geller et al., 2000; Hayaki et al., 2002). Furthermore, Power and Dalgleish (1997, 2008) argued that common emotion processes may account for co-morbidity and this may help to explain co-morbidity in eating disorders. Finally, the SPAARS model incorporates a second route to emotion generation that can work without conscious awareness, which has the potential to explain the clinically observed link between different representations and emotional responses (e.g., 'tight jeans' = disgust). All of these points are new concepts in the study of eating disorders and it is argued that considering eating disorders from a SPAARS perspective allows for an important theoretical advancement beyond the cognitive-behavioural models discussed above. This paper will now present a more detailed overview of the SPAARS model (Power & Dalgleish, 1997, 2008).

### *Multi-Level Approach to Cognition and Emotion—SPAARS Model (Power and Dalgleish, 1997, 2008)*

As has been more fully discussed elsewhere (Power & Dalgleish, 1997, 2008), cognitive theory of mental disorder has tended to be based on single-level approaches to emotion, where, for example, there is a direct link between verbal propositional cognition (e.g., a negative automatic thought) and emotion (e.g., depression). Although there have been clear benefits from this type of operationalized cognition in therapy (e.g., Gloaguen, Cottraux, Cucherat, & Blackburn, 1998), CBT still has its drawbacks and theoretical difficulties, including its difficulty in accounting for why certain proposi-

tions in verbal form often miss how other stimuli (e.g., visual) can generate emotion (Teasdale & Barnard, 1993). Also, as noted by Jones (2001), the classic 'Beckian' CBT approach often does not account for the complex interactions between emotion and cognition observed in therapy, and how one set of propositions (in the form of verbal thoughts) can account for a number of different emotions within one person. Finally, as Power and Dalgleish (1999) pointed out, it is often observed clinically that patients will report various emotions, but without any apparent associated cognitions. This is a potentially serious theoretical flaw in any single level approach to mental disorder.

A number of authors have proposed models that show how emotions can be potentially generated across multi-layers of processing (e.g., integrated cognitive systems (ICS) model [Teasdale & Barnard, 1993]; SPAARS model [Power & Dalgleish, 1997, 2008]). Because the SPAARS model builds upon the ICS model, this paper will focus on the SPAARS model. A diagram of the model can be seen in Figure 1.

As can be seen above, an event (either internal or external) enters the SPAARS via the analogical system. According to Power and Dalgleish (1999), the analogical system is made up of a number of parallel processing modules that are modality-specific (e.g., verbal, olfactory, gustatory and proprioceptive). The representations generated within a specific modality do not require a linguistic interpretation to have a meaning and modular-specific representations are present throughout the SPAARS processing systems. It is argued that these modular-specific representations within SPAARS are an important point in understanding certain emotional disorders. For example, in post traumatic stress disorder, certain sights, sounds or other bodily sensations may become inherent parts of the memory of the traumatic event (Power & Dalgleish, 1997, 2008). The schematic model level is the highest processing part of the SPAARS model and it is essentially an effortful appraisal route, in which either external or internal stimuli is evaluated. This route is in keeping with contemporary theory in 'normal' emotional processing (for a fuller discussion, see Power & Dalgleish, 1997, 2008 and Teasdale & Barnard, 1993) and according to these theories, this schematic level of processing incorporates a higher level of representation that is above 'verbal expressible propositional concepts'. Within their book, Power and Dalgleish discussed the distinction between propositional and schematic model (implicational) representations,

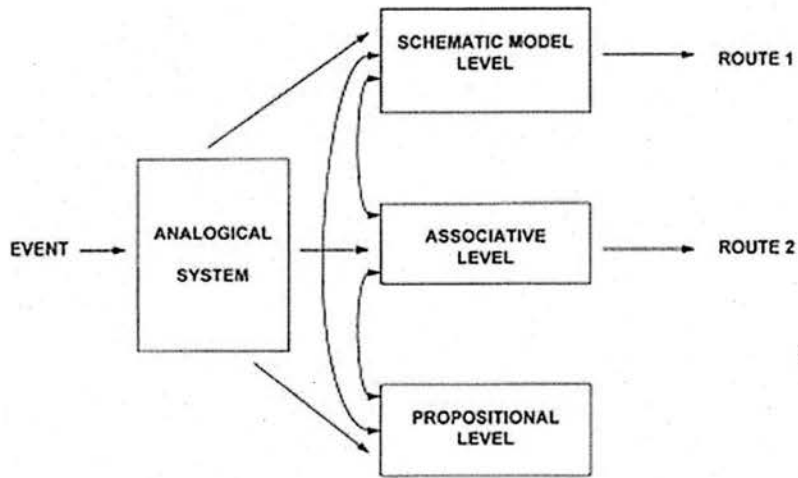


Figure 1. Power and Dalgleish's multi-level model of emotion—SPAARS

by using the example offered by Teasdale and Barnard, in which they compared a piece of prose with a piece of poetry. This is given below:

Implicational meaning:

*O what can ail thee, Knight-at Arms  
Alone and palely loitering?  
The sedge has wither'd from the lake  
And no birds sing*

Propositional meaning:

*What is the matter, armed old-fashioned soldier,  
Standing by yourself and doing nothing with a  
pallid expression?  
The reed-like plants have decomposed by the lake  
And there are not any birds singing*

As noted by Teasdale and Barnard (1993, p. 73), 'the implicational meaning or 'sense' conveyed by the two versions is very different. The poetic form conveys a sense of melancholy, emptiness and abandonment that is largely lost in the much more matter of fact tone of the prose example'. As Jones pointed out, this abstract level of processing is much more complex than Beck's concept of a schema (Jones, 2001). According to Beck, a schema is the sum of propositional statements that have been learnt over a period of time, while Power and Dalgleish argued that the schematic appraisals capture the contextual, historical and

emotional information (as shown in the poetry example). Thus, within the schematic models, the system is dynamic, draws from all other parts of the system to generate rules that apply to emotion generation and, in agreement with Beck et al. (1979), the SPAARS model proposed that domains of knowledge are organized around the self, others and the world.

The propositional level within the SPAARS model consists of representations that can be entirely described within normal language (although not one particular language). These representations are more akin to the negative automatic thoughts that are considered in other theories (e.g., Beck et al., 1979). The representations within this level are discreet (e.g., 'the tallest mountain in the world is Everest') and the propositional level does not have a direct emotion output. In agreement with Teasdale and Barnard (1993), it is argued that this level of information processing feeds into either the schematic or associative level for emotion generation, though certain words or phrases may lead to the direct generation of emotion (e.g., certain insulting or offensive words), or they may trigger associative emotion due to a certain place or person being mentioned (e.g., the name of someone who has recently died).

The second route to emotion generation is an associative route, where emotion is produced without any effortful cognition. It is proposed that there are two primary pathways for an event to become linked with an emotion. The first is via

an evolutionary preparedness for certain stimuli to elicit emotion (e.g., a snake phobia versus a telephone phobia). This draws from Seligman's proposal that certain stimuli may be more 'evolutionary prepared' for emotion generation (e.g. snakes, spiders etc.) (Seligman, 1975). A second source for the development of event-emotion links being developed comes from a learning perspective, in which certain pairings of events with emotions may become automated. For example, the eating of a particular food that gives someone a bad case of food poisoning could be linked with the emotion of disgust. This emotion could then be automatically generated every time that person saw the food following taste-aversion conditioning. Jones (2001) also pointed out that the event may also be internal, as well as external. For example, propositional representations can also be linked to particular emotions, such as 'they are out there' may be linked, over time, with the emotion of fear. Therefore, certain propositional statements can become an emotion generator in their own right, but through an automated associative route.

There are two final theoretical points from the SPAARS model that need to be considered before the model is applied to eating disorders, which are the constructs of inhibition and coupled emotions. According to the SPAARS model, inhibition can occur in three different ways: passive, active and the inhibition of particular emotion modules. Passive inhibition can be broadly understood as when the individual has an awareness of the internal emotional state and uses strategies such as distraction to inhibit the emotion, while active inhibition is much more akin to the psychodynamic concepts of repression and dissociation. According to the model, early learning leads to the development of schematic models that lie across the three domains of knowledge (i.e., self, others, world). Once these schematic models have been developed, they have the capacity to organize and filter information. This can be seen more clearly in the following example; Peter experiences during his childhood constant comments and opinions from his caregivers that he is not a very nice person because he is loud and talkative. The schematic model of the self would develop accordingly (e.g., SELF-BAD-NOT LIKE-ABLE) which would then inhibit incoming information to the contrary. However, once a 'critical mass' has been achieved that represents information to the contrary, Peter may be able to develop alternative schematic models that account for the new information about the self (e.g., Peter may have started a relationship in which he is loved and

respected). In this instance, the original schematic model of the self might not be lost, but it could be inhibited. If events occur that trigger the old schematic model, the prior emotion could occur (e.g., losing a relationship—sadness). In this instance, the 'new' schematic model would become inhibited. As discussed by Young et al. (2003) and Le Doux (1996), there is some evidence that suggests that schematic representations are laid down, through early childhood, within the sub-cortex. Although it is not clear whether their definition of schema is the same as the one proposed by Power and Dalgleish (1997, 2008), it does fit theoretically, as Le Doux proposed that once a schema has been laid within the amygdala it is very resistant to change, and they argue that it never completely disappears (Le Doux, 1996).

A key point in understanding the SPAARS model's role for emotional inhibition is that it proposes that the emotional schematic modules develop in a way that are akin to other modularized cognitive functions (e.g., elements of perception etc.). Accordingly, an individual's learning history may play a significant role in learning whether certain basic emotions are 'acceptable' or not. If, from an early age, a particular emotion is regarded as wrong or unacceptable, it is proposed that this modularized emotion 'splits off' from normal emotional development and becomes 'ego-dystonic' and modularized. Thereby, the schematic model within SPAARS operate in a way that is similar to a 'central executive', in that, it monitors information processing and the corresponding emotional output from the SPAARS model.

The notion of 'coupled emotions' is an important feature of the SPAARS model. It is argued that two or more basic emotions can become coupled via a person's learning history. Power and Dalgleish argued that more complex emotions and, importantly, emotional disorders can be the product of coupled emotions. For example, depression may be made up of the emotions of sadness and disgust directed at the self. The idea of coupled emotions compliments emotional inhibition because one emotion may be regarded as ego-dystonic, while the other emotion may be viewed as 'acceptable to the self'. In this instance, the acceptable emotion would be used to inhibit the unacceptable or 'ego-dystonic emotion'.

Emotional disorder occurs when the system becomes 'stuck', such as when different components of the system start to activate other parts of the system. For example, when a schematic model has been activated that indicates that the self is bad



(i.e., SELF-BAD), this then leads to the activation of propositional representations (e.g., 'I am a bad person'). Through a process of repetition this then leads onto the development of an associative link to low mood.

### *Applying a Multi-Modal Emotion Approach to Eating Disorders—SPAARS-ED*

Throughout this paper, it has been proposed that any theoretical understanding of eating disorders needs to account fully for the complex interrelationship of emotions that research has highlighted. It is argued that eating disorders are an affect regulation strategy, and hence should be regarded as an extension to affective or emotional disorders/difficulties. The works of Waller, Cordery, Corstorphine, Hinrichsen, et al. (2007) and Corstorphine (2006) have shown that the interpersonal context is important because individuals with eating disorders have a number of socially orientated 'schemas' (e.g., fear of rejection, mistrust in relationships, unrelenting standards etc.), and there is an overall sense of the self perceiving himself/herself as 'bad', 'worthless' or at risk of rejection/abandonment. According to the SPAARS model, these representations could be understood as 'SELF-BAD, OTHERS-IMPORTANT and WORLD-UNSAFE'. As has been discussed earlier, research has identified that these types of appraisals are also found in depression, and, thus, one of the outputs of the schematic arm of the SPAARS is the activation of the sadness emotion module.

Researches by Geller et al. (2000), Waller et al. (2003), and Fox and Harrison (2008) have started to suggest that the anger module is significant for people with eating disorders. It is hypothesized that the anger module may be primed by earlier experience. Moreover, anger has traditionally been regarded as a non-feminine emotion in Western cultures and this may place a cultural propensity on females having difficulties in expressing their anger (e.g., Lorenz, 1966; Tavris, 1989, 1992). Kent and Waller (2000), in their review, pointed out that emotional abuse may well lead to the development of belief systems that are likely to involve seeing oneself as undeserving and unlovable, seeing others as dangerous and hurtful, and experiencing the world as harmful, unpredictable and unfair.

According to emotion theory (e.g., Oatley & Johnson-Laird, 1987; Power & Dalgleish, 1997, 2008), anger can be understood as an emotional response to the blocking of goals; these goals can be regarded as life goals, relationship goals etc. It is

plausible that one of the main emotional responses to early life experiences is the development of a sensitive anger emotion module (e.g., at being 'let down' by carers, anger at self for being a 'bad person' etc). DiGiuseppe and Tafrate (2007) argued that having the experiences of abuse and maltreatment in childhood leaves the developing child with a significant 'hurt', leading to a sense of the unfairness of the world. Interestingly, they also argued that these experiences can also be responsible for a number of cognitive errors, such as an expectation of threat and suspicion from others. These authors, from their review of the literature, also suggested that the research evidence on the emotion of anger shows that the relationship between perceptions of threat and anger expression is moderated by beliefs of self-efficacy (i.e., limited expression of anger is related to low self-efficacy). Related to this point on the role of self-efficacy to anger expression, Hochschild (1979) termed the phrase 'emotional deviance' which describes the dissonance between the perceptions of one's own emotional experience and the perception of socially prescribed 'emotional scripts' for the expression of certain emotions. In other words, certain environments may be perceived to limit or expressly forbid the expression of certain emotions, such as anger. These points offer some useful additions to the theoretical points raised above in the discussion of emotional abuse within eating disorders (e.g., Corstorphine, 2006; Kent & Waller, 2000). It is argued that abuse and neglect leave a child with an emotional hurt, which predisposes the young person to a sense of threat and unfairness within his/her surrounding world. These same experiences also predispose the same person to perceptions of low self-efficacy and therefore, according to the points raised above, limit the expression of anger. Moreover, DiGiuseppe and Tafrate (2007) also argued that there is evidence that inhibited anger leaves the person more vulnerable to episodes of depression (as discussed above).

These theoretical points about the expression of anger appear to be important in their application to eating disorders because research has shown that this is an emotion that is inhibited within these disorders. There is some evidence that the emotion of anger is regarded as dangerous and unpredictable within an interpersonal relationship (Fox, 2009) for people with eating disorders, and these results are in keeping with the work of Geller and colleagues (Geller et al., 2000) who discussed how people with eating disorders may well suppress anger in an attempt to protect relationships. The

points raised by DiGiuseppe and Tafrate (2007) suggest that the emotional factors in a female with an eating disorder background may well be important (e.g., neglect, frank criticism and belittlement), because abuse may well leave the individual with a sense of 'hurt', which predisposes the person with the eating disorder to perceptions of being treated unfairly, and thus an increase in overall levels of anger. However, due to beliefs about low self-efficacy, this anger may be inhibited. These developmental factors, in SPAARS terms, would lead anger to become modularized and ego-dystonic and thus detached from the person's sense of self (for example, ANGER-DANGEROUS; ANGER-THREAT-OTHERS). However, there would also be in existence other automated appraisals that would suggest that other people are dangerous, threatening and important (for example, OTHERS-THREATENING; OTHERS-DANGEROUS), and that would suggest that the world is unfair and unpredictable (WORLD-UNFAIR; WORLD-UNPREDICTABLE).

Research has highlighted the importance of disgust and its potential role in body and food-related aspects of eating disorders (e.g., Troop et al., 2002). Moreover, the application of a dual level emotion theory allows for the theoretical development of the role of disgust, and its relation to other emotions. Works by Fox and Harrison (2008), Geller et al. (2000) and Hayaki et al. (2002) have shown that the lack of expression of emotions, in particular anger, is related to disgust and body dissatisfaction. On the basis of this research it is proposed that disgust via both 'preparedness' and 'over-learning' becomes an automatic emotion within certain contexts and interpersonal relations. Previous research has shown that body shape concern is significantly high among adolescent females and negative feelings towards the body is virtually universal in modern-day society (Stice, 2001; Maine & Kelly, 2005). Given the presence of socially directed schemas and the inhibition of anger, it is argued that anger and disgust (and to a lesser degree sadness) may become coupled during the course of emotional development. The work of Power and Dalgleish (1997, 2008) argued that depression can be understood as the product of the coupling of disgust (in the form of self-disgust) and sadness, and this theoretical point may help to explain the high level of co-morbidity of depression and eating disorders. The coupling of anger and disgust may also help to explain the theoretical processes that occur in eating disorders. The potential use of the basic emotion module of disgust to suppress and

'redirect' the emotion of the anger is an important part of the model being proposed, and to a lesser degree, sadness. According to SPAARS, the representations throughout the model take different sensory modalities (e.g., olfactory, tactile, visual). It is a common observation in clinical practice that people with eating disorders have an array of modalities that evoke disgust towards themselves and food. For example, the sensation of a 'tight pair of jeans', the smell of food cooking, the visual image of the self being fat or eating could all potentially be directly related to the emotion of disgust for people with eating disorders. Anxiety is often regarded as a key emotion within eating disorders because a morbid fear of fatness is regarded as a crucial symptom (e.g., DSM IV [APA, 1994]). It was discussed earlier in the paper that there is a strong relationship between disgust and anxiety (fear) in eating disorders because they are both emotions of avoidance (e.g., Uher et al., 2005). The work of Davey et al. (2006) has suggested that the relationship between disgust and anxiety is uni-directional with induced disgust creating a negative interpretational bias within the individual. It is argued that the emotion of disgust leads to the development of fear, in that, there is a fear of weight gain and/or food. In other words, the fear of disgust eliciting stimuli induces anxiety in people with eating disorders, and therefore, the anxiety is secondary to the principal emotion of disgust. This is an area that appears to warrant further investigation.

Thus, once the SPAARS-ED model (Figure 2) has been activated in a particular fashion, it becomes biased in its appraisal of incoming information (both externally and internally) and this can lead to the development of a 'default mode' of operating. This 'locking' maintains the dominant emotion within the SPAARS-ED model, and thus, the person has a heightened sensitivity to disgust-eliciting stimulus, via the associative route. The finding from Fox and Harrison (2008) that anger and disgust are potentially coupled also suggests the dominance of disgust within the SPAARS-ED as anger-eliciting stimuli will also elicit the emotion of disgust. Again, the feedback loops in the SPAARS model help us to explain why it is only self-disgust that is particularly sensitive because the analogue system is 'locked' on the main stimuli of disgust elicitation, namely food, body and self.

According to the SPAARS model, emotional modules are shaped by an individual's own learning experiences. Power and Dalgleish (1997, 2008) argued that certain environments and/or cultures lead an individual to learn that the expression, or

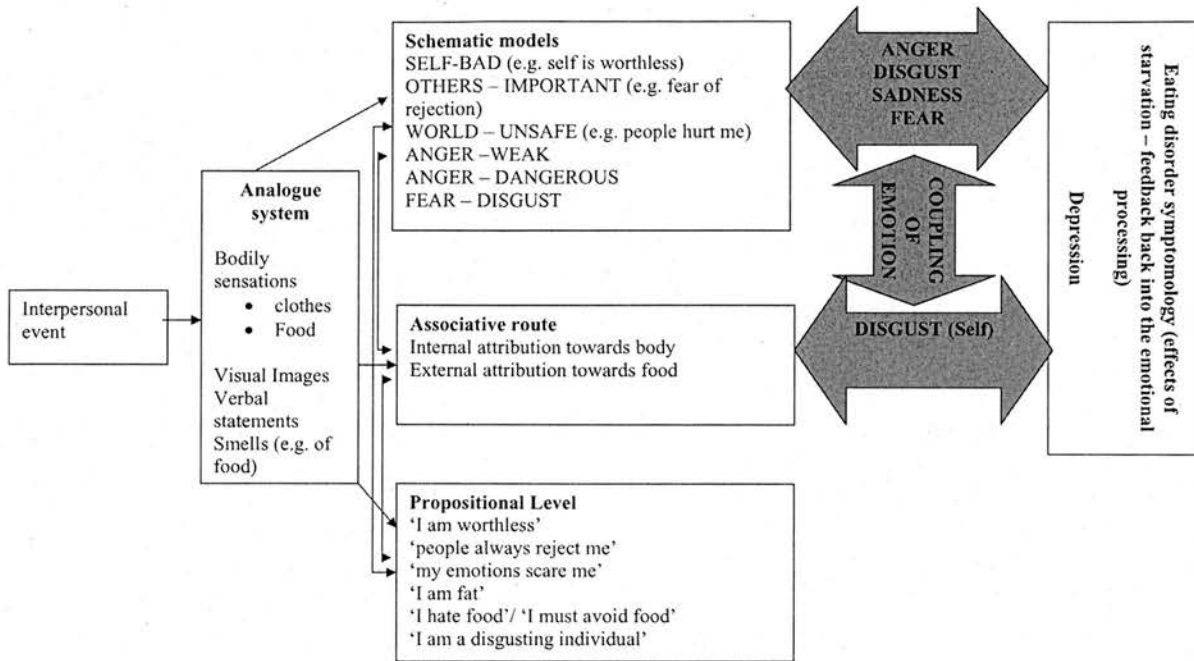


Figure 2. A diagram of the SPAARS model applied to eating disorders (SPAARS-ED)

indeed, the feeling of a particular emotion is 'bad' or 'wrong', and in these situations the person comes to perceive that particular emotion as being ego-dystonic/damaging to the sense of self. In these situations, the schematic level may inhibit the experience of that emotion, although the emotion may still be generated at the associative level. Within Western culture, traditionally certain emotions are acceptable to be expressed by females, while others are often not allowed (e.g., anger). Perhaps it is no coincidence, therefore, that females are the vast majority of sufferers of eating disorders.

Waller and colleagues discussed that one of the key processes within their model was where the actual emotion was being inhibited. The notions of primary and secondary inhibition of emotion fit neatly with the definitions proposed within the general SPAARS model, of passive and active inhibition. According to the model, passive inhibition is a process where an emotion is experienced, but the person engages in strategies to distract or avoid the feeling of that emotion (e.g., involving oneself in something else, or avoiding a conversation that is discussing an emotion-eliciting situation). Passive inhibition fits with all the research and theory that have demonstrated that bingeing and vomiting occur in relation to negative affect. The

primary avoidance of negative emotion fits with the idea of active inhibition where the individual uses almost automatic procedures (e.g., repression and dissociation) to inhibit emotion. It is likely that in reality, both processes are in operation within eating disorders, but to varying degrees. It is an empirical question whether these differences could account for the different symptom patterns found in eating disorders (e.g., restricting versus binge-vomiting).

The final theoretical point that needs to be discussed is the role of eating disorder symptomatology that maintains the emotional components of the eating disorder. As discussed by others, eating disorder symptoms have an important physiological underpinning. For both restricting and binge-purging eating disorders, the role of extreme dieting has been shown to be important in the maintenance of the eating disorders (Fairburn et al., 1993; Keys et al., 1950). As discussed above, research suggests that extreme dieting and bingeing-purging cycles have an impact on lowering mood (e.g., Keys et al., 1950). It is argued that these physiological effects may well feedback into the emotional processes and reinforce a sense of worthlessness and disgust, and provoke a sense of anger at oneself for having the eating disorder.



Furthermore, these factors lock the SPAARS model for certain emotions and therefore, maintain the disorder within the individual.

## IMPLICATIONS FOR RESEARCH AND CLINICAL PRACTICE

So far, through this paper, a new model of eating disorders has been presented that has used the current status of the research literature on both cognitive processing and emotional functioning in eating disorders. However, it has also used contemporary emotion theories and models to develop and formulate a new model that both accounts for current research findings and offers new theoretical insights into the emotional processing in eating disorders. The notion of anger being a suppressed emotion is not a new concept, nor is the notion of disgust and shame being directed at the body. However, the theoretical construct of these two emotions being coupled and that the emotion of disgust being present at an associative level (and in different modalities) help to offer some theoretical insights into the relationship between suppression of emotion and the subsequent development of pronounced body dissatisfaction in females. This, as has been argued throughout the paper, has been a significant theoretical gap in the cognitive literature. The remainder of this paper will now consider both the research and the clinical implication of this model.

### Research Implications

As with all new theories and models, it is hoped that the SPAARS-ED model will generate further research and theory development. At the start of this paper, the current controversies about diagnoses of eating disorders were presented. Although this model has adopted a transdiagnostic perspective (in keeping with a number of other authors in the field, Fairburn, 2007), it is still important to unpick the nature of emotional processes between predominantly bingeing-purging and restricting eating disorder symptom clusters. Moreover, there are a number of research questions about the nature of the representations of emotions, and it would be worth undertaking research that looks at these within individuals with eating disorders. It has been hypothesized that anxiety and disgust have an important relationship and this is currently a part of a research project that the authors are undertaking.

### Clinical Implications

The current main models (with the exception of some of the second generation cognitive theories) have tended to focus on the various maintenance factors involved in eating disorders (e.g., beliefs about weight gain, beliefs about dieting etc.). As such, they have tended to emphasize very practical strategies that focus on behavioural change, with very little focus on other cognitive variables. If these factors are considered in light of the proposed model, it becomes evident that the notion of emotions in the treatment of eating disorders has been forgotten. According to the theory, certain emotion modules are primed and activated within eating disorders and these are involved with the actual emotions concerned and the ability or motivation to express a particular emotion (e.g., anger). Only schematic interventions (e.g., Waller) currently focus on the schematic modules of emotion, in that they focus on goals, aspirations and beliefs about the self and others. Despite this, it is important to note that some CBT approaches tend to focus on propositional levels of the SPAARS model (e.g., challenging negative automatic thoughts (NATS)), and thus fail to address the higher-level schematic models. This will not only prevent any real emotional change, but also paradoxically reinforce the schematic model. A good example offered by Power and Dalgleish (1999) concerns how the therapist may work to challenge the clients' assumptions about being a failure, thereby reinforcing that very belief, as they are 'incapable of doing it on their own'. As proposed by more traditional models of CBT (e.g., Fairburn et al., 2003), there is a directive manner in the treatment of BN, and the outcome studies have only demonstrated approximately 50% improvement rates. The points above may suggest that there is a risk that this type of manualized approach may reinforce schematic representations of the self as a 'failure' because the focus is the propositional statements occurring as negative automatic thoughts.

There is neither consideration of the actual emotional output nor the associative route in current models. It has long been noted that people often leave treatment for an eating disorder with still a very poor body image (e.g., Deter & Herzog, 1994; Goldbloom & Olmsted, 1993; Ratnasuriya, Eisler, Szmukler, & Russell, 1991). As has been discussed within the main theory section, this residual poor body image after treatment could be accounted for by the role of disgust still being active via the associative route within SPAARS-ED.

Within the SPAARS model, Power and Dalgleish (1997, 2008) discuss fast and slow change processes in therapy. They give the example of panic disorder in which therapy helps the person to reframe or reappraise his or her beliefs about imminently having a panic attack to one of understanding that they are symptoms of anxiety/panic. However, panic sufferers may still have marked symptoms after therapy, and Power and Dalgleish argue that this is due to the over-learned associative route taking longer to change than the fast route for therapeutic change. Within the eating disorder field, it is argued that therapy will need to work with the emotion of disgust that is directed at the body, and with the schematic model of the unacceptability of certain emotions, especially anger. Power and Dalgleish (1997, 1999) argue that exposure and the use of 'behavioural experiments' are much more useful than purely cognitive or linguistic methods for associative route change and it has long been argued by some authors that behavioural change is an essential component of the treatment plan for someone with an eating disorder (e.g., Waller, Cordery, Corstorphine et al., 2007). Moreover, the notion of working with disgust towards the body, in the guise of marked body dissatisfaction, would need to be incorporated into any treatment option.

This would enable the person to start to re-learn, via the associative route, a non disgust emotion attached to his or her body. This is an empirical question, but recent work by Jensen, Nederkoorn and Mulken (2005) on attentional training in body image distortion in eating disorders tends to suggest that this could be a productive way to work with individuals with eating disorders. According to this point, the individual is trained to attend to parts of his/her body he/she does not dislike (by using a mirror) in order to help him/her gain a more balanced perspective of his/her body. Within the SPAARS understanding of eating disorders, it is argued that this would allow the individual to learn to associate alternative emotions to his/her body and, thereby, reduce the relation of disgust towards the body and food. Indeed, this may be an important theoretical point why exposure work to new or banned foods may help to break down the associated disgust attached to the foods.

With regard to the schematic arm of SPAARS-ED, the notion of inhibited emotion has been considered to be important. Interestingly, recent developments within the CBT field have started to consider the issue of emotions and their avoidance. For example, DBT (Linehan, 1993) and Acceptance and

Commitment Therapy (Hayes, Strosahl, & Wilson, 1999) both argue for the need to accept one's own emotions, whether 'positive or negative' and that the notion of 'healthy normality' (where there is an expectation that everything is happy and healthy) is very unhelpful within the field of mental health. These ideas with SPAARS-ED fit with these theoretical and therapy perspectives and it is proposed that an aim for a person with an eating disorder is to accept his or her emotions and to learn to live with them in a more productive manner. Thus, in theoretical terms, this would involve the teaching and/or facilitation of the development of cognitive skills that allows the person to experience painful overwhelming emotion (and/or associated traumatic event), while being held in the consciousness of the experiencer. This allows the individual to become aware of the self-as-experiencer of the emotion. This reflective state could allow the individual to develop a new schematic model of what may have previously been overwhelming, but now it is experienced as painful but contained within the self.

## CONCLUSIONS

It has been argued throughout this paper that evidence exists to indicate that there are marked difficulties with both the experience and expression of emotions for people with eating disorders. Although these difficulties have been highlighted, there has been very little attempt to address these issues within a theory of eating disorders.

By adopting the SPAARS approach, a model is proposed that attempts to account for both the emotional underpinning of eating disorders and the developmental pathways that lead to disordered eating. It is suggested that cognitive therapy approaches appear to be effective in the treatment of eating disorders, but the evidence does suggest that there is a long way to go in the development of these treatment models. It is hoped that the SPAARS-ED model will act as a catalyst for research and theory development for understanding and treating eating disorders.

## ACKNOWLEDGEMENTS

Thanks are due to a number of colleagues who helped in the development of ideas, reading drafts and giving guidance and support in the writing of this paper. Particular gratitude goes to Professor Janet Treasure and Amy Harrison at the Institute of Psychiatry in London, Professor Steve Jones at

Lancaster University and Ken Goss at the Coventry Eating Disorders Services.

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