AN ANALYSIS OF THE SELF-REPORT DIARIES OF PATIENTS WITH BULIMIA NERVOSA

by

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THIS IS DEDICATED TO WOMEN WHO BELIEVE THAT
BEING THIN IS THE SAME AS BEING HAPPY
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SUMMARY

Bulimia nervosa is an eating disorder that has stimulated considerable research efforts in recent years. The increasing prevalence of bulimia nervosa has been partially attributed to the prevailing sociocultural notion that thinness embodies the essence of beauty, success and personal achievement. This has led to greater demands for more efficacious treatment approaches by clinicians because of the rigid and intractable nature of the disorder.

Bulimia nervosa is characterized by dysfunctional cognitions and cognitive styles where weight is inappropriately central to self-worth. Bulimic individuals are extremely negative in their views of themselves. Their self-image is intricately related to their body weight and shape. This poor body image is responsible for the development of depression and the depressive symptoms further exacerbate negative cognitions. Distorted cognitions and negative mood thus play a critical role in the initiation and maintenance of bulimia nervosa.

The understanding and treatment of bulimia nervosa is largely centered around the presence of dysfunctional cognitions. These cognitions encompass beliefs about food, body weight and shape that manifest in a desperate pursuit for thinness at any cost. Thoughts and emotions regarding the drive for thinness predominate and often compromise the individuals’ global functioning thus leading them to seek treatment. There are numerous treatment approaches...
available to the bulimic sufferer but cognitive behavioural therapy remains the treatment of choice according to the literature.

Cognitive behavioural therapy aims to reduce and ultimately eliminate maladaptive belief systems and the consequent behaviours. In the case of bulimia nervosa the attitudes and beliefs about weight and shape that cause the individual to engage in bulimic behaviours are challenged and changed. The compensatory behaviours are also simultaneously targeted and remediated. The therapy format for cognitive behavioural therapy revolves around self-monitoring and daily record keeping in order to identify cognitive and behavioural patterns. A daily diary of thoughts and behaviours is recorded by the bulimic patient and this is then used in weekly therapy sessions.

The aim of the present study is to ascertain if there are statistically significant differences between two groups of bulimic patients who had completed a course of cognitive behavioural therapy with regards to subjects' personal information and diary contents recorded during this course of therapy.

Two groups of white western middle class female bulimic subjects were grouped according to therapy outcome which was either successful (Group S, where n=21) or unsuccessful (Group U, where n=7). The diaries of these subjects were
drawn from the files of a therapist practicing at an eating disorder unit in South Africa.

The emphasis in the literature on cognitive processes and cognitive content regarding body weight and shape as well as negative mood in bulimia nervosa led to the broad research question: Are there statistically significant differences between successful and unsuccessful bulimic patients in terms of certain subject variables, diarised word usage (eating disordered words and affective disordered words) and diarised compensatory behaviours?

The four subject variables that were compared were duration of illness, weight loss goal, body mass index and number of diary days recorded. The average total number of certain eating disordered words and certain affective disordered words diarised during therapy were also compared. Furthermore, five specific eating disordered words and five specific affective disordered words were identified in the diary contents, and the frequency of the usage of these words was compared at the beginning and at the end of therapy for each group. The frequency of certain diarised daily compensatory behaviours was also compared at the beginning and at the end of therapy for each group. It was expected that the frequency of eating disordered words, affective disordered words and compensatory behaviours would decrease significantly for the successful therapy group but not for the unsuccessful therapy group.
Regarding the between-group analyses for personal data, namely duration of illness, weight loss goal, body mass index and the number of diary days recorded, for eating disordered words, for affective disordered words and for total word output, no differences manifested between the two groups. A possible rationale for this is that the small number of subjects used in the study. It is also possible that the differences between the two groups of subjects lie in variables not considered in this study such as personality pathology, family issues and other comorbid diagnoses.

Regarding within-group analyses, statistically significant differences between Quarter 1 and Quarter 4 of therapy were found for the group with successful therapy outcome. Quarter 4 consistently showed a reduction in the use of some eating disordered words, affective disordered words and compensatory behaviours compared to Quarter 1. The group with an unsuccessful therapy outcome consistently showed no change in the use of eating disordered words, affective disordered words and compensatory behaviours between Quarter 1 and Quarter 4.

These results suggest that bulimic patients undergoing cognitive behaviour therapy use language that is indicative of cognitive structures that revolve around poor body image, eating and depressed mood regardless of the outcome of therapy. However, the use of specific eating disordered and affective disordered language only improves in those bulimic patients who had a
successful outcome at the end of therapy. This study also shows that the
dysfunctional behaviours associated with bulimia nervosa such as bingeing,
vomiting and exercise abuse decrease significantly by the end of therapy for the
successful group only. Furthermore, this study demonstrates the usefulness of
the self-monitoring diary technique used in the cognitive behavioural approach
to the treatment of bulimia nervosa.

No other studies were found that have attempted to quantitatively analyze
qualitative diary content. It is thus hoped that this study will add to the existing
cognitive behavioural theoretical model of bulimia nervosa and hence be the
foundation for further research into the cognitive aspects of this disorder.
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"To men, a man is but a mind
Who cares what face he carries?
Or what form he wears
But a woman's body is the woman"

AMBROSE BIERCE
CHAPTER 1

ORIENTATION, MOTIVATION AND AIMS

1.1 ORIENTATION AND MOTIVATION

The increasing incidence of bulimic behaviour, predominantly in young women, has generated a substantial treatment demand and curiosity regarding the disorder. The exact prevalence of eating disorders is unknown but it is clear from the literature that these disorders constitute a significant source of psychiatric morbidity (Eagles, Easton, Nicoll, Johnston & Millar, 1999). This has prompted an abundance of research efforts but there are still no definitive answers to the multitude of research questions regarding the diagnosis, epidemiology, aetiology, theory, treatment and prognosis of bulimia nervosa.

Bulimia nervosa is a complex disorder that cannot be regarded in linear terms and therefore does not reduce easily to a single aetiological or theoretical model. Since aetiology informs treatment approaches it follows that there is no single treatment for bulimia nervosa. Eating disorder research is fraught with difficulties because of the elusive and complex nature of these disorders which defy precise aetiological delineation.
Researchers in the field of bulimia nervosa do however agree on the presence and importance of cognitive disturbances in bulimia nervosa (Butow, Beumont & Touyz, 1993; Cooper & Fairburn, 1993; Fairburn & Cooper, 1984; Zotter & Crowther, 1991). These cognitive disturbances are characterised by unusual beliefs, assumptions and attitudes that revolve around food, eating, body weight and shape. Brumberg's (1989) description of anorexia nervosa as “a secular addiction to a new kind of perfectionism, one that links personal salvation to the achievement of an external body configuration rather than an internal spiritual state” (p. 7) also reflects the beliefs and attitudes held by bulimic sufferers. The bulimic's sense of self worth, achievement, success and happiness are all dependent on the external appearance and weight of the body. They are continually striving for a low weight and remain preoccupied with obtaining a thin form. This reflects sociocultural standards and expectations placed on women's physical shape (Akan, & Grilo, 1995; Lavin & Cash, 2001; Rand & Wright, 2001).

Modern western culture has elevated thinness to the highest moral plane for women who have learned to derive a great sense of mastery and gratification from the pursuit and achievement of weight loss and thinness. It appears that patterns of modern western culture constitute the kind of environmental pressure that interacts with physiological and psychological variables and results in eating disorders. Sociocultural factors have been strongly implicated in the genesis of bulimia nervosa that seems to develop as a result of the intersection of external
and internal forces. The external forces are the social and cultural demands that western women are exposed to. Internal forces are less obvious and more difficult to define and identify. They may also vary widely from one individual to the next. The stance taken in this investigation is that of organised cognitive structures that shape the thoughts and cognitions of the bulimic individual. The core psychopathology of eating disorders appears to be represented in organised cognitive structures which lead to the development and maintenance of eating disorders (Channon, Hemsley & de Silva, 1988; Cooper & Fairburn, 1993; Ruderman, 1986; Vitousek & Hollon, 1990).

Dysfunctional cognitive processes have been strongly implicated in the development and maintenance of bulimia nervosa (Bruch, 1981; Butow, Beumont & Touyz, 1993; Fairburn, 1985, 1991; Garner & Bemis, 1982). These dysfunctional cognitive processes revolve around attitudes and beliefs held about eating, body weight and shape, and the thinking styles and structures within which these beliefs operate (Butow, Beumont & Touyz, 1993; Goldfein, Walsh & Midlarsky, 2000; Vitousek & Hollon, 1990). The beliefs and assumptions held by bulimic sufferers are intractable and rigid.

The development and nature of these rigid beliefs and the role of cultural factors in their genesis become pertinent questions for research to address (Mautner, Owen & Furnham, 2000). Modern influences on body weight and shape must
therefore be investigated to shed light on the internalisation of these ideals in women. Internal cognitive structures reflect the way in which bulimic individuals think, feel and evaluate themselves. If cultural factors are responsible for or implicated in the development and maintenance of bulimia nervosa as research suggests then it is surprising that all women do not have an eating disorder. What can be said is that most western women are body conscious and may diet at some point in their lives, but not all dieting will lead to a clinical eating disorder.

Research has shown that body image problems occur amongst women both with and without eating disorders (Adami, Gandolfo, Campostano & Scopinaro, 1998; Allaz, Bernstein, Rouget, Archinard & Morabia, 1998; Klesges, 1983; Smith, Thompson, Raczynski & Hilner, 1999). Most women see themselves as being heavier than they really are. Poor body image results in body dissatisfaction and is prevalent in both bulimic women and those who do not have the disorder (Garfinkel, 1992). Research consistently shows that the negative evaluative body image attitudes that are prevalent among women in general, distinguish well between women with and without eating disorders. It thus appears that body image difficulties, dieting, weight and body preoccupation all lie on a continuum ranging from the benign to the pathological. What differentiates women with bulimia from those who do not have an eating disorder, is the negative thoughts and attitudes regarding the self. The content of these thoughts and attitudes is
focused on physical appearance, body shape and weight. This is accompanied by an affective component that also pervades the bulimics' thoughts and attitudes.

For some women it seems that thinness at any cost represents the ideal (Wiseman, Gray, Mosimann & Ahrens, 1992). There are a host of factors that seem to contribute to this pervading ideal of thinness. Among these factors are the mass media that reinforce and portray these ideals (Morris, Cooper & Cooper, 1989; Myers & Biocca, 1992; Pinhas, Toner, Ali, Garfinkel & Stuckless, 1999; Richins, 1991; Silverstein, Perdue, Peterson, Vogel & Fantini, 1986). Western society is surrounded by the exercise and dieting industry, fashion models, magazines, television, books, videos, pills, potions, supplements and shakes all promising to deliver the miracle of the perfect body thus giving hope to the consumer that happiness, attractiveness, beauty and success will follow.

The effect that this western environment has on women has been researched and shown to contribute to the increasing incidence of body image disturbances and possibly the development of eating disorders (Pinhas, Toner, Ali, Garfinkel & Stuckless, 1999; Wiseman, Gray, Mosimann & Ahrens, 1992).

Although extensively researched there are still many unanswered questions and inconclusive findings in the field of eating disorders. The treatment and therapy available to eating disordered individuals are often ineffective or short lived with
relapse rates being very high. Eating disorders are elusive and often respond poorly to treatment which seems to be related to the core nature of these disorders rather than to poor treatment (Waller, 1997). The secretive nature of bulimia nervosa and the denial seen in anorexia nervosa lead to a reluctance to seek or accept help. Where sufferers do attend therapy, the dropout rate is high (Steel, Jones, Adcock, Clancy, Bridgeford-West & Austin, 2000) and compliance is often poor. These factors hinder research efforts and sample sizes are often too small. Bulimia nervosa is notoriously treatment resistant and even where the outcome of therapy is favourable the long term remission rates are not clear.

Cognitive behavioural therapy has enjoyed a fair amount of research attention in comparison to other therapy modalities. It has also been relatively successful in the treatment of eating disorders, particularly bulimia nervosa and is widely regarded as the treatment of choice. This is reflected in the literature, but long term maintenance of positive results is not clear (Bulik, Sullivan, Carter, McIntosh & Joyce, 1999; Crow & Mitchell, 1996; Fahy & Russell, 1993; Rorty, Yager & Rosotto,1993).

The question arises why many modern western women capitulate to the social pressure to be thin. There is a reversible association between drive for thinness, low self esteem, poor body image and depression all of which are aggravated where such thinness is not achieved. Many women's internal sense of self is
entirely dependent on external physical features that leads to a battle between the physiological make up of the woman and the cultural expectation of extreme thinness (Beebe, Holmbeck, Schober, Lane & Rosa, 1996; Brownell, 1991). The thoughts, attitudes and beliefs of eating disordered women reflect this emotional battle that often leads to depression (Arnow, Kenardy, & Agras, 1995).

The literature is replete with research that concerns the existence of the thoughts, attitudes and beliefs of bulimic patients. The research on cognitive behavioural approaches for the treatment of bulimia nervosa is also extensive and explicates the process of such therapy. The research shows that the cognitive behavioural therapeutic process that makes use of a diary system is effective and beneficial to the recovery of bulimic patients (Fairburn & Cooper, 1993). The diary system requires the bulimic patient to keep daily records of behaviours, thoughts and feelings pertaining to the disorder (Arnow, 1996). No research studies in the literature reported on the specific content of these patient diaries. Many research studies acknowledge the presence of self-statements that reflect underlying beliefs and automatic assumptions of bulimic patients but the specific content and language used has not been detailed (Waller, Ohanian, Meyer & Osman, 2000; Zotter & Crowther, 1991). The motivation for the present study was to examine the language content or self-statements of bulimic patients. This language was assumed to be present in the daily diary records of bulimic patients that were kept as a requirement for cognitive behavioural
therapy. Once language markers were identified the significance of the presence of such language could be determined by comparing the diary content of successful therapy patients with unsuccessful therapy patients.

The present study aims to contribute to the existing body of research of bulimia nervosa by adding specifically to the understanding of the cognitive processes that are observed in individuals with this disorder. The motivation to embark on this project was also driven by the hope that the effectiveness of cognitive behavioural therapy could be evaluated thus possibly promoting the practise and research of this treatment approach. The efficacy of record keeping and self monitoring that cognitive behavioural therapy makes use of has received limited research attention and it is hoped that this study will stimulate further research efforts in this direction in order to improve treatment outcome for those individuals who have the courage to seek professional therapy and help.

The general research question arising from this is as follows:

- Are there statistically significant differences between two groups of bulimic patients (successful and unsuccessful outcome at the end of therapy) in terms of subject variables, word usage (eating disordered words and affective disordered words) and compensatory behaviours.

The specific questions arising from the above are as follows:
• Are there differences in variables such as duration of illness, weight, body mass index, and number of diary day recorded in these subject groups?

• Are there specific eating disordered words and affective disordered words that appear frequently in the diaries of bulimic subjects so as to reflect the cognitive structures of these subject groups? If so, are there changes that occur in the frequency of these words at the beginning and end of therapy for subjects who succeed in therapy compared to subjects who are unsuccessful as a result of their dropping out of therapy?

• Are there changes in the frequency of compensatory behaviours at the beginning versus the end of therapy and if so are these changes statistically significant for the successful group compared to the unsuccessful group?

The aims of the present study are based on the research question and are delineated in the following section.

1.2 AIMS OF THE STUDY

The aims of the study are outlined by discussing the specific as well as the general aims that guided this research study. The central hypothesis is then stated.
1.2.1 SPECIFIC AIMS OF THE STUDY

The specific aim of the present study is to ascertain if there are statistically significant differences

- between and within two groups of bulimic patients
- who had completed a cognitive behavioural therapy course
- regarding certain personal data and certain diary entries as summarised below
- and written up during their therapy
- the first group (n=21 females) having had a successful outcome (Group S)
- and the second group (n= 7 females) having had an unsuccessful outcome (Group U).

The personal data and diary entries that were subjected to between and within group comparisons were as follows :-

(i) Subject variables:
The four subject variables examined were duration of illness, weight loss goal, body mass index, and number of diary days recorded. Differences between the successful group and the unsuccessful group were considered.

(ii) The average total eating disordered words.
Eating disordered (ED) words are those words that refer to negative body image (e.g. fat, disgusting, ugly), food, eating and appetite (e.g. hungry, bingeing) and
poor self image (e.g. guilty, hate myself, pathetic, useless). The eating disordered words were counted and ranked from one to twenty where one was the most frequently used eating disordered word and twenty the least frequently used eating disordered word for all subjects.

The average total number of eating disordered words used in Quarter 1, Quarter 4, in Quarter 1 minus Quarter 4 and in all the Quarters were compared between the successful group and within the unsuccessful group.

(iii) The average total affective disordered (AD) words.
Affective disordered words are those words that refer to negative mood (e.g. sad, unhappy, tired, angry) and words indicating the presence of depression (e.g. down, miserable, anxious, negative). The affective disordered words were counted and ranked from one to twenty where one was the most frequently used affective disordered word and twenty the least frequently used affective disordered word for all subjects.

The average total number of affective disordered words used in Quarter 1, Quarter 4, in Quarter 1 minus Quarter 4 and in all the Quarters were compared within the successful group and within the unsuccessful group.
(iv) The average total word output. The total word output was derived by counting all the words written down each day for the duration of the therapy.

The average total word output in Quarter 1, Quarter 4, and in Quarter 1 minus Quarter 4 were compared between the successful group and the unsuccessful group.

(v) Specific eating disordered words in Quarter 1 versus Quarter 4 of therapy for the successful group (Group S).

The five most frequently used eating disordered words were considered for statistical purposes. The average use of the eating disordered words fat, hungry, guilty, excessive and weak occurring in Quarter 1 of therapy was compared to the average used of the same words in Quarter 4 of therapy for the successful group (Group S).

(vi) Specific affective disordered words in Quarter 1 versus Quarter 4 of therapy for the successful group (Group S).

The five most frequently used affective disordered words were considered for statistical purposes. The average use of the affective disordered words...
unhappy, anxious, tired and negative and weak occurring in Quarter 1 of therapy was compared to the average used of the same words in Quarter 4 of therapy for the successful group (Group S).

(vii) Specific eating disordered words in Quarter 1 versus Quarter 4 of therapy for the unsuccessful group (Group U).

The five most frequently used words were considered for statistical purposes. The average use of the eating disordered words fat, hungry, guilty, excessive and weak occurring in Quarter 1 of therapy was compared to the average used of the same words in Quarter 4 of therapy for the unsuccessful group (Group U).

(viii) Specific affective disordered words in Quarter 1 versus Quarter 4 of therapy for the unsuccessful group (Group U).

The five most frequently used words were considered for statistical purposes. The average use of the affective disordered words unhappy, anxious, tired and negative and weak occurring in Quarter 1 of therapy was compared to the average used of the same words in Quarter 4 of therapy for the unsuccessful group (Group U).
Specific compensatory behaviours occurring in Quarter 1 versus Quarter 4 of therapy for the successful group (Group S).

The average occurrence of compensatory behaviours which includes binges, vomiting, laxative abuse and exercise abuse in Quarter 1 of therapy was compared to the occurrence of the same behaviours in Quarter 4 of therapy for the successful group (Group S).

Specific compensatory behaviours occurring in Quarter 1 versus Quarter 4 of therapy for the unsuccessful group (Group U).

The average occurrence of compensatory behaviours which includes binges, vomiting, laxative abuse and exercise abuse in Quarter 1 of therapy was compared to the occurrence of the same behaviours in Quarter 4 of therapy for the unsuccessful group (Group U).

Bingeing is defined as episodes of overeating where the subject characteristically feels out of control of the type and quantity of food eaten.

Self induced vomiting is defined as vomiting that only occurs as a result of the subject intentionally forcing themselves to vomit by such means as sticking a finger down the throat. This is done to avoid weight gain.
Laxative abuse is the unnecessary overuse of this medication ingested in large quantities to voluntarily produce diarrhoea in order to avoid and lose weight gain.

Exercise abuse is defined as exercise that is engaged in purely for the purpose of burning up calories to avoid weight gain. This can result in numerous gruelling exercise sessions per day where weight loss is the only motive for this behaviour. It can become a compulsive daily activity that causes physical and emotional distress.

1.2.2 GENERAL AIM OF THE STUDY

The general aim of the present study is to contribute to the growing body of research that focuses on the cognitive processes of bulimia nervosa and subsequently to add to, and improve, the treatment protocols of this highly refractory disorder.

The present study aims to provide substantiated research data on the changes that occur in cognitive content and compensatory behaviours in bulimic subjects during the process of cognitive behavioural therapy. Furthermore, the study hopes to identify differences between those individuals who succeed in therapy and recover versus those who do not, thus providing valuable prognostic indicators for clinicians working with bulimic clients.
1.2.3 CENTRAL HYPOTHESIS

The central hypothesis for this study is that there are statistically significant differences between or within two groups of bulimic subjects regarding:

- subject variables
- the use of eating disordered words
- the use of affective disordered words
- the occurrence of compensatory behaviours

The bulimic subjects were grouped according to the outcome of therapy which was either successful or unsuccessful. Group S thus had a successful outcome at the end of therapy and Group U had an unsuccessful outcome at the end of therapy.

1.4 CHAPTER DELINEATION

Chapter one orientates the reader to the context, background and motivation that the study is based on. The specific and general motivations and aims are also presented in chapter one. In chapter two a literature review covering the diagnostic criteria, epidemiology and aetiology of bulimia nervosa is presented. Chapter two also discusses the need for theory then selectively reviews some of the theoretical models of bulimia nervosa. The modern influences on body weight and shape highlight the impact of western social, economic and cultural
forces that affect the way in which the ideal of female thinness is perpetuated in women. Body image is then discussed to show the complex nature of how individuals relate to and perceive themselves regardless of the presence of disordered eating. The collision of physiology and culture is discussed to emphasis the limitations of the body and to show how self destructive the pursuit of thinness can be. Chapter two ends with the summary.

The experience and theory of bulimia nervosa are discussed in chapter three. Herein the clinical features of the disorder are given a more detailed description. This is followed by review of the classic starvation study conducted by Keys, Brozek, Heschel, Mickelsen and Taylor in 1950 (Keys et al., 1950). The relevance and significance of this study to bulimia nervosa are discussed which shows the importance of addressing the nutritional aspects of bulimia nervosa when treating this disorder. Chapter three then goes on to outline the cognitive model of psychopathology and shows how this model has been applied to depression and bulimia nervosa. Cognitive processes, schematic content and cognitive specificity in bulimia nervosa are then outlined. Finally, chapter three reviews the treatment of this disorder and is closed by the chapter summary.

Chapter four discusses the empirical investigation. The aim of the study along with the research question, subject selection, procedure for data collection, the hypotheses, the statistical analysis and a summary comprise this chapter.
In Chapter five the results are presented.

A discussion of these results follows in chapter six. An interpretation of the results and an evaluation of the study are offered. Recommendations for future research are then made.

This chapter has outlined the motivation and aims of this study and also provided a chapter delineation. The motivation and aims of this study are based on the current literature and research in the field of eating disorders. Bulimia nervosa is the eating disorder focused on in this study. A literature review of bulimia nervosa relevant to the present study thus follows in chapter two.
CHAPTER 2

BULIMIA NERVOSA: LITERATURE REVIEW

The motivation for this study along with the aims, as set out in Chapter 1, have highlighted some of the issues encountered in research on eating disorders. The current research focuses on the eating disorder category bulimia nervosa as defined in the 4th edition of the *Diagnostic and statistical manual of mental disorders* (American Psychiatric Association [APA], 1994) (referred to herein as the DSM-IV). In the present chapter the literature is reviewed in terms of the diagnostic criteria of bulimia nervosa in order to show the difficulties that surround this disorder. The epidemiology and aetiology of bulimia give an indication of the prevalence this problem and how western culture contributes to the genesis thereof. A brief review of some of the theoretical models shows a diversity of approaches to the understanding of bulimia. The modern influences on body weight and shape are examined to elucidate the western world's emphasis on thinness. The complex and problematic concept of body image is then addressed. In the final section, the collision of physiology and culture is discussed. This is followed by the chapter summary.
2.1 DIAGNOSTIC CRITERIA OF BULIMIA NERVOSA

According to the 4th edition of the *Diagnostic and statistical manual of mental disorders* (American Psychiatric Association [APA], 1994), eating disorders are characterised by severe disturbances in eating behaviour. Bulimia nervosa is characterised by repeated episodes of binge eating followed by various inappropriate compensatory behaviours. Binge eating episodes are characterised by the consumption of large amounts of food in a discrete period of time. During a binge the individual experiences a sense of being out of control of the type and quantity of food that is consumed. The compensatory behaviours that follow the binge eating episodes are an attempt to prevent weight gain and include self-induced vomiting; misuse (and abuse) of laxatives, diuretics and enemas or other medications; fasting; or excessive exercise. This behaviour pattern of binge eating followed by compensatory behaviours must occur on average at least twice a week for three months for the diagnosis of bulimia nervosa to be made.

The central feature of bulimia nervosa is a disturbance in perception of body shape and weight. The individual's self evaluation is unduly influenced by this perceptual disturbance. Further to the above criteria, bulimia nervosa is categorised according to two types, namely the purging and the non-purging types. For the diagnosis of the purging type to be given, regular self induced vomiting and/or the misuse of laxatives, diuretics or enemas must occur. In the
non-purging type these compensatory behaviours do not occur. Instead
behaviours such as fasting and/or excessive exercise are engaged in. The
diagnosis of bulimia nervosa is made when all the above DSM-IV (American
Psychiatric Association, 1994) criteria are met.

Bulimia nervosa has been studied and investigated rigorously since the 1970's
(Beumont, Garner & Youyz, 1994; Brownell & Foreyt, 1989; Bruch, 1974; Halmi,
1985, 1996; Russell, 1979). In the past decade an explosion of investigations of
the eating disorders has produced information necessary for defining and
diagnosing bulimia nervosa. Many studies have focused on describing, defining
and categorising the eating disorders and their associated behaviours (Hay,
Fairburn & Doll, 1996; Walsh, 1992; Wilson, 1992). Despite research efforts the
diagnosis of the eating disorders remains controversial (DaCosta & Halmi, 1992;
Devlin, Walsh, Spitzer & Hasin, 1992; Fairburn, Welch & Hay, 1993; Garfinkel,
1992; Hay & Fairburn, 1998; Hay, Fairburn & Doll, 1996; Hsu & Sobkiewics,
1991; Mickalide, 1985; Mitchell, 1992; Palmer, 1993; Thornton, Russell &
Hudson, 1998; Wilson & Eldredge, 1991). The diagnostic criteria for anorexia
nervosa and bulimia nervosa have changed three times in the last 15 years (Ash
& Piazza, 1995). The symptomatology of eating disorders has therefore also
changed over the years (Ash & Piazza, 1995; Eagles, Easton, Nicoll, Johnston &
Millar, 1999). According to Halmi (1985) the eating disorders are best
conceptualised as syndromes and should therefore be classified on the basis of
the cluster of symptoms that are present. This implies that these maladaptive
eating behaviour conditions are entities and not diseases with a common cause, course or pathology. It follows that where diagnostic problems exist then epidemiological studies will be affected making prevalence figures inaccurate. The epidemiology of bulimia nervosa is however important because the incidence of this disorder reflects social and cultural trends thereby informing research efforts to address the growing issues of treatment and prevention strategies.

2.2 EPIDEMIOLOGY OF EATING DISORDERS AND BULIMIA NERVOSA

The prevalence of eating disorders is discussed to highlight the extent of the problem that faces clinicians and health care professionals. Although the severe clinical eating disorders, as defined by the DSM-IV are reportedly increasing in prevalence, sub-clinical disordered eating is more common than expected and is probably increasing more rapidly (Cooper, Waterman & Fairburn, 1984; Eldredge & Agras, 1996; Fombonne, 1996; Hay, 1998; Mintz & Betz, 1998; Mizes & Sloan, 1998). The prevalence of sub-clinical eating disorders is relevant here because they are precursors to clinical eating disorders and therefore may present a more accurate reflection of prevalence rates (Button & Whitehouse, 1981; Hall, Blakey & Hall, 1992; Herzog, Field, Keller, West, Robbins, Staley & Colditz, 1996; Herzog, Hopkins & Burns, 1993; Mitchell, 1992; Striegel-Moore, Dohm, Solomon, Fairburn, Pike & Wiffley, 2000; Wilson & Eldredge, 1991).
The literature indicates that disordered eating behaviours are becoming more prevalent in western societies (Bruce & Agras, 1992; Cooper & Fairburn, 1993; Halmi, 1995; Hay, 1998; Pryor, Wiederman & McGilley, 1996). The incidence of clinical eating disorders have apparently risen sharply in recent decades but this has been accompanied by a shift in the symptomatic spectrum and hence diagnostic criteria (Halmi, 1996; Holmgren, Humble, Norring, Roos, Rosmark & Sohlberg, 1983). There has also been a proliferation of reports and research in the psychological literature and the popular press describing pathological eating behaviour. A significant increase in diet and exercise articles published in American women’s magazines suggests continued social pressure to be thin and an ever growing cultural overvaluation of slimness in women (Wiseman, Gray, Mosimann & Ahrens, 1992).

Eating disorders in women are also becoming an area of increasing clinical concern as many more women are presenting with eating, food and body related problems. Yet despite this, accurate prevalence figures are unavailable. Over the last four decades the prevalence of eating disorders has not at any time been accurately established. There are numerous explanations for this including diagnostic issues (Thornton, Russell & Hudson, 1998), the secretive nature of the disorder and therefore reluctance of women to seek treatment (Burket & Hodgin, 1993) as well as refusal to participate in research efforts (Beglin & Fairburn, 1992; Waller, 1997). Methodological problems such as sampling
procedures, differences in patient populations, and the inaccessibility of out
patients, further bias prevalence figures (Beglin & Fairburn, 1992; Burket &
Hodgin, 1993). Furthermore the nosological status of the variously described
clinical syndromes remains unsettled.

While the incidence of eating disorders cannot be given with much confidence
for a variety of methodological reasons, it is estimated that approximately 1% of
young women in modern industrialised countries suffer from anorexia while the
incidence of bulimia may be as much as 10 times higher (Barber, 1998). By
contrast, Hay (1998) sites figures for anorexia nervosa and bulimia in young
western women to be less than 1% and around 1%, respectively. Healy, Conroy
and Walsh (1985) surveyed a large sample of Irish students, aged 17-25 years,
to establish the prevalence of binge eating and bulimia in this group. The results
suggested a 2.8% prevalence of binge-eating and bulimia in these female
a prevalence rate of 0.99% for clinical eating disorders, and 1.78% for the partial
syndrome (sub-clinical) of eating disorders in London state schoolgirls.

Bruce and Agras (1992) conducted a study where a community-based, randomly
sampled population of women was interviewed to establish the prevalence of
binge-eating. Using the criteria stipulated in the 3rd edition (revised) of the
*Diagnostic and statistical manual of mental disorders* (American Psychiatric
Association [APA], 1987) binge eaters were classified for bulimia nervosa. The
DSM III-R reports that 1.8% of the binge eaters met the full criteria for bulimia,
while 3.8% met all but the frequency criteria for bulimia (Bruce & Agras, 1992).

An Australian community-based survey by Hay (1998), showed that regular
binge eating occurred in 3.2% of the subjects, regular fasting or strict dieting
occurred in 1.6% of the subjects, and 0.8% of the subjects purged. An estimated
0.3% had bulimia nervosa and 1% had binge-eating disorder. Most prevalence
estimates of bulimia are based on self-report questionnaires, and range from 1 -
19% (Rand & Kuldau, 1992). Those based on interviews report substantially
lower prevalence, from 1 - 3% (Fairburn & Beglin, 1990).

In the DSM-IV the prevalence figure sited for bulimia nervosa among females in
late adolescence and early adulthood is approximately 1%-3%. According to the
DSM-IV the occurrence of bulimia nervosa in males, is approximately one-tenth
of that found in females.

In conclusion, these epidemiological studies can only be regarded as preliminary
investigations, which will serve as the harbinger of more sophisticated research
projects. Far more rigorous research is required before accurate statistics can
be quoted regarding the prevalence of eating disorders (Fairburn & Cooper,
1984). Currently it seems that eating disorders will continue to evade the
researcher's quest to discover the prevalence rates in the community at large, at any given time.

Similarly, the precise delineation of the aetiology of bulimia nervosa has also evaded researchers resulting in many theories and approaches to the understanding of this disorder.

2.3 AETIOLOGY OF BULIMIA NERVOSA

"A disease is no absolute physical entity but a complex intellectual construction, an amalgam of biological state and social definition"  - Charles E. Rosenberg 1962

The process by which the symptoms of bulimia nervosa emerge is an area that remains a critical aspect of the disorder that has yet to be adequately delineated. Bulimia nervosa is not a simple disorder and does not reduce easily to a single aetiological model. Most research findings and results concerning the genesis of anorexia nervosa are thought to be true for bulimia as well. Factors that have been identified in the genesis of bulimia nervosa include low self esteem as well as societal emphasis on slimness and success particularly as related to women and distorted body image. Dieting and restrained eating, feeling fat, certain family characteristics (alcoholism, depression) and dynamics (Thienemann & Steiner, 1993; Yager, 1982), and the presence of stressful situations (with an accompanying lack of appropriate coping skills), deficits in
autonomy and assertiveness, personality features (Yates, Sielent & Bowers, 1989) and various biological considerations have all been implicated (Boskind-Lodahl, 1976; Mitchell & Pyle, 1982) in the development of bulimia (Pyle, Halvorsan, Neumann & Mitchell, 1986).

Some of these possible contributing risk factors in the genesis of bulimia nervosa are discussed in the next section, followed by a description of the binge-purge cycle.

2.3.1 RISK FACTORS IN THE DEVELOPMENT OF BULIMIA NERVOSA

Bulimia nervosa has a strong psychological foundation. Neumann and Halvorsan (1983) maintain that bingeing and purging are used, among other things, as mechanism for escaping negative feelings and stressful situations. It would appear that while dieting and weight loss are the primary factors in the development of bulimia, it is not enough to maintain the behaviour. The psychological causes of bulimia can result from the positive reactions from others to the individual's weight loss (due to illness, surgery, dieting), which impacts favourably on the sense of self and self-esteem. Stressful life situations, fear of rejection, and being overweight are strong psychological driving forces that may initiate the dieting and weight loss in an attempt to gain and ensure approval, affection, acknowledgement and recognition (Fairburn & Cooper, 1993; Stice, 1998).
It has furthermore been suggested that individuals with a tendency towards depression, alcohol or drug abuse may have a predisposition to developing bulimia (French, 1987). However, most individuals with these tendencies do not ever develop bulimia or any other eating disorder. Similarly eating disordered women do not all suffer from depression, alcohol or drug abuse. It is unknown how or to what extent genetic and familial influences contribute to the development of the condition. French (1987) says that sufferers may learn to recognise food, alcohol or drugs as diversions from stress during childhood. Depression may be an underlying cause (Davis, Freeman & Solyom, 1985; Fairburn & Cooper, 1984; Heatherton & Baumeister, 1991; Johnson & Larson, 1982; Katzman & Wolchik, 1984; Walsh, 1992) during which the individual turns to binge-eating for relief from emotional misery, hunger or stress. Due to the destructive cyclical nature of bulimia it is still unknown whether depression is a cause or result of bulimia (or both).

Some bulimic individuals may be biologically predisposed to obesity which means their bodies are more efficient at storing fat even if food intake is restricted and these individuals also seem to burn fat up less effectively (French, 1987). These individuals are thought to run greater risk for bulimia as a result of having to exercise excessively and to impose severe dietary restraint upon themselves such as to make their lives utterly miserable and unbearable as they wage war against their own physiology (Brownell, 1991).
French (1987) maintains that a proneness to premenstrual carbohydrate cravings may also contribute to the development of bulimia. Hormonal changes during the premenstrual phase cause abnormally low blood sugar levels and women particularly sensitive to these changes may experience cravings which act as a protective mechanism in the body to correct blood sugar levels by binge eating. This theory is questionable, because the carbohydrate cravings may in fact be a function of restrained eating, severe dieting and purging.

Russell (1985) notes that in a proportion of bulimic patients, enhanced suggestibility may play a part in the spread of the disorder, thus the increased frequency of bulimia might, in part, be due to a factor of contagion. Information is transmitted widely through the popular press and the media, reaching susceptible individuals in this way - individuals who would probably not have developed the disorder without media input and the information provided thereby.

Other risk factors that have been identified include the possibility that an intolerance or hypersensitivity to certain foods may constitute a risk to the development of bulimia nervosa. Brain biochemistry (Goldbloom, Garfinkel & Shaw, 1991; Pope & Hudson, 1982, 1984), certain physical illness, e.g. diabetes (Lacey, 1984), low self-esteem and perfectionism (Bastiani, Rao, Weltzin & Kaye, 1995; Davis, Claridge & Fox, 2000), certain professions (dancers, models,
and athletes such as figure skaters (Williamson, Netemeyer, Jackman, Anderson, Funsch & Rabalais, 1995; Ziegler, Khoo, Sherr, Nelson, Larson & Drewnowski, 1998), and gender role conflict and growing up in the western world are all implicated in the genesis of bulimia (French, 1987; Lake, Staiger & Glowinski, 2000).

The causes of bulimia seem to be highly varied from individual to individual. The available risk and theoretical models are not universally applicable to all bulimic women. The factors that contribute to the maintenance of bulimia nervosa are also variable. It is important to have an understanding of these mechanisms that maintain the disorder so that intervention efforts are appropriate and have long term efficacy.

2.3.2 MAINTAINING THE BINGE-PURGE CYCLE

Bulimic sufferers experience certain aspects of the disorder as being positive or beneficial, albeit maladaptive and dysfunctional, which may explain how the disorder is maintained. Sufferers are often quite ambivalent about recovery because the disorder becomes a coping mechanism and serves some purpose in the individual's life (French, 1987). Secondary gains include physical, psychological and emotional rewards of bingeing and purging. Sufferers who binge on refined carbohydrates often experience 'highs' resulting from the
instant boost of sugar in the brain via the blood stream, which lifts their mood and makes them feel ready for energetic activity (French, 1987).

The physical reward of vomiting comes with the tremendous relief from physical discomfort of overeating. Where individuals do lose weight as a result of stringent dieting combined with vomiting, there is further positive reinforcement of this aberrant behaviour. The emotional rewards of bingeing revolve around the blotting out of certain feelings, conflict, and painful emotions during the bingeing process. This purging behaviour may also be a way to release anger and aggression. Weight preoccupation and fat-phobia are widespread among bulimic individuals and are responsible for causing significant intra-personal distress. The emotional reward of being able to eat without the fear of becoming fat is thus a powerful reinforcing and maintaining factor. However, although the guilt of bingeing is alleviated by the vomiting it is sometimes replaced by guilt and shame of vomiting (Dana & Lawrence, 1988; French, 1987; Lawrence, 1987; Lawrence & Dana, 1990; Pope & Hudson, 1984).

A notable feature of bulimia is that while weight loss is one of the initial motivating factors, it often becomes less significant as the condition progresses (Dana & Lawrence, 1988; French, 1987; Lawrence, 1987; Lawrence & Dana, 1990; Pope & Hudson, 1984). Purging then becomes the central objective, not weight loss. Self induced vomiting requires a lot of energy and is often said to be
exhausting. This cathartic behaviour not only purges the body of the feared food (carbohydrates and fats in particular), it is also an emotional release. The psychological effects of purging are very intense. Stress, anger, frustration, confusion and any unpleasant thought, experience or situation is resolved by the forced expulsion of stomach contents (Fairburn & Cooper, 1984).

The bulimic's emotional problems are temporarily expelled along with the dreaded food and its fattening effects. Like drug addicts who cannot function or cope without their daily fix, the bulimic cannot function without the daily purge. The bulimic will therefore eat to enable her to purge. This is a complete turnabout because the calming tranquillising effects of the vomiting replaces the initial reason for the purging namely to avoid weight gain (Boskind-White & White 1983; Fairburn & Cooper, 1984; Lawrence, 1985, 1987). The tranquillising effects of the binge-purge cycle becomes the primary motivating factor that maintains the disorder in some cases. Initially the bulimic purges to avoid weight gain but at some point in the disorder, weight loss loses its emphasis for some individuals and bingeing continues in order to purge (Johnson & Larson, 1982).

Johnson and Larson (1982) also indicate that purging behaviour does seem to offer relief by restoring a sense of alertness, control and adequacy. The purging behaviour also appears to provide some discharge of anger as evidenced by the decline in the experience of anger during the purge (Johnson & Larson, 1982).
Thus the purging behaviour may play a major role in the maintenance of the binge-purge cycle. So it can be hypothesised that it is the purging behaviour that serves the most important integrative function for some bulimic women (Johnson & Larson, 1982).

Lawrence (1987) argues that whereas the infrequent or casual bulimic may vomit in order to be able to eat, the compulsive bulimic eats in order to vomit. As vomiting is not inherently pleasurable it must be rewarding enough in some way for the bulimic woman to persist in the physically harmful and unpleasant behaviour. The bulimic individual vomits to alleviate stress and to release a very specific tension. The physical and emotional states achieved after a vomiting episode become positively valued and the bulimic comes to crave them. Thus bulimic behaviour becomes psychologically addictive (Lawrence, 1987).

In conclusion, after 30 years of research in the field of eating disorders there is still no comprehensive, universally applicable aetiological model for bulimia nervosa. Arriving at some consensus regarding the aetiology of eating disorders is further hampered by the continuously changing nature of the disorder. DiNicola (1990) best described anorexia nervosa as “anorexia multiforme - a medical chameleon that changes with the times” (p.166). The same can be said for bulimia nervosa as it currently presents diagnostic challenges due to its heterogeneity. There is no doubt that the eating disorders have undergone
changes in terms of symptom manifestation and presentation. This should direct research efforts towards the aetiological models of bulimia nervosa because changes in presentation may or may not indicate change in cause. The theoretical models are important as they provide the framework necessary for the treatment of the eating disorders.

2.4 THEORETICAL MODELS OF BULIMIA NERVOSA

In this sub section, the theoretical models of bulimia nervosa are briefly reviewed. Not all research differentiates between the various eating disorders, so there is often overlap and generalisations in the theoretical arena pertaining to anorexia nervosa, bulimia nervosa, eating disorders not otherwise specified, and binge eating disorder. The need for theoretical models is important as they give guidelines for prevention, therapeutic intervention and general clinical management. There are many theoretical models that attempt to explain how and why bulimia nervosa and eating disorders arise. Most theoretical models do not adequately account for all facets of the development of eating pathology. However, all these theoretical models do add to the understanding of certain aspects of eating disorders. In this section the need for theory will first be discussed, followed by an outline of five models. A very brief sketch of psychoanalytic theory is offered first. The psychosocial theory is then considered, followed by the dieting and restraint theory of bulimia. The dual
pathway model and the cognitive model add further insight into the pathogenesis of bulimia nervosa.

2.4.1 THE NEED FOR THEORY

It is widely accepted that prevention, early detection and intervention are appropriate and necessary in the management and treatment of eating disorders (Crisp, 1980, 1988). To make this possible, it is essential to identify those at risk. The development of theoretical risk models for eating disorders is thus important for identifying individuals who may be vulnerable or predisposed to the eating disorders. From their literature review of different risk models of eating disorders, Leung, Geller and Katzman (1995) conclude that risk research is still in its formative years and that more well planned prospective studies are needed. A significant amount of research has gone into the search for the cause of eating disorders but, as observed by Barber (1998), the proposed theoretical models fall short in many areas and cannot be applied universally to all individuals affected. This is certainly due to the fact that there are inter-group (anorexia nervosa, bulimia nervosa, binge eating disorder) differences as well as significant inter- and intra- individual differences. The theories also fail to provide an all encompassing approach to the (early) identification and treatment of both anorexia nervosa and bulimia nervosa. Overall the theoretical explanations are unsatisfactory and clinicians are left to match combinations of various models to each individual patient.
2.4.2 PSYCHOANALYTIC THEORY OF BULIMIA NERVOSA

Psychoanalytic explanations for human behaviour are based on the belief that critical conflicts in one’s early life, when unresolved, lead to difficulties in psychological functioning later on. Modern psychoanalytic theories have expanded to embrace conflicts at any stage of life, and have increasingly implicated family systems in the aetiology of psychiatric problems.

The psychoanalytic interpretation of anorexia and bulimia is based on the widely held view that these disorders are a rejection of femininity that most often manifests itself as a fear of oral impregnation (Pope & Hudson, 1984; Schneider & Agras, 1985). The eating disordered individual is understood to be afraid of growing up and facing the maturational process since they cannot accept their sexual identity. The fear of pregnancy dominates this view, wherein pregnancy itself is symbolised by food and getting fat means being pregnant. Behind such fears and fantasies is an unconscious hatred of the mother and against femininity. The disorder is therefore seen as a pre oedipal mother conflict, which is usually covered by an oral sadistic Oedipus conflict (Boskind-Lodahl, 1976).

Bruch (1961; 1974), was critical of the oral impregnation interpretation and theorised that bulimia nervosa is caused rather, by an overcontrolling family who prevents the child from becoming attuned to the rhythm of her own bodily needs. Having failed to learn this self attunement, she is then susceptible to nutritional
disorganisation, thus causing the eating disorder. Bruch (1974) suggests that bulimia arises as part of the struggle to gain control over one's functioning during adolescence. In a child who has come from an over-controlling family, this battle for self-control, and for a distinct identity, may fail, possibly leading to eating pathology.

Bruch's (1974) theory has prompted many studies over the years, all attempting to produce a family personality profile and patterns of eating disordered women but the results have been conflicting, contradictory and inconsistent. Yager (1982) reviewed all the family studies done between 1970 and 1981, and concluded that if any common personality patterns are to be found in the families of eating disordered women, they would have to be on a very subtle level. Studies of parent-child interactions have produced similarly contradictory results.

In summary, the psychoanalytic theories of the pathogenesis of bulimia nervosa have lead to a plethora of research studies into the family dynamics of bulimic individuals (Kanakis & Thelen, 1995; Sutker & Adams, 1994). There is little agreement amongst these studies meaning that at this point no conclusive results can be offered. This leaves the psychoanalytic interpretation somewhat in doubt.
2.4.3 PSYCHOSOCIAL THEORY OF BULIMIA NERVOSA

Perhaps the most striking feature of both bulimia nervosa and anorexia nervosa is that they occur almost exclusively in women. Furthermore, bulimia nervosa was largely unknown prior to the late 1970s, strongly indicating the role of current cultural context in its genesis. The psychosocial context creates pressure on women to be thin. This then leads to weight preoccupation and dieting, both of which are forerunners to the onset of eating disorders (Barber, 1998).

The current cultural milieu defines the ideal female body shape as slim and lithe, and women experience considerable pressure to conform to this physical ideal (Striegel-Moore, Silberstein & Rodin, 1993). As a result, the majority of young women in the United States diet to influence body weight and shape. It is no coincidence that bulimia nervosa is most common among that segment of the population who diet most to meet cultural expectations. It is predominantly white women from middle and upper-middle socioeconomic classes who make up this diet and body conscious segment of the population. There is an overall correlation between cultural pressure to be thin and prevalence of eating disorders, both across and within different ethnic groups.

Social norms, values and pressures dictate standards of female thinness and beauty and according to psychosocial theory this pressure to be thin is what initiates bulimia nervosa. The difficulty with this single factor theory is that it fails
to show why only some women go on to develop a clinical eating disorder. All western women are to a certain extent exposed to the same pressures but this does not mean that all these women have bulimia nervosa. Sociocultural pressure and expectations are undoubtedly risk factors but need to be integrated with the many other risk factors to form a more comprehensive theory.

2.4.4 DIETING AND THE RESTRAINT THEORY OF BULIMIA NERVOSA
Clinical experience and epidemiological data strongly suggest that dieting is closely linked to the onset of bulimia nervosa (Brewerton, Dansky, Kilpatrick & O’Neil, 2000; Mussell, Mitchell, Fenna, Crosby, Miller & Hoberman, 1997; Polivy & Herman, 1992, 1999; Wardle & Beales, 1988). Restraint theory proposes that dieting causes binge eating by promoting the adoption of a cognitively regulated eating style, which is necessary if the physiological defence of body weight is to be overcome. The defence of body weight entails various metabolic adjustments that assist energy conservation, but the behavioural reaction of binge eating is best understood in cognitive, not physiological terms. Dieting makes the dieter vulnerable to disinhibition and consequent overeating because physiological regulatory controls are supplanted with cognitive controls (Bourne, Bryant, Griffiths, Touyz & Beumont, 1998; Gattellari & Huon, 1997; Polivy & Herman, 1985, 1992, 1999; Rotenberg & Flood, 1999; Ruderman, Belzer & Halperin, 1985). Binge eating is thus a conflict between a biologically derived drive for food and a cognitive and culturally derived drive for thinness.
The vast majority of patients with bulimia nervosa report the occurrence of binge eating following a severe diet. Still more persuasive, a prospective study of 1,010 high school girls in London showed that dieters were significantly more likely than non-dieters to develop an eating disorder one year later (Johnson-Sabine, Wood, Patton, Mann & Wakeling, 1988). Although the precise relationship between dieting and the onset of bulimia nervosa remains to be determined, dieting can have a variety of biological, cognitive, and affective consequences that predispose one to binge eating (Polivy & Herman, 1985, 1999; Wilson & Pike, 1993).

The occurrence of binge eating is followed by extreme weight-control behaviours that are aimed at compensating for what the person perceives to be excessive food intake. Despite the diverse evidence implicating dieting in the development and maintenance of binge eating, it may not be a necessary causal condition and is not a sufficient one (Wilson, 1992). Research has shown that binge eating can develop in the absence of dieting and that dieting does not always result in binge eating (Mussell, Mitchell, Fenna, Crosby, Miller & Hoberman, 1997). Although relatively rare, clinicians are familiar with cases of bulimia nervosa in which dieting did not appear to precede the development of binge eating (Striegel-Moore, Wilson, Wilfley, Elder & Brownell, 1998). This pattern is far more common in obese bingers. Dieting alone does not cause bulimia nervosa. Whereas a majority of young women in the United States diet, only a
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small minority develop an eating disorder. Other factors must interact with diet-induced mechanisms to cause the eating disorder. The possibilities range from genetic predisposition through personality and individual psychopathology to familial influences (Pike & Rodin, 1991). Unique combinations of these factors are more likely to be responsible for the development of bulimia nervosa (Barber, 1998; Lyon, Chatoor, Atkins, Silber, Mosimann & Gray, 1997).

2.4.5 THE DUAL PATHWAY MODEL OF BULIMIA NERVOSA

The dual pathway model represents an integration of several single-predictor theories of bulimia nervosa (Stice, Ziemb, Margolis & Flick, 1996). This model focuses on the interaction between body dissatisfaction (Rosen, 1990, 1996), dietary restraint (Polivy & Herman, 1985), and affect regulation (Heatherton & Beaumeister, 1991). The dual pathway model of bulimia also recognises the sociocultural factors in the promotion of bulimia nervosa and attempts to explain the mediating mechanisms between these factors and the resultant expression of the disorder (Stice, 1994).

The dual pathway model proposes that bulimia nervosa is a function of body mass, internalisation of the thin ideal-body stereotype, body dissatisfaction, dietary restraint, perceived pressure to be thin, and negative affect. In the face of the thin cultural norms, elevated body mass leads to body dissatisfaction and amplified pressure to attain, and conform with, the thin ideal (Meijboom, Jansen,
It is thought that the pressure to be thin increases body dissatisfaction both directly and indirectly through internalisation of the culturally determined body ideal. Body dissatisfaction then leads to bulimic symptoms through restrained eating and negative affect (the dual pathways). Restraint also contributes to negative affect. The final proximal predictors of bulimic pathology are thus restraint and negative affect, and the effects of other risk factors are mediated by these two mechanisms. Previous research has provided individual support for each of these variables (Levine, Smolak, Moodey, Shuman & Hessen, 1994; Mitchell, Hatsukami, Pyle & Eckert, 1986; Pike & Rodin, 1991; Stice, Nemeroff & Shaw, 1996).

The dual pathway model effectively combines single-predictor theories to form a more flexible theoretical approach to bulimia nervosa. The strength of this theoretical model is its usefulness in therapeutic interventions as it allows for flexibility in tailoring the therapy to fit the client.

2.4.6 THE COGNITIVE-BEHAVIOURAL MODEL OF BULIMIA NERVOSA

The cognitive view of psychopathology maintains that the individual's problems are derived largely from certain distortions of reality based on erroneous premises and assumptions. These incorrect conceptions originate in defective learning during the person's cognitive development. Cognitive theory is based on a logical model of the relationship between cognition, emotion and behaviour.
There are three major premises of cognitive theory, namely automatic thoughts, underlying assumptions and cognitive distortions. The first premise states that automatic thoughts shape individual emotions and their actions in response to events. The second premise states that the individual’s beliefs, assumptions and schemas shape the perception and interpretation of events. The third premise is based on Beck’s (1976) theory that errors in logic or cognitive distortions are quite prevalent in clients suffering from a number of different disorders. In addition to the above, Freeman, Pretzer, Fleming and Simon (1990) add that the cognitive model is not simply that thoughts cause feelings and actions but that it is recognised that emotions can influence cognitive processes and that behaviour can influence the evaluation of a situation by modifying the situation itself or by eliciting responses from others. The impact of mood on cognition is another factor that the cognitive model takes into account.

Cognitive theory can thus be easily applied to bulimia nervosa. The underlying beliefs and automatic assumptions that body shape and weight are of fundamental importance and that both must be kept under strict control are believed to be the core psychopathology of bulimia nervosa. This leads to extreme dieting, vomiting, and laxative abuse, the preoccupation with food and eating, the sensitivity to changes in shape and weight, and frequent weighing or total avoidance of weighing. These core beliefs and values appear to be of primary importance in the maintenance of bulimia and not simply symptomatic to
the condition (Freeman, Pretzer, Fleming, & Simon, 1990; Waller, Ohanian, Meyer & Osman, 2000).

It follows from this model that modification of abnormal attitudes about the personal significance of body shape and weight and replacement of dysfunctional dietary restraint with more normal eating patterns should be a central focus of treatment.

The focus on modifying abnormal attitudes and dietary restraint has been embedded in a more general cognitive behavioural framework that, among other features, includes an emphasis on developing cognitive and behavioural skills for coping with intra- and inter- personal triggers for binge eating and purging, enhancing self control skills for regulating eating behaviour, and training in relapse-prevention strategies. This amalgam of diverse cognitive and behavioural interventions arguably addresses aspects of psychopathology, such as affective instability, that is commonly believed to interact with dieting in causing the eating disorder. Cognitive behavioural models highlight the need to modify these extreme attitudes about body weight and shape and the unhealthy dieting they drive (Butow, Beumont & Touyz, 1993; Ordman & Kirschbaum, 1985).
The value of this model lies in its practical application to treatment. It is also flexible as is the dual pathway model discussed above. Client compliance and collaboration are made easier because the theoretical principles are easily explained to and understood by the client.

In summary, there are many interesting theoretical approaches to the understanding of the pathogenesis of bulimia nervosa (Agras & Kirkley, 1986). Clearly no one theory is all encompassing of all the known contributing variables to bulimia nervosa. Halmi (1996) states categorically that eating disorders begin with dieting. Antecedent behaviours and influences of dieting can be categorised into problems of biological vulnerability, psychological predisposition, and social influences. Research in each of these categories has yielded salient information that has contributed to the understanding of the development of eating disorders. Halmi (1996) points out that it is the integrative effect of these disturbances on dieting that propels the individual person into developing an eating disorder. As dieting continues there are additional changes that occur including the effects of starvation, weight loss, nutritional deficits and psychological changes. The maladaptive eating behaviour is thus reinforced by both psychological and physiological factors. A sustaining cycle of the core dysfunctional eating disorder behaviours thus occurs. The exact combination and number of variables or risk factors will differ from one bulimic to another and if these are numerous, a multitude of computations is possible. There is
consensus among investigators that bulimia is a multidetermined disorder that can serve a variety of biological, psychological and sociocultural adaptations. Thus it seems reasonable to suggest that a multidimensional approach is needed to explain the development and persistence of bulimia nervosa. One such factor may be the modern influences of societal norms and standards that dictate the weight, shape and size of women's bodies.

2.5 MODERN INFLUENCES ON BODY WEIGHT AND SHAPE

There are undeniably significant social and cultural pressures on women to be thin and to diet, and research over the past 40 years has linked these pressures to the expression of serious and life threatening eating disorders. This subsection looks at women in modern western society, then goes on to discuss economics, prosperity and body weight. Finally, the modern socio-cultural aspects of body shape are examined.

2.5.1 WOMEN IN MODERN WESTERN SOCIETY

Concepts of feminine beauty have varied throughout history to reflect the aesthetic standards of the period. In different era’s, different body shapes have been selected for, and associated with, desirable social status. Garner, Garfinkel, Schwartz and Thompson (1980) have shown that throughout the last century, self-satisfaction decreased as personal body size deviated from the social stereotype of the time. This raises questions about the influence and
impact that social and cultural ideals have on the female population and on the
development of eating and body image disturbances.

Women have mostly been judged in terms of their attractiveness, not their
competency (Eichenbaum & Orbach, 1988). Today's woman faces an impossible
task: to achieve as much as a man in a society where she is taught that she is
not as good as a man; to run her home, be a super-mother, prove that her career
has not harmed her children; to be thin, well groomed and attractive - and do all
this, hungry.

The woman obsessed with her weight is at a disadvantage as she enters the
male world because she does so in a debilitated state, suffering the effects of
food deprivation - depression, impaired concentration and impaired mental
performance, withdrawal, disorientation and being out of touch with her most
basic needs and feelings.

The expression of both obesity and anorexia nervosa has been linked to certain
sociocultural factors (Garner & Garfinkel, 1980; Wiseman, Gray, Mosimann &
Ahrens, 1992). Obesity is strongly determined by social class with lower class
women showing greater proclivity than their upper class counterparts. In
contrast, anorexia nervosa has been shown to have a marked preponderance of
adolescent females in the upper social classes (Barber, 1998; DiNicola, 1990;
Garner & Garfinkle, 1980). It has been hypothesised that the ongoing increases in the incidence of anorexia nervosa and bulimia may be related to increasing social pressures on women to be slim and the interaction between cultural ideals for beauty and success (Boskind-Lodahl, 1976; Brooks, LeCouteur & Hepworth, 1998; Garner, Garfinkel, Schwartz & Thompson, 1980; Morris, Cooper & Cooper, 1989; Silverstein, Perdue, Peterson, Vogel & Fantini, 1986; Singh, 1994; Wiseman, Gray, Mosimann & Ahrens, 1992).

According to Rothblum (1989) it is important to emphasise that concern with overweight is limited to affluent Western nations. Whilst the major causes of death in developing countries are malnutrition and infectious disease, thinness is unlikely to be viewed with envy; rather, increased body weight is associated with wealth. In many developing countries such as India, Latin America, and Puerto Rico, research among adults has shown that an increased standard of living is correlated with increasing body weight (Furnham & Alibhai, 1983). The same correlates were found for children in China and the Philippines (Furnham & Alibhai, 1983).

At the turn of the century, thinness was associated with tuberculosis in the United States, as it was a prevalent cause of death at that time. Similarly, with the current world wide Aids epidemic, it remains to be seen how this disease will impact on Western attitudes and perceptions regarding body image, beauty,
health, fatness and thinness (Brand, Rothblum & Solomon, 1992). It is also ironic that the current symbols of 'sexual attractiveness' may be gravitating toward a weight that is in biological opposition to normal reproductive activity (Garner & Garfinkel, 1980; Garner, Garfinkel, Schwartz & Thompson, 1980).

2.5.2 ECONOMICS, PROSPERITY AND BODY WEIGHT

In general, when there is an abundance of food, fashion acclaims the thinnest body as the most beautiful, and the most basic diets the healthiest. After the First World War, food was plentiful and elegant women of the 1920's had thin flat chested figures. The Flappers of the Roaring Twenties celebrated thinness. Again, after World War II the West prospered and the reaction to plenty was epitomised by the popularity of Twiggy, who was described as the angular young model with the matchstick figure. This androgynous flat chested look, reminiscent of the flapper era, remained popular until the early 1970's when there was a shift to a strong, lean but curvaceous body (Agras & Kirkley, 1986; Brumberg, 1989; Garner, Garfinkel, Schwartz & Thompson, 1980; Morris, Cooper & Cooper, 1989).

Based on cross-cultural evidence, Barber (1998) argues that the storage of body fat in women constitutes an economic strategy that is predictable from the economic status of women. Research has found that the amount of body fat considered desirable in a culture is inversely correlated with the value of
women's work, with their degree of political power, and with their control over economic resources. This implies that body fat will be admired and considered an asset in societies in which women possess little economic wealth (Furnham & Baguma, 1994).

Barber (1998) also maintains that women may engage in two main economic strategies through which the resources necessary for raising children are acquired. The first strategy is marriage, in which a husband and wife pool their economic and social resources for reproductive purposes. The second strategy is independent acquisition of economic resources such as cultivating crops, trading, or participating in the work force for pay. In modern western societies, women employ a mixed strategy of economically co-operative marriages with independent occupations and careers. In contrast to this, Goldin (1995) reports that at most only 17% of American women combine careers with having children. This figure may, however, be on the increase as the incidence of single parent families is escalating all the time. Barber (1995) hypothesises that these different strategies create conflicting pressures as to the curvaceousness of a woman's ideal body, and thus may account for secular changes in standards of bodily attractiveness. Similarly, these pressures may be invoked to account for cross-cultural variation in the amount of body fat that is seen as desirable. Of course there must be many emotional and psychological mechanisms at work here, which have not been documented or accounted for.
The area of economics, politics and reproduction in relation to women's body shape and weight is still in need of research attention in order to clarify the hypotheses as suggested by Barber (1995). It has however been shown that modern social and cultural norms and standards of physical appearance do impact on women's eating behaviour, self concept and body shape.

2.5.3 MODERN SOCIAL AND CULTURAL ASPECTS OF BODY SHAPE

It has been argued that eating disordered symptoms are an extreme form of societal preoccupation, which Barber (1998) states, is borne out by the finding that at any time, 35% of the adult population of the United States claim to be on diet (Barber, 1998; Brownell & Rodin, 1994). Ferguson and Spitizer (1995) have also shown that dieting is extremely common in the United States, with as many as 25% of men and 44% of women dieting at any one time. Martz, Sturgis and Gustafson (1996) report that as many as 75% of US women and 47% of US men will diet at some time in their lives. Studies of dieting behaviour consistently show that more women than men diet (Halmi, 1995). Thus, more women are exposing themselves to the major risk factor for developing an eating disorder, which may partially explain the higher prevalence of eating disorders among women (Halmi, 1995; Johnson-Sabine, Wood, Patton, Mann & Wakeling, 1988).

A study conducted by Garner, Garfinkle, Schwartz, and Thompson (1980) investigating the cultural expectations of thinness in women, revealed that there
had been a gradual but definite evolution in the cultural ideal body shape for women over the preceding 20 years, that is, 1960 to 1980. They established this by comparing height, weight and measurement data of Playboy centrefolds over the 20 year period. The same data was collected and compared for Miss America Pageant contestants and the yearly winners. This study produced results that strongly support the idea that there has been a gradual but definite evolution in the cultural ideal body shape for women. Most recently, there has been a shift in the ideal standard toward a thinner size. It was also found that over the same period of time there was a significant increase in diet articles in women’s magazines that reflect the public interest and perhaps even preoccupation with the pursuit for attaining this thinner idealised shape for women. In sharp contrast to the ever decreasing weight of the ideal women is the fact that the average female under 30 years of age has become heavier, according to actuarial statistics (Garner, Garfinkel, Schwartz & Thompson, 1980). So, whilst magazine centrefolds, pageant participants and winners, and presumably female role models have been getting thinner, the average woman of a similar age have become heavier (Garner, Garfinkle, Schwartz & Thompson, 1980; Gray, 1977; Morris, Copper & Cooper, 1989; Singh, 1993, 1994; Wiseman, Gray, Mosimann & Ahrens, 1992).

The study by Garner, Garfinkle, Schwartz and Thompson (1980) was replicated by Morris, Cooper, and Cooper (1989) as well as Wiseman, Gray, Mosimann,
and Ahrens (1992), adding further support to the original study by extending the hypothesis that the cultural ideal for women's body size has remained thin and has in fact become even thinner. Wiseman, Gray, Mosimann, and Ahrens, (1992) found that a further decrease in body size was still occurring among Miss America contestants and for Playboy centrefolds it had plateaued at an even lower level. According to these studies, women's body image ideal has stabilised at 13-19% below expected weight.

Self concept and identity are borne out of society's standards and expectations that imply that women will be striving towards the ideal body image that has been shown to be 13-19% underweight. Women are exposed to this ideal via the media, which has been implicated in the genesis of eating disorders because of the unhealthy and unattainable standards of thinness that they portray (Andersen & DiDomenico, 1992; Morris, Cooper, & Cooper, 1989; Pinhas, Toner, Ali, Garfinkle & Stuckless, 1999; Silverstein, Perdue, Peterson, Vogel & Fantini 1986; Stice, Schurpak-Neuberg, Shaw & Stein, 1994; Stice & Shaw, 1994). The effect of this current ideal of female beauty and thinness on women was therefore examined by Pinhas, Toner, Ali, Garfinkle, and Stuckless (1999). This study assessed female university student's mood states resulting from viewing slides of full body images of female fashion models taken from six popular magazines who represent a thin ideal. Exposure to slides of thin female fashion models led to feelings of depression and anger. Thus viewing these
images had an immediate negative effect on women's mood. Although the researchers state that their study "supports the hypothesis that media images do play a role in disordered eating" (p 223), the researchers do not offer any explanation or hypothesis as to how or why this would occur. Negative mood states that resulted from viewing thin fashion models only indicate possible body dissatisfaction, which in itself may be a transient state and may not necessarily result in the development of an eating disorder. It could be argued that if anger and negative mood are the direct consequences of looking at thin models, it would follow that body dissatisfaction and dieting will also occur, both of which are known precursors to eating disorders. More rigorous research with follow up or longitudinal data would be needed to support the hypothesis that media images play a role in the promotion of disordered eating.

Russell (1985) says that the most plausible explanation for the sharp rise in incidence of anorexia nervosa is that changing sociocultural factors are responsible for the heightened incidence of the illness. Thus heightened social pressure for women to acquire a slim body may represent a powerful pathogenic influence especially when they act on young girls at an age when they are most vulnerable or when they follow studies or occupations in which there is an undue emphasis on body size and shape (Russell, 1985).
2.6 BODY IMAGE

Many women, both with and without eating disorders, have a distorted body image (Hsu & Sobkiewics, 1991) and see themselves as being heavier than they really are. Similarly, poor body image that results in body dissatisfaction is prevalent in both bulimic women and those who do not have the disorder (Garfinkel, 1992). The following subsection looks at the concept of body image and goes on to shows how body image is dictated and mediated by different sociocultural factors, including, sexual orientation, gender and ethnicity. It will also be shown that the pressures that ensue as a result of the modern cultural expectations of thinness also have an effect on children. Finally, body image specific to eating disorders will be discussed.

2.6.1 THE CONCEPT OF BODY IMAGE

Body image is a concept of tremendous interest in eating disorder research and dates back to 1961 when Bruch first identified it as a feature of anorexia nervosa (Bruch, 1961). Body image is also one of the most comprehensively studied constructs in the field of eating disorders (Roth & Armstrong, 1993). Yet despite extensive research over the past 35 years, body image distortion and its role in the eating disorders remain ill defined and equivocal (Szymanski & Seime, 1997). Because body image distortion is relatively common among most women even in the absence of an eating disorder, it cannot be considered diagnostic thereof. What can be said is that body image distortion is far greater among
eating disordered women than those without that diagnosis (Waller & Hodgson, 1996). Although negative body image attitudes are prevalent among women in general, the research consistently shows that these evaluative body image attitudes distinguish well between women with and without eating disorders. The US survey conducted by Cash and Henry (1995) found that 48% of adult women have a negative overall appearance evaluation, 63% are not satisfied with their weight, and 49% are overweight preoccupied. This indicates that eating disordered women are exceptionally, albeit not distinctively, disparaging of their body size, shape, and appearance (Geller, Srikameswaran, Cockell & Zaitsoff, 2000).

There is a very large body of research that has consistently revealed associations between a range of body-image disturbances and problematic eating behaviours and attitudes. Research has clearly demonstrated that body image experiences predict the severity of disturbed eating patterns (Goldfein, Walsh & Midlarsky, 2000; Waller & Hodgson, 1996). Prospective and structural modeling studies also indicate that body image disturbances are precursors of eating disorders (Cash & Deagle III, 1997).

As a construct, body image can be conceptualised as having two relatively independent dimensions. The first is body size perception, which involves the estimation of one's own body size as well as associated perceptual distortions
and discrepancy from idealised standards. The second is body satisfaction that refers to the individuals’ affect, behaviours, and cognitions concerning their size and appearance (Rucker & Cash, 1992). The research on body image shows that these dimensions are labile and are differentially susceptible to change. Body image can therefore be affected by internal and external environments. Depressed mood (Joiner, Wonderlich, Metalsky & Schmidt, 1995), anxiety, stressful situations, performance evaluation, public scrutiny, self-consciousness, foods eaten, and binge eating all impact negatively on both dimensions of body image (Paxton & Diggens, 1997; Roth & Armstrong, 1993). This in turn affects self-esteem severely (Geller, Srikameswaran, Cockell & Zaitsoff, 2000). Thus self-esteem that is based on body weight and shape has been identified as a central cognitive substrate of the eating disorders (Cooper & Fairburn, 1993) and is a key predisposing factor to the development thereof. Such body image deficits occur not only amongst women but similar processes have also been observed in marginalised communities.

2.6.2 SEXUAL ORIENTATION AND BODY IMAGE

Homosexual males mirror the ideals and attitudes of heterosexual females, because of their shared emphasis on physical attractiveness (Beren, Hayden, Witfley & Grilo, 1996; Siever, 1994). A study by Silberstein, Mishkind, Striegel-Moore, Timko and Rodin (1989) demonstrated that relative to heterosexual men, homosexual men showed more body dissatisfaction and
considered appearance more central to their sense of self. The desire to improve their attractiveness motivated this group to engage in exercise. Attitudes and behaviours associated with disordered eating among homosexual men who desired to be thinner were more prevalent than in those who were thinner than their desired size. In sharp contrast to this, heterosexual men who wished to be heavier had lower self-esteem than men who were heavier than or equal to their desired size. These findings support the view that a male subculture that emphasises appearance may heighten the vulnerability of its members to body dissatisfaction and disordered eating. It is reasonable to ask why gay men and heterosexual women are preoccupied with physical attractiveness. One possibility may be that in both groups, a strong desire to procure the attention and affection of men exists (Brand, Rothblum & Solomon, 1992; Siever, 1994). If this hypothesis were confirmed by research, it would mean that where sexual-objectification of desirable or potential partners takes place, those who are objectified, are at greater risk for developing body image problems and eating disorders.

Research has shown that women who rate their appearance as feminine have been shown to experience lower body satisfaction compared to women who identify themselves as androgynous and masculine (Ludwig & Brownell, 1999). It has therefore been hypothesised that feminine women are more sensitive to cultural appearance pressures than are others in the women-orientated lesbian
culture (Heffernan, 1996). Masculine and androgynous women seem to be more capable of dismissing the societal forces that dictate what women should look like. It is not only sexual orientation that results in a vulnerability to the development of poor self and body image. Gender differences also manifest in distinctive perceptions of desirable body shape (Tiggemann & Pennington, 1990).

2.6.3 GENDER DIFFERENCES IN PERCEPTION OF BODY SHAPE

When looking at eating attitudes and eating disorders in Western culture it is essential to address the issues of gender differences in the perception of body shape standards and ideals, and the subsequent influence this may have on body image and body satisfaction. In Western countries the self is judged in terms of looks and outward appearance, and thinness is viewed as the most salient aspect of physical attractiveness (Epel, Spanakos, Kasl-Godley & Brownell, 1996). Within certain social strata of Western societies, attaining the ideal body shape has come to symbolise success in many domains of life (Brownell, 1991). Social and demographic factors may influence a person's attitude and vision of the ideal body, but gender is certainly a predominating factor. Females of all ages place greater emphasis on body shape and thinness, and express far more dissatisfaction with the way they look, than do males (Allaz, Bernstein, Rouget, Archinard & Morabia, 1998; Epel, Spanakos,
that the pattern of responses in the women who participated in the original study by Fallon and Rozin (1985) only resembled the pattern of women in their own study who scored high on the Eating Attitudes Test. Zellner, Harner, and Adler (1989) showed that women who scored low on the EAT wanted to be thinner than they perceived themselves to be, but they also wanted to look like what they believe was attractive to men, whereas anorexic women and many bulimic women did not care what men found attractive. Being thin was not seen as a sexual lure to secure the interest of men. Thus being thin must serve very different psychological and emotional needs of anorexic and bulimic women compared to non eating disordered women.

Many women are at war with their own biological make up, and this is a battle that they cannot win. This is a battle that women of all weights and shapes enter into, often in the absence of obesity. Desirable body shape and weight also seem to be strongly influenced by race or ethnicity as will be discussed in the following section.

2.6.4 ETHNICITY, BODY PREFERENCES AND EATING DISORDERS

Ethnicity seems to play a role in the perception of desirable body weight and on body image. Eating problems in Eastern cultures are also discussed to demonstrate how westernization has been implicated in the development of eating problems.
2.6.4.1 ETHNICITY AND DESIRABLE BODY WEIGHT

Singh (1994) says that the personal and interpersonal consequences of being overweight is apparently not as negative for black women as it is for white women. Compared to white adolescent females, black adolescent females are more satisfied with their bodies and are less desirous of being thin (Rosen & Gross, 1987). For adult black women a more tolerant attitude about being fat has been observed (Rucker & Cash, 1992). Obesity and body image do not exert as powerful a negative influence on the lives of adult black women as it does on those of white women (Thomas, 1989). The majority of white women believe that being thin is a prerequisite to attractiveness, but most black women do not hold the same belief. Singh (1994) points out that although there are no studies demonstrating that black men and women idealise fatness, a positive stereotype of fatness has been reported for black Americans. According to Harris, Walters and Waschull (1991) black men are less likely to refuse to date an overweight woman, and consider them to be attractive and sexy. Research by Altabe (1998), and Greenberg and LaPorte (1996) showed that African-American women have a significantly higher prevalence of obesity, a markedly lower prevalence of eating disorders, and greater satisfaction with their bodies than Euro-American women. Greenberg and LaPorte (1996) postulate that these discrepancies may be explained by the differential body type preferences between the men in these two communities. It has therefore been suggested that young black men and women find overweight figures desirable and attractive.
Findings based on research by Singh (1994) do not support this notion. College age black men and women ranked normal weight figures as more attractive and desirable for long term relationships than both underweight and overweight figures (Singh, 1994). Further research is required to address these contradictory findings possibly by investigating ethnic attitudes towards fatness in a population that is not restricted to college students. If there is a greater tolerance for varying body weight in non-white groups then research needs to clarify why such differences in attitudes exist. The implication of tolerance for fatness is that there will be corresponding differences in body image across ethnic groups.

2.6.4.2 ETHNICITY AND BODY IMAGE

Miller, Gleaves, Hirsch, Green, Snow and Corbett (2000) compared body image dimensions by ethnicity and gender in a university population and found differences between African American, European American and Latin American men and women. African Americans reported greatest body satisfaction and least overestimation of weight, while Latin Americans were equal to or higher than European Americans on all indices. Their findings are consistent with earlier research, suggesting that within a university population, gender differences are relatively consistent across race/ethnic groups and vice versa (Smith, Thompson, Raczynski & Hilner, 1999). Furthermore, in some aspects of body image there are more racial/ethnic differences for women than for men.
Miller et al. (2000) state that ethnographic research methods are indicated in order to establish a more complex understanding of how different racial groups think and feel.

Caldwell, Brownell and Wilfley (1997) conducted one of the largest magazine surveys of dieting practices in order to study the relationship of weight, body dissatisfaction, and self-esteem in African American and white female dieters. The respondents were generally overweight and of middle to high socio-economic status. The number of completed and returned questionnaires was 21,920. These respondents were between the ages of 21 and 65 who were not pregnant and not suffering from any current illness that might affect their weight. There were also no behaviours reported that were consistent with any eating disorder. The final sample size was 7,383 women, of which 183 were African American and 7,200 were white. Contrary to previous research reports that showed that African American women are less dissatisfied than are white women with body size and shape, the survey by Caldwell, Brownell and Wilfley (1997), suggests that these ethnic differences do not exist, and that earlier studied confounded race and SES (socio-economic status).

Results of this study showed no significant differences between African American and white women for body dissatisfaction, self-esteem, discrepancies between actual and ideal weight and shape, or the relationship between body
dissatisfaction, and self-esteem. These findings suggest that class rather than race is a strong mediating factor in overall body satisfaction. These results need further replication to verify the findings in light of the fact that there are two growing bodies of contradictory data regarding race, ethnicity, SES and body dis/satisfaction. The most obvious discrepancies in these types of studies come to the fore when sampling procedures are compared. Studies where the samples are taken from university populations in comparison to general population samples show the greatest inconsistencies. This seems to indicate greater disfunctioning or adjustment difficulties in university populations. Possible explanations for the higher incidence of maladjustment in university populations is the existence of university subcultures and of a transient developmental phase that many students appear to go through.

2.6.4.3 EATING PROBLEMS IN EASTERN CULTURES

In a cross cultural comparison of non-clinical women in Japan and the United Kingdom, Waller and Matoba (1999) examined emotional eating and eating psychopathology. In Western populations emotional eating is associated with eating disorders but it is unknown if the same holds true in non-western cultures. A comparison was made between three groups of non-clinical women - Japanese living in Japan, Japanese living in the UK and British living in the UK. The results of the study indicate that emotional eating is less of an index of eating psychopathology in non-western cultures than in western cultures. What
is significant is that the study showed an acculturative process meaning that where women of non-western cultures are exposed to or enter a Western culture, they are negatively affected by the sociocultural norms and expectations placed on women to be thin thus rendering them vulnerable to emotional eating and eating disorders. These results were replicated in the United States by Davis and Katzmann (1999) who assessed the impact of acculturation in male and female Chinese students living in the USA. Research findings by Lee and Lee (2000) are also consistent with and support the work of Waller and Matoba (1999) and Davis and Katzmann (1999). Lee and Lee (2000) examined disordered eating among high school students in three Chinese communities and concluded that societal modernisation fosters disordered eating in women.

In conclusion, gender, sexual orientation, ethnicity, race and the accompanying sociocultural preferences, all seem to have an important impact on the way people see themselves, how they feel about their bodies, and what standards of beauty and body ideals they aspire to (Andersen & Hay, 1985; Altabe, 1998; Epel, Spanakos, Kasi-Godley & Brownell, 1996; Furnham & Baguma, 1994; Greenberg & LaPorte, 1996; Lee & Lee, 2000; Stormer & Thompson, 1996; Wilfley, Schreiber, Pike, Striegel-Moore, Wright & Rodin, 1996). As to the exact influence of these factors on the development of clinical eating disorders, it is still unclear and further investigations are necessary to establish a causal relationship. It is clear from cross-cultural, ethnicity and gender studies that
individuals living in Western societies and culture are at highest risk for the development of body dissatisfaction, body image distortions and eating disorders regardless of their race or cultural background. This demonstrates the power of cultural expectations and stereotyping of the (overvalued) ideal body, as most Western women (and men) are body-conscious and weight preoccupied (Mautner, Owen & Furnham, 2000; Stormer & Thompson, 1996). This body-consciousness manifests differently in males but insufficient research is available for the average male. It appears that disturbed eating practices may exist in many sectors of the general population other than weight preoccupied women. A society that is body conscious, weight preoccupied and fitness orientated, must produce children who are equally aware of the body standards, pressures and expectations that their parents are faced with. Through modeling and vicarious learning, it can be postulated that children will also develop body image problems and eating concerns because many probably have mothers who regularly diet (Schur, Sanders & Steiner, 2000; Stice, Agras & Hammer, 1999; Striegel-Moore & Kearney-Cooke, 1994; Waugh & Bulik, 1999).

2.6.5 BODY IMAGE IN CHILDREN

Much of the research sites puberty as the catalyst for eating disorders in adolescence (Bunnell, Cooper, Hertz & Shenker, 1992; Button, Loan, Davies & Sonuga-Barke, 1997; Byely, Archibald, Graber & Brooks-Gunn, 2000; Edmunds & Hill, 1999; Geller, Srikaneswaran, Cockell & Zaitsoff, 2000; Gustafson-Larson
& Terry, 1992; Hill, 1993). Recent investigations of preadolescent samples have however indicated that ideas and views on body image and eating are formed prior to this biological landmark (Sands, Tricker, Sherman, Armatas & Maschette, 1997). The research results in the studies of body image in children are alarming in terms of the age at which dissatisfaction is detected. Decreased body satisfaction and dieting motivation, as well as the relationship between body satisfaction and self-concept, may be present before the onset of puberty (Hill, 1993; Maloney, McGuire, Daniels & Specker, 1989; Rolland, Farnill & Griffiths, 1997). Moreover female children, like adult women, are also exposed to highly unrealistic ideals for shape and weight as represented by toys such as Barbie (Brownell & Napolitano, 1995). Similarly male action figures/dolls also provide boys with some index of the evolving American cultural ideals of male body image (Pope, Olivardia, Gruber & Borowiecki, 1999). Male dolls have become more muscular over the past 30 years, with contemporary figures far exceeding the muscularity of even the largest human body builders (Pope, Olivardia, Gruber & Borowiecki, 1999). The impact that these toys have on male body image in childhood and later on in adulthood is unknown. Although there is a growing body of literature describing body image disorders in men, there is insufficient data to make any conclusive statements regarding male body image problems in the general population.
In a report by Mellin, Irwin and Scully (1992), 30% of nine-year-olds reported worrying that they were too fat now or feared becoming fat in the future and 33% of 10th-grade females judged themselves to be very overweight when their weights were well within normal parameters for their height and age. Rolland, Farnill and Griffiths, (1997) who set out to establish how widespread the desire for thinness was among preadolescent Australian children found that 50% of girls and 33% of boys wanted to be thinner. Further to this, 40% of girls and 24% of boys reported having attempted to lose weight by either dieting or increasing exercise. These attitudes and behaviours of Australian children are consistent with US and Israeli findings where concerns about being overweight are prevalent among 8 to 12-year olds (Gustafson-Larson & Terry, 1992; Koff & Rierdan, 1991; Maloney, McGuire, Daniels & Specker, 1989; Sasson, Lewin & Roth, 1995; Thelen, Powell, Lawrence & Kuhnert, 1992). Similarly Schur, Sanders and Steiner (2000) report that 50% of third to sixth - grade boys and girls wanted to weigh less and 16% reported attempting weight loss.

Research in the field of body image and body shape ideals has consistently found that thinness is desirable to girls long before the onset of puberty (Feldman, Feldman & Goodman, 1988; Schur, Sanders & Steiner, 2000; Steinhausen & Vollrath, 1993; Thompson, Conwin & Sargent, 1997). These findings highlight the need for early detection and prevention of body image distortions so as to reduce the risk of developing eating disorders in
adolescence (Byely, Archibald, Graber & Brooks-Gunn, 2000). The question that arises is how and why such young children develop or internalise these ideals. The role of maternal attitudes towards (their own and others') weight, shape and body image, and how these affect or influence their children will most likely provide some interesting information (Agras, Hammer & McNicholas, 1999).

Tiggemann and Wilson-Barrett (1998) administered a children's version of the Figure Rating Scale to 140 South Australian boys and girls between the ages of seven and twelve years. All girls irrespective of age rated their ideal figures as smaller than the one they considered most attractive to boys, and as substantially smaller than their current figure. There was no difference for ratings in boys. These results replicate the findings of Fallon and Rozin's (1995) adult study mentioned earlier.

Thompson, Corwin and Sargent (1997) investigated the racial and gender differences in perceptions of ideal body size among white and black fourth-grade children. They found that females and whites experience more body dissatisfaction and weight concern than males and blacks. This study indicated that influential factors in selecting ideal body size and determining body satisfaction include early sociocultural development of children, gender, race and socio-economic status (SES).
In a study by Hodes, Jones and Davies (1995), cultural variation in mother's attitudes to children's body shape was investigated. Their study revealed that UK and Mediterranean mothers found slimmer girls more attractive compared to mothers from South Asia, the Caribbean regions, and sub-Saharan Africa. Mothers' attitudes about beauty, attractiveness, slimness and body image are likely to be expressed to their children and so will influence how children evaluate their own bodies. Schur, Sanders and Steiner (2000) have suggested that the family can play a powerful role in countering the development of eating concerns and body dissatisfaction in children.

The conclusion that can be drawn from the studies of body image in children is that sociocultural factors such as child rearing, parenting styles, societal standards of beauty, the mass media and fashion trends are impacting on girls to the extent that body dissatisfaction has become normative in females of all ages (Hill, Draper & Stack, 1994; Hill, Oliver & Rogers, 1992, Tiggemann & Pickering, 1996). It appears that the vast majority of young girls, by virtue of their gender, will be unable to avoid the experience of body dissatisfaction, dieting and low self-esteem during late childhood and early adolescence due to the sociocultural forces and expectation confronting them at every level of their development (Hill & Pallin, 1998). In terms of eating disorders this may then mean that prevention efforts should be aimed at younger females. Ultimately, it is the sociocultural standards of attractiveness, beauty and thinness as well as
the widespread anti-fat attitudes that need to be addressed because these ideas are socially transmitted to children and perpetuated by them. Physiological and biological education or awareness may also be necessary to assist in realistic goal setting and self acceptance. Shape and weight based self-esteem has been identified as a central cognitive substrate of the eating disorders (Cooper & Fairburn, 1993; Geller, Johnston, Madsen, Goldner, Remick & Birmingham, 1998), and it has been suggested that this is possibly a key predisposing factor in the development of eating disorders. Thus the development of positive self esteem and a healthy body image may play a role in the prevention of body image distortions and dissatisfaction and the subsequent development of eating disorders (Button, Loan, Davies & Sonuga-Barke, 1997; O’Dea & Abraham, 2000).

2.6.7 BODY IMAGE IN EATING DISORDERS

Body image dissatisfaction has become the normative discontent (Rodin, Silberstein & Striegel-Moore, 1985), but it is not clear why only some women go on to develop an eating disorder. Body image research in eating disordered women is equivocal and rife with long standing controversies and inconsistent findings (Cash & Deagle III, 1997). Problems in this regard are issues concerning the specific nature of body image disturbances, and the definition of the body image construct in the eating disorders.
Despite these problematic points, there is sufficient evidence that body image experiences predict the severity of problematic eating patterns. It is also evident from the literature that body image disturbances are the precursors of disordered eating. This could imply that sub-clinical eating disturbances are more widespread than expected and do not necessarily develop into clinically diagnosable eating disorders (Perpina, Hemsley, Treasure & de Silva, 1993). This also suggests that the relationship between body image and eating pathology is on a continuum, ranging in severity from negligible to pathological.

Body image is a multidimensional concept and the problems associated herewith should be treated with a multidimensional framework. This means that a linear model of simple cause and effect will fall short in explaining how body image distortions arise and function, and how this then leads to the development of eating disorders.

The confusion in the literature on body image and eating disorders led Penner, Thompson and Coover (1991) to refer to anorexics’ distortions as “much ado about very little” (p. 90). Hsu and Sobkiewics (1991) have argued for the abandonment of body image disturbances as a diagnostic criterion for eating disorders. Cash and Deagle III, (1997) thus conclude that “clarification of the nature and extent of dysfunctional body image experiences among persons with clinical eating disorders is of paramount importance” (p.110). Cash and Deagle
III (1997) therefore set out to establish this by means of a meta-analysis of extant research on body image and eating disorders. The results of their study showed that attitudinal body dissatisfaction produced substantially larger effect sizes than did perceptual size-estimation inaccuracy. Body dissatisfaction measures differentiated between bulimic and anorexic groups, with bulimics having far more body dissatisfaction. The perceptual distortion indices did not show any differences between these groups. Thus size distortion among eating disordered individuals appears unlikely to reflect a more generalised perceptual deficit.

The essence of body image disturbances in eating disorders is in the way the individual sees and feels about their physical body. This is characterised by extreme dissatisfaction with body weight and shape and self loathing is usually part of the emotional response to the dissatisfaction. The eating disordered individual is preoccupied with the fear of becoming fat. They are unable to be objective about their weight, size, and shape all of which determine their sense of self-worth. Self-evaluation is based on physical appearance of the body, to the extent that all other personal achievements, abilities and talents are disregarded and undermined (Goldfien, Walsh & Midlarsky, 2000). Mood is severely affected by the overwhelming sense of body dissatisfaction. This reflects the attitudinal modality of body image distortion that revolves around cognitive, evaluative, affective, and behavioural elements that contribute to and sustain dysfunctional body and self esteem. It has been proposed that the
substantial investment placed on body shape and weight is the primary distinctive feature of eating disorders (Fairburn, 1987; Garfinkel, 1992; Vitousek & Hollon, 1990). Cash and Deagle III (1997) point out that this “investment dimension has been glaringly neglected in clinical eating disorder research” (p.119).

Among the quasi- and nonclinical populations, assessment of body image investment not only correlate positively with eating disturbances, they also predict eating disturbances incrementally over evaluative body image alone. Cash and Deagle III (1997) therefore recommend that researchers and investigators should expand their attitudinal assessment from exclusively satisfaction measures to include measures of body image investment or schematicity and assessment to capture the “specific physical foci, dynamic situationality, and associated emotionality of body image experiences” (p.119). Research should systematically examine the evocative influences of cognitively mediated contextual events on specific body image experiences among clinical and nonclinical populations (Cash & Deagle III, 1997). The challenge for researchers then remains to disseminate this information to the lay public and to embark on a process of re-education in an attempt to assist individuals in forming realistic and achievable goals that do not collide with the individual’s physiological limitations.
2.7 PHYSIOLOGY AND CULTURE COLLIDE

People seek the ideal body not only because of expected health benefits but because of what the ideal symbolises in our culture - self-control, success, acceptance, beauty, desirability, influence and status. Brownell (1990) points out two assumptions that are widespread with regard to body weight and shape. One is that the body is infinitely malleable and that with the right combination of diet and exercise, every person can reach the ideal. The second is that vast rewards await the person who attains the ideal (Brownell, 1990).

Brownell (1990) has also pointed out how modern society breeds a search for the perfect body. Research has shown that biological variables, particularly genetics, are influential in the regulation of body weight and shape (Brownell, 1990; Stunkard, 1986, 1990). This means that people are limited to the extent to which they can change their bodies. However, this does no seem to prevent people from going to extreme lengths in an effort to obtain this perfect body. This desperate search for thinness and physical perfection often places culture in direct conflict with the individual's physiology. Contrary to common beliefs, dieting is not always the solution to obtaining the perfect body, and weight loss is not simply a matter of willpower. There are powerful biological and physiological components involved in body composition, appetite, eating and satiety.
Eating and feeding behaviours in humans involve complex interactions between an individual's physiological and psychological state as well as environmental conditions. Eating disorders are most likely caused and sustained by the same factors but the exact mechanisms are not fully understood. Little is known about the psychobiological phenomena of hunger, satiety, taste, and eating behaviours in these disorders (Halmi, 1996). What remains is the fact that feeding and eating behaviours are complex processes in both animals and humans.

There are, undeniably, many cultural, social, economic and political pressures that influence the way people feed themselves and others, and the way they view their bodies (Lake, Staiger & Glowinski, 2000). The pressure to be thin is a prominent feature of modern western life that is impossible to ignore, especially in the face of the increasing incidence of life threatening eating disorders. Thus the misuse of the eating function could be seen as an effort to camouflage problems of living in anorexia nervosa, bulimia and obesity. The eating function together with appetite, satiety and body composition, form a complex biological process that appear to be genetically regulated. The mechanism influencing and controlling eating and the disorders thereof are poorly understood. What researchers do know is that food consumption is determined by economic issues, cultural traditions, cognitive decisions and biological drives (Stunkard, 1984; Treasure & Owen, 1997).
2.8 SUMMARY

Bulimia nervosa is a disease that has received considerable research attention (Halmi, 1996). Despite a plethora of data on bulimia nervosa, there is still no consensus regarding incidence, aetiology or theoretical models. Much of the available data is either inconclusive or contradictory. Bulimia nervosa is thus still as elusive and mystifying as when the syndrome was first described by Russell in 1979.

Through the ages women's body shape and weight have changed considerably as societal norms and values have dictated what women should look like. Economics and prosperity have also dictated women's weight and shape, but the most powerful influence has come from modern cultural expectations that demand ultra thinness in women of all ages. These factors have all contributed to the development of eating pathology and body dissatisfaction.

Body image is also an area that has elicited great interest from researchers. It is an important aspect of bulimic pathology, but as the literature reveals, disturbances in body image are wide spread and certainly not confined to bulimia nervosa. Body image distortions have been found across ethnic and racial groups as well as in male athletes (Anderson, Barlett, Morgan & Brownell, 1995; Enns, Drewnowski & Grinker, 1987; Sykora, Grilo, Wilfley & Brownell, 1992; Thiel, Gottfried & Hesse, 1993), male homosexuals (Silberstein, Mishkind,
Striegel-Moore, Timko & Rodin, 1989) and non eating disordered women (Caldwell, Brownell & Wilfley, 1997; Klesges, 1983).

Research into the body image of lesbian women shows that this group enjoys the most stable body and self image due to the fact that this group is not victim to the sociocultural imposition of bodily standards and ideals. Furthermore since this group is not objectified by men, as are heterosexual women and homosexual men, lesbian women experience the freedom of being who and what they were born to be (Heffernan, 1996).

Western women are exposed to the cultural pressures and expectations to be very thin. Thinness in women has come to symbolize self control, success, beauty and desirability. Most women cannot realistically achieve the unnaturally thin ideal because of their biological and genetic make up. So unless they resort to maladaptive and dysfunctional behaviours they cannot overcome their own physiology. The war that these women wage against themselves results in emotional, psychological and physical suffering and ultimately, in clinical eating disorders. There are biological limitations to the extent to which body shape and size can be changed, a consideration that the sociocultural forces are oblivious to (Brownell, 1991).

In the next chapter the experience of bulimia nervosa will be discussed in order to show how the bulimic individual is affected by the behavioural and cognitive
symptoms of this disorder. The psychological, emotional and physical consequences of starvation will then be examined. The cognitive model of psychopathology and the cognitive processes exhibited in bulimia nervosa will follow.
CHAPTER 3

THE EXPERIENCE OF BULIMIA NERVOSA AND ITS CONCOMITANT COGNITIVE THEORY AND PROCESSES

"The one thing psychologists can count on is that their subjects will talk, if only to themselves; and not infrequently whether relevant or irrelevant, the things people say to themselves determine the rest of the things they do".


In chapter 2 a literature review examined bulimia nervosa and the current issues that research is confronted with concerning diagnostic criteria, epidemiology, aetiology, theoretical models and modern influences on body weight and body image. In chapter 3 the experience of bulimia nervosa as reflected in a complex combination of behavioural, cognitive and affective disturbances is discussed. The understanding of these areas of dysfunction is necessary to in order to inform and improve treatment approaches as well as the long term outcome of therapy. The cognitive processes in bulimia are then outlined. The cognitive model of psychopathology is explicated in order to lay the foundations for the application thereof to depression and bulimia nervosa (Crow, Zander, Crosby & Mitchell, 1996; Fairburn, 1985; Johnson & Larson, 1982). Finally, the cognitive schemas in bulimia nervosa are examined. The literature suggests that the way bulimic individuals think and process information regarding body image, self
image, food and eating may represent the core psychopathology of the disorder. This implies that addressing and changing the way that bulimic sufferers think may be an important aspect of successful treatment interventions. Continued research in the area of cognitive behavioural therapy is thus necessary to develop efficacious strategies for this treatment resistant disorders. The chapter is closed with a summary.

3.1 THE EXPERIENCE OF BULIMIA NERVOSA

In the present subsection an account of the experience of bulimic symptoms is given to demonstrate the extent to which the individual is affected by this disorder. The hallmark features of bulimia nervosa are presented and the impact of these symptoms on the individual are discussed. The compensatory behaviours are also described in more detail to illustrate the extreme behavioural lengths that bulimics go to in order to avoid weight gain. The consequences of starvation as demonstrated by the classic Keys study (Keys, Brozek, Heschel, Mickelsen & Taylor, 1950) will reveal that starvation causes changes in attitude and behaviour, and cause bulimia.

3.1.1 HALLMARK FEATURES OF BULIMIA NERVOSA

The first hallmark feature of bulimia nervosa is the recurrent episodes of binge eating. Binge eating is typically characterised by the consumption of large amounts of food in a short time and is accompanied by a sense that the bulimic
has no control over the eating during such episodes. During these binges (overeating episodes) the preferred food items are simple and complex carbohydrates where fat content is usually high, such as breads, biscuits, cakes, pies, pastries, sweets, chocolates, and ice cream. For ease of vomiting, large quantities of ice cream are often eaten towards the end of the binge. Depending on availability of food, the bulimic individual will eat preferred food first then consume anything else that is edible. Some bulimics report eating frozen food when all other food has been consumed, while others relate eating food scraps from the dustbin or dog bowl. Binge food is most often considered to be forbidden food that the individual actively excludes from their diet when not bingeing. The binge episodes usually occur in secret and can last for a few minutes to a few hours. The binge is terminated when either the food runs out, or the stomach aches due to distension, or by vomiting. In some cases, if there is abdominal discomfort, vomiting takes place and the binge continues. This is the classic picture of the binge-purge cycle, but there are many variations hereof.

The binge-purge cycle described above is not unique to modern western eating disordered women. A similar practice of this type of bulimic behaviour dates back to the ancient Roman world when it was culturally sanctioned for relieving the discomfort associated with overeating (Dana & Lawrence, 1988). Crichton (1996) concludes in the light of contemporary Latin literary and historical sources as well as influential Greek medical sources, that cultural and social
factors are an important influence on eating habits that would today be considered pathological.

Researchers have questioned the notion that bulimics always eat large amounts of food during bingeing that precedes vomiting (Beumont, George & Smart, 1976; Pratt, Niego & Agras, 1998). There is insufficient data available to make conclusive statements. However, it appears that the size of the binge can vary considerably from one individual to another. This calls into question the definition of a binge (Johnson, Boutelle, Torgrud, Davig & Turner, 2000). Each individual bulimic defines bingeing differently and this definition is relative to their normal daily consumption of permitted foods.

The psychological and emotional consequences of these binge-purge cycles are feelings of shame, self-disgust, self-loathing, depressed mood and guilt (Sanftner & Crowther, 1998). At the same time the bulimic also experiences great relief after purging. The relief is both physical and psychological because the discomfort is reversed and weight gain is bypassed (Goldfein, Walsh, La Chaussee, Kissileff & Devlin (1993).

Purging is one of the compensatory behaviours or mechanisms employed by the bulimic to counter the binge eating. Any combination of compensatory behaviours, which include vomiting, the misuse of laxatives, diuretic (if
available), enemas, fasting or excessive exercise can occur after bingeing. The frequency of this pattern is also highly variable both inter- and intra- individual. The same holds true for the triggering mechanisms that initiate the cycle. Factors such as boredom, dieting, anxiety, depression, loneliness, habit, stress and restrained eating have all been implicated in the triggering of the binge-purge cycle (Fairburn, 1991).

The second hallmark feature of bulimia nervosa is the undue influence that body weight and shape have on self-evaluation (Garfinkel, 1992). The bulimic has a set of attitudes or overvalued ideals that were originally described by Russell (1979) as a morbid fear of becoming fat. These attitudes are an extreme form of the views that are widely held by many women in western culture. What makes such attitudes dysfunctional is the strength and power that they exert over the individual as well as their great personal significance. These beliefs form the core psychopathology of bulimia nervosa and negatively impact on self worth (Fairburn, 1991; Vitousek & Hollon, 1990).

Individual self worth is judged largely, and in most cases exclusively in terms of body weight and shape. The thoughts that dominate and preoccupy the individual revolve around weight, shape, food, eating, how to avoid eating and the planning of the next binge. The theme that runs through the bulimic’s day is avoiding weight gain and striving for thinness. It has been suggested that most
features of bulimia nervosa appear to be secondary to these extreme and
dysfunctional attitudes (Fairburn, 1991).

Other clinical features that can occur frequently in bulimia nervosa but are not
part of the DSM IV (APA, 1994) diagnostic criteria are symptoms of depression,
anxiety, impaired social functioning, impulse control problems (stealing, drug
and alcohol abuse), personality disorders, weakness and fatigue, and menstrual
abnormalities. Due to the heterogeneity of the disorder, these clinical features
are not generalisable to all individuals afflicted with bulimia nervosa, and are
therefore not part of the diagnostic criteria thereof.

The actual body weight of bulimics varies from individual to individual (Garner,
Olmsted & Garfinkel, 1985). Some individuals are moderately underweight whilst
others remain at normal weight (Mitchell & Pyle, 1982). Bulimic sufferers can
also be overweight or obese (Striegel-Moore, Wilson, Wilfley, Elder & Brownell,
1998). Weight status can fluctuate drastically in some cases whilst in others,
weight remains relatively constant (Foreyt, Brunner, Goodrick, Cutter, Brownell
& St. Jeor, 1995; Geracioti & Gold, 1992). In certain cases a history of anorexia
nervosa precedes the onset of bulimia nervosa, with the bulimia appearing in
response to recovery. In contrast to this, many bulimic sufferers never
experience dramatic weight loss or emaciation. Differing body weight and weight
histories may therefore suggest the existence of subtypes of bulimia nervosa,
but the research is inconclusive (Garner, Olmsted & Garfinkel, 1985). The reason for this is likely to be found in the use of the term bulimia to describe both a symptom and a syndrome. As a symptom, bulimia refers to an episode of uncontrollable overeating; it does not include purging. As a syndrome, bulimia refers to a distinct constellation of symptoms with specific psychological and physical morbidity (Garner, Olmsted & Garfinkel, 1985). The syndrome also includes maladaptive compensatory behaviours that cause varying degrees of individual distress. It is when these behaviours compromise the individual’s social, occupational and interpersonal functioning that treatment is sought. The presence and severity of compensatory behaviours thus seems to be a valuable indicator of individual distress.

3.1.2 COMPENSATORY BEHAVIOUR IN BULIMIA NERVOSA

The aggressive and self-abusive measures that the bulimic individual institutes to control and reduce body weight results in physical consequences. The consequences and complications of bulimia nervosa are largely due to the compensatory behaviours of self-induced vomiting, laxative abuse, dieting and fasting (Mitchell, Hatsukami, Pyle & Eckert, 1986). The consequences of these behaviours will be very briefly outlined to demonstrate the risks that bulimic individuals are faced with.
3.1.2.1 SELF-INDUCED VOMITING

The most commonly used method of purging is self-induced vomiting and is performed as soon as possible after eating to ensure minimal absorption of food (Fullerton, Neff & Getto, 1992) and hence weight gain is avoided. Weight loss does not necessarily result from self-induced vomiting except in extreme cases where the individual also restricts food intake. Most bulimics are in fact normal weight but there are increasing suggestions from clinicians working in this area that overweight and obese individuals are presenting with bulimia nervosa (Striegel-Moore, Wilson, Wilfley, Elder & Brownell, 1998).

Vomiting is induced by sticking the finger down the throat to produce the gag reflex thus causing the desired effect of vomiting. A toothbrush or a spoon is also sometimes used to achieve the same result. Other methods used to induce vomiting include the use of over the counter emetics, and the drinking of home-made saline solution (Greenfeld, Mickley, Quinlan & Roloff, 1993; Humphries, Shirley & Piascik, 1992).

Excessive vomiting leads to electrolyte disturbances, cardiac irregularities, swollen salivary glands, gastrointestinal complaints, dental erosion, finger clubbing or swelling, oedema, dehydration, oesophageal ruptures and tearing and haemorrhages on the cornea, soft palate and face (Mitchell, Specker & de
Where self-induced vomiting is accompanied by laxative abuse, the risk of medical sequelae is increased significantly.

3.1.2.2 LAXATIVE ABUSE

Although a relatively ineffective method of avoiding food absorption, the abuse of laxatives is nevertheless quite prevalent in bulimia nervosa (Hubert-Lacey & Gibson, 1985; Neims, McNeill, Giles & Todd, 1995; Phelps, Andrea, Rizzo, Johnston & Main, 1993; Pryor, Wiederman & McGilley, 1996). Prevalence data on purging behaviour is estimated to be as high as 13% in adolescents (Killen, Taylor, Telch, Saylor, Maron & Robinson, 1986). The rationale for taking large quantities of laxatives lies in the belief that weight gain will be avoided if diarrhoea is induced. Most nutrients are absorbed in the small intestine and laxatives affect the large intestine only, meaning that weight gain cannot be prevented through the use of excessive laxative ingestion. The bulimic is given the false sense of weight loss because of the large fluid losses that result from diarrhoea. This in turn results in rebound fluid retention causing a false sense of weight gain and so the bulimic repeats the cycle in a desperate attempt to lose weight according to the scale (Colton, Woodside & Kaplan, 1999). Gradually laxative tolerance results in increased doses but every time there is perceived weight loss after laxative abuse the behaviour is reinforced due to the overwhelming drive for weight loss. Laxative withdrawal results in anxiety and constipation, with the latter creating bloatedness and the feeling of heaviness.
that again leads back to laxative use and abuse (Colton, Woodside & Kaplan, 1999; Weltzin, Bulik, McConaha & Kaye, 1995). Dehydration is also a risk that can lead to hospitalisation. Idiopathic oedema, fatigue, and generalised weakness are most commonly experienced and are exacerbated when the individual regularly engages in dieting, fasting and restricted eating (Muller-Lissner, 1993).

3.1.2.3 FASTING, DIETING AND RESTRICTED EATING

The intermittent dieting, fasting and food restrictions that take place in between the binge-purge cycle are usually stringent and severe. Despite most bulimics having normal body weight, metabolic and endocrine adaptations to starvation are present as a direct response to fasting. It is clear from the literature that fasting, dieting and restricting are most often the antecedents to binge eating (Brewerton, Dansky, Kilpatrick & O'Neil, 2000; Herman & Polivy, 1975; Mussell, Mitchell, Fenna, Crosby, Miller & Hoberman, 1997; Polivy & Herman, 1985). Dieting and self-starvation are of great significance in bulimia nervosa due to the psychological and cognitive consequences that they cause.

3.1.3 CONSEQUENCES OF STARVATION - THE KEYS STUDY

In the renowned and classic study by Keys, Brozek, Heschel, Mickelsen and Taylor (1950) the effects of starvation were systematically studied at the University of Minnesota. The relevance of this study to bulimia nervosa is the
contribution that it makes to the understanding of the disorder and it therefore merits a description of the experiment and its findings.

In the Keys et al. (1950) experiment, 36 young, healthy, psychologically normal males volunteered to participate in the study as an alternative to military service. The experiment involved restricting the calorie intake of these male volunteers over time. Baseline data was obtained over the first three months and subjects ate normally. The everyday behaviours, personalities, and normal eating patterns of all subjects were observed in detail over the initial three months.

During the subsequent six months, the volunteers were restricted to approximately half of their former food intake and lost on average 25% of their original body weight. This was then followed by three months of rehabilitation, where gradual refeeding took place. Individual responses varied considerably but overall the volunteers experienced dramatic changes as a result of starvation. The general attitudinal, behavioural and emotional changes that occurred in all the subjects were significant. Important social, sexual, physical and physiological changes were also observed. These changes persisted during the renourishment phase in most cases.
3.1.3.1 ATTITUDE AND BEHAVIOURAL CHANGES

The attitudes and behaviours of the volunteers in relation to eating proved to be very interesting in terms of what is currently known about eating disorders. One result of starvation was a dramatic increase in the preoccupation with food. Concentration difficulties were marked since the volunteers were plagued by thoughts of food and eating. The primary topic of conversation, reading and daydreams amongst the volunteers was food. Many began reading cookery books and collecting recipes. Some volunteers even showed hoarding behaviour, where a sudden interest in collecting kitchen utensils occurred. One volunteer began rummaging through dustbins in search of anything he might have needed. This type of hoarding behaviour has also been observed in anorexic individuals (Crisp, Hsu & Harding, 1980) as well as in food deprived rats (Fantino & Cabanac, 1980). Although not directly associated to bulimia nervosa, these findings suggest that food deprivation leads to a preoccupation with food, implying that aberrant food related behaviours and food preoccupation are secondary to restricted nutritional intake.

The actual eating habits of volunteers also underwent notable changes during starvation. A significant portion of the day was spent planning how they would eat their allotment of food. Similar behaviour is common in bulimia nervosa.
The volunteers were also described as being caught between conflicting desires to gulp down their food ravenously and to consume it slowly so that the meal would last longer. The volunteers also became increasingly demanding about various aspects of their rations such as having meals served hot. Tremendous increases in the amount of salt and spice usage occurred. Coffee and tea consumption also increased so dramatically that volunteers had to be limited to nine cups per day. Similarly, the chewing of gum also became excessive and had to be limited. Most of these attitudes and behaviours persisted during the 12-week rehabilitation period.

3.1.3.2 BULIMIA

Bulimia was also a feature that developed in many of the volunteers. All volunteers reported increased hunger during the starvation regimen. Whilst some volunteers were able to tolerate this fairly well, others found it intolerable. Several volunteers failed to adhere to their diets and reported episodes of bulimia followed by self reproach. An example of this was a volunteer, who while working in a grocery store “...suffered a complete loss of will power and ate several cookies, a sack of popcorn, and two overripe bananas before he could regain control of himself. He immediately suffered a severe emotional upset, with nausea, and upon returning to the laboratory he vomited...He was self-deprecatory, expressing disgust and self-criticism” (Keys et al., 1950, p.887).
During the eighth week of starvation yet another volunteer "...flagrantly broke the dietary rules, eating several sundaes and malted milks; he even stole some penny candies. He promptly confessed the whole episode, (and) became self-deprecatory" (Keys et al., 1950, p.884).

During rehabilitation many volunteers lost control of their appetites and ate excessively and continuously. Increased hunger following a meal was a common complaint. Only five months after rehabilitation did the majority of the volunteers report some normalisation in their eating patterns. In some, the extreme over consumption persisted.

Factors that distinguished volunteers who rapidly normalised their eating from those who continued to eat large amounts of food were not identified. One of the significant results of the study was that there were tremendous differences among volunteers in their reactions and responses to the starvation experience, and that a subset of men developed bulimia that persisted long after they were permitted free access to food. This implies that the heterogeneity of bulimia could possibly be attributed to individual differences in responses to restricted eating and starvation (Fairburn, 1991; Polivy & Herman, 1999).
3.1.3.3 EMOTIONAL CHANGES

The Keys et al. (1950) experiment also revealed significant emotional changes in response to the starvation process. The strict procedure used to select subjects for inclusion in the experiment led the experimenters to conclude that the "...psychobiological stamina of the subjects was unquestionably superior to that likely to be found in any random or more representative sample of the population" (Keys et al., 1950, p.916). So although subjects were psychologically healthy prior to the experiment, most of them experienced significant emotional changes as a result of semistarvation.

Both transient and protracted periods of depression were reported by volunteers. An overall lowering of the threshold for depression was also observed. Periods of occasional elation were also observed but were inevitably followed by periods of low mood. Furthermore, most volunteers displayed tolerant dispositions prior to starvation but as the starvation experiment progressed, tolerance was replaced by irritability, outbursts of anger, and anxiety. This in turn resulted in nail biting and smoking which was a response to feeling nervous. Volunteers became argumentative and negativistic. Apathy, neglect in personal hygiene, and severe emotional distress were observed in most volunteers and they all exhibited symptoms of semistarvation neurosis.
As a result of extreme emotional deterioration, overall functioning deteriorated severely in 20% of the volunteers. The conclusion from this data in relation to bulimia nervosa is that many, if not all, of the psychological disturbances that are manifest in the disorder are a consequence of semistarvation.

3.1.3.4 SOCIAL CHANGES

Social and sexual changes were also observed in the volunteers of the Keys et al. (1950) experiment. Although all were originally quite gregarious, the volunteers became progressively more withdrawn and isolated. The volunteers began feeling socially inadequate as the experiment progressed and their humour and sense of comradeship diminished rapidly. Social initiative and sociability in general underwent considerable change. The men became reluctant to plan activities, to make decisions, and to participate in group activities. They spent more and more time alone. It became “too much trouble” and “too tiring to have contact with people” (Keys et al., 1950, pp. 836-837).

Volunteers’ social contact with women declined sharply and they found these relationships to be strained. Sexual interest was similarly reduced, and all experienced a very reduced or absent libido. During the rehabilitation phase sexual interest was slow to recover, even three months after refeeding. Sexual interest returned to its former levels, eight months after renourishment. Further changes that aggravated the social difficulties included impaired concentration,
comprehension and judgement as well as decreased alertness. Formal intellectual testing showed no signs of diminished intellectual abilities.

3.1.3.5 PHYSICAL CHANGES

Physical changes included gastrointestinal discomfort, decreased need for sleep, dizziness, headaches, hypersensitivity to noise and light, reduced strength, poor motor control, oedema, hair loss, decreased tolerance for cold temperatures (hands and feet), visual disturbances, tinnitus, and paraesthesia in hands and feet. Physiological slowing also occurred as seen in decreases in body temperature, heart rate and respiration. Basal metabolic rate (BMR) also slowed considerably, so that by the end of the experiment BMR’s dropped 40% below normal. Needless to say body weight also dropped by 25%. Body fat fell by 70% and muscle tissue decreased by 40%.

Another noteworthy finding was that upon refeeding and return to pre-experiment body weight, a far greater proportion of the regained weight was fat. In the eighth month of rehabilitation, the volunteers were at about 110% of their original weight but had approximately 140% of their original body fat! Only six months after the rehabilitation phase, were volunteers approaching their pre-experimental weight levels.
This finding by Keys et al. (1950), that undernourished individuals (even if not drastically underweight or emaciated) will regain more adipose tissue than muscle tissue, is highly relevant in the refeeding of eating disordered individuals who complain of exaggerated feelings of fatness. During dieting, muscle tissue is severely compromised and atrophied before fat stores are mobilised. On refeeding the muscle tissue that gives shape and tone, is not rehabilitated. More fat is regained in a defensive response to protect the body in the event of future fasting. The individual is thus fatter and flabbier than before recovery. The unfortunate misassociation is then made between being thinner and bulimic versus being fatter and recovered. The bulimic cycle is thereby reinforced and maintained. Nutritional management of bulimia is therefor an area of treatment that should be emphasised and not neglected (Hsu, Holben & West, 1992).

Other physical changes or responses to semistarvation included reduced physical activity, tiredness, weakness, apathy, listlessness and lack of energy. Voluntary movements were much slower. Deliberate exercise did however occur in some volunteers that was motivated by the hope that they would receive increased rations. In eating disordered women, a similar phenomenon occurs: the individuals who institute a self-imposed caloric limitation, feel that if they exercise strenuously enough then they can allow themselves a bit more to eat.
3.1.3.6 SIGNIFICANCE OF THE KEYS STARVATION STUDY

From this description of the Keys et al. (1950) Minnesota study, it is apparent that most of the features of bulimia nervosa and anorexia nervosa are a direct result of starvation, and not specific or peculiar to these eating disorders. The symptoms of starvation are not limited to food and weight but extend to virtually all areas of psychological and social functioning. These findings have been replicated in subsequent research. Green and Rogers (1995) investigated cognitive functioning during dieting and found that deficits in cognitive functioning and performance are closely related to dieting and not to pre-existing deficits. Increased distractibility, feelings of anxiety and depression as well as stress symptoms (that resulted from maintaining dietary restrictions) were observed in dieters. In an earlier study of the psychological effects of dieting, Warren and Cooper (1988) noted significant changes in cognitions concerning eating as a result of dieting in men and women of normal weight with no history of eating pathology. A preoccupation with thoughts of food and strong urges to eat were observed.

A study by Laessles, Platte, Schweiger and Pirke (1996) attempted to clarify to what extent these above mentioned symptoms are consequences of dieting behaviour by placing nine female non-eating disordered subjects on an intermittent dieting schedule over four weeks. These subjects reported a tendency to overeat, difficulties concentrating, moodiness and increased fatigue
in response to the dieting schedule. Eating-related thoughts, feelings of hunger and fear of loss of control over eating were significantly more frequent during the dieting days compared to the normal eating days. These results also suggest that a substantial part of symptoms experienced by bulimic patients might be secondary to frequent periods of extremely restrained eating and dieting.

The research results and findings have important implications for the treatment and management of eating disorders. In order to accurately assess emotional disturbances in eating disordered individuals it is critical that weight and food intake are increased and normalised because the symptoms are not a cause of the disorder but rather a result of under nutrition. Treating mood disturbances with antidepressant medication without attending to the nutritional status of the individual might explain why such medication has often been relatively unsuccessful.

The Keys et al. (1950) study highlights the incredible adaptive capacity of the human body. The body goes to great physiological effort to protect itself and maintain life. It does this by slowing down all bodily processes and at the same time it increases the drive towards food. All other activities and pursuits such as social and sexual functioning are subordinate to the primary drive towards food. Thus in response to starvation, the internal protective and defence mechanisms create a preoccupation with food in the individual. This adds to our
understanding of the obsessive, ruminating thoughts that eating disordered women have about food.

Restrained eating, fasting, and strict diets, characteristic of eating disorders, result in preoccupation with food and binge eating because that which one is deprived of is that which one becomes obsessed with, as is demonstrated by the Keys et al. (1950) study as well as more recent research (Warren & Cooper, 1988). The self-imposed dieting and food restrictions that the eating disordered individual pursues leads to a clash in physiological needs and the psychological desire for extreme thinness. It is perhaps this collision of conflicting needs that contribute to the aetiology of eating disorders.

The Keys et al. (1950) study demonstrates that starvation results in physical and psychological sequelae regardless of age, sex or previous pathology. The cognitive changes observed in the Keys et al. (1950) study are of interest because of the cognitive and body image distortions that bulimic individuals exhibit. The Keys et al. (1950) study does not however explain why certain individuals or dieters are predisposed, vulnerable or susceptible to developing eating disorders (French & Jeffery, 1994). Current research suggests that a particular cognitive style and particular cognitive processes are present in bulimic women that predispose them to the disorder. The prevailing notion is that eating disordered individuals display more dysfunctional cognitions and
cognitive styles than the normal non clinical population (Bonifazi, Crowther & Mizes, 2000; Butow, Beumont & Touyz, 1993). The cognitive model of psychopathology and cognitive processes in bulimia nervosa will therefore be discussed in the following sections.

3.2 THE COGNITIVE MODEL OF PSYCHOPATHOLOGY

Cogito Ergo Sum (I Think, Therefor I Am).

Descartes, 1641

According to Beck (1976) emotionally disturbed individuals are victimised by concealed forces over which they have no control. Cognitive theory maintains that the individual's problems are derived largely from certain distortions of reality based on erroneous premises and assumptions. These incorrect conceptions originate in defective learning during the person's cognitive development.

Cognitive theory is based on a logical model of the relationship between cognition, emotion and behaviour. The three aspects of cognition that make up the major premises of the cognitive view are automatic thoughts, underlying assumptions and cognitive distortions. The first premise holds that automatic thoughts shape the individual's emotions and actions in response to events. The second premise is that the individual's beliefs, assumptions and schemas shape their perception and interpretation of events. The third premise is that errors in
logic (cognitive distortions) are quite prevalent in individuals suffering from a
number of different disorders (Beck, 1976; Westra & Kuiper, 1996). Accordingly,
Beck (1976) suggests that various neurotic disorders may be characterised by
common errors in thinking but may be distinguished in terms of ideational
content.

The combination of automatic thoughts, underlying assumptions, cognitive
distortions and the impact of mood on cognition, set the stage for a self
perpetuating cycle that is observed in many disorders (Freeman, Pretzer,
Fleming & Simon, 1990). Dysfunctional assumptions predispose an individual to
psychopathology without noticeable effect until a situation relevant to the
assumptions arises, thereby setting this process in motion. Regardless of the
point at which the cycle started, cognition plays an important role in the cycle
and often is a productive point for intervention (Freeman, Pretzer, Fleming &

The various cognitive approaches all share the assumptions that the human
organism responds primarily to cognitive representations of its environments
rather than to those environments per se and that these cognitive
representations are functionally related to the processes and parameters of
learning. Furthermore, it is assumed that most human learning is cognitively
mediated and that thoughts, feelings and behaviours are causally interactive.
Beck (1979), applied this model to depression and the treatment protocol that it generated has been very successful. Beck's cognitive model of depression has been successfully applied to eating disorders because of the cognitive features and processes that manifest in the disorders.

3.3 COGNITIVE PROCESSES IN BULIMIA NERVOSA

Dysfunctional cognitive processes have been strongly implicated in the development and maintenance of bulimia nervosa (Bonifazi, Crowther & Mizes, 2000; Bruch, 1981; Butow, Beumont & Touyz, 1993; Fairburn, 1985; Garner & Bemis, 1982; Waller, Ohanian, Meyer & Osman, 2000). The literature focuses on two possible levels of cognitive dysfunction. The first revolves around attitudes and beliefs held about eating and body weight and shape, while the second concerns the thinking styles and structures within which these beliefs operate (Butow, Beumont & Touyz, 1993).

The importance of both levels of cognitive distortions was recognised by Garner and Bemis (1982) who developed a model emphasising this. In their model, assumptions believed to be causally related to eating disorders were identified. Similar assumptions commonly held by bulimics, such as that weight gain means indulgence or lack of control, were also described by Fairburn (1985). These beliefs and assumptions held by bulimics are notoriously intractable and rigid. To explain this, the cognitive model, as delineated by Beck (1976) for the
treatment of depression and neurotic disorders was applied to the eating disorders (Beck 1976; Beck, Rush, Shaw & Emery, 1979; Garner & Bemis, 1982).

Although a seemingly promising model of eating disorders, and despite the widespread interest shown by researchers, there is little empirical evidence for the basic tenants of the cognitive model. Only a few studies have investigated cognitive functioning in different groups (Bonifazi, Crowther & Mizes, 2000; Butow, Beumont & Touyz, 1993; Fransella & Crisp, 1979; Kaye, Bastiani & Moss, 1995; Phelan, 1987). The evidence that eating disordered women differ from controls in their use of weight concepts, self-image, and complexity of thought structure is tentative. The problem with this model is that factors such as cognitive distortions and the undue use of body, weight, and self concepts that they result in, are not exclusive or unique to eating disordered individuals and so cannot necessarily be a diagnostic feature thereof (Formea & Burns, 1996; Huon & Brown, 1996; Perpina, Hemsley, Treasure & de Silva, 1993). However, based on empirical studies that used structured interviews to assess weight and shape concerns in bulimic women, Garfinkel (1992) argues that the persistent over concern with body weight and shape is a necessary criterion for the diagnosis of bulimia nervosa.
Dysfunctional cognitions, distorted eating attitudes and body image have been found in non-clinical normal subjects who diet or have subclinical patterns of eating disorders (Goldfein, Walsh & Midlarsky, 2000). This could be a function of the enormous social pressure on women to be extremely thin regardless of their actual weight or age (Allaz, Bernstein, Rouget, Archinard & Morabia, 1998; Rizvi, Stice & Agras, 1999). This also suggests that these faulty cognitions may occur on a continuum rather than sharply differentiating clinical and non-clinical groups. The severity, but not the presence, of cognitive distortions is more likely to be an indication of risk or of an existing eating disorder.

Butow, Beumont and Touyz (1993) carried out a study that investigated the differences in attitudes and thinking styles in eating disordered women, normal dieters and normal non-dieters. Their results support the application of Beck’s cognitive model (Beck, 1979) to eating disorders. Butow et al. (1993) found that eating disordered groups differed from normal controls along a number of dimensions. For the eating disordered groups the concept of weight and control were highly rule-bound. This group used extreme language when talking about weight control and the impulse to eat. This was not observed in the control groups. The eating disordered groups also applied these constructs very broadly to all eating and food-related situations, with weight concerns dominating their thinking. Control groups did not share this feature of clinging to rigid rules to organise their eating and their sense of self. Extreme and constricted thinking in
relation to eating situations was only observed in the eating disordered groups. This is of interest to therapy intervention research because it follows that if the thinking styles and patterns can be shifted or altered in bulimic individuals then there may also be an accompanying shift in the behaviours that such thinking drives.

Dichotomous thinking was also a strong feature of the eating disordered groups who saw themselves as either completely in control or completely out of control, very virtuous or extremely indulgent, and either perfectly normal or very abnormal. This finding supports the contention that constricted dichotomous thinking is a fundamental problem in dieting disorders because it reduces tolerance of ambiguity and uncertainty. This leads to an incapacity to trust internal regulatory mechanisms and an over dependence on rigid self-control.

Butow, Beumont and Touyz (1993) found that positive self-esteem was related to low weight, while low weight was in turn associated with positive self attributes in bulimic but not anorexic subjects. Their study also revealed that eating disordered groups were overwhelmingly negative and had a great sense of inadequacy. Feelings such as not being in control of one’s life, insecurity, inadequacy, and worthlessness were dominant in the eating disordered groups. They also overused the constructs of unhappiness, abnormality, weakness of character, and low confidence when describing the difference between
themselves and others. Within the eating disordered groups, differences were found between the anorexic and bulimic subjects. These differences were manifest in terms of severity suggesting that the psychopathology of anorexics is more severe (Butow, Beumont & Touyz, 1993).

Cognitive style is thought to differentiate eating disordered individuals from controls. It may also differentiate between eating disordered individuals who recover and those who do not. Limited research is available to confirm this. Within the eating disorder subgroups, anorexic and bulimics show differences in cognitive styles. Kaye, Bastiani and Moss (1995) demonstrated that bulimics are behaviourally more impulsive than anorexics. Bulimics, in keeping with this, are also more cognitively impulsive than anorexics. Anorexics display a reflective cognitive style in contrast to the impulsive cognitive style seen in bulimics. It has been suggested that extreme cognitive styles may contribute to resistance to therapy, resistance during treatment and relapse in the eating disorders (Kaye, Bastiani & Moss, 1995). The role of dieting and varying degrees of starvation in the presence of extreme cognitive styles is in need of further research.

To conclude, the cognitive aspects of eating disorders such as cognitive functioning, style and content are important in the understanding of these disorders. The causal relationship is however still unclear. Regardless of the cause, eating disordered individuals display attitudes, beliefs (cognitive content),
and thinking styles that are intractable and rigid. The severity of this cognitive profile is indicative of the severity of the disorder.

Research has shown an extremely high incidence of depression in bulimia nervosa and some studies have proposed a reversible association between these two disorders (Cohen-Tovee, 1993). Beck's (1967) theory of depression and its application to bulimia nervosa will be discussed in the next section.

3.4 DEPRESSION IN BULIMIA NERVOSA

The symptom of depression is a prominent feature of bulimia nervosa (Crow, Zander, Crosby & Mitchell, 1996; Fairburn, Cooper, Kirk & O'Connor, 1985). The lifetime prevalence rate of depression in bulimia nervosa has been estimated to be 47-73% (Crow, Zander, Crosby & Mitchell, 1996; Hudson, Pope, Yurgelun-Todd, Jonas & Frankenburg, 1987). When the high rate of depression was first identified in the 1980's, investigators hypothesised that bulimia nervosa could be conceptualised as an affective disorder variant (Cooper & Fairburn, 1986; Hudson et al., 1987). Subsequent research has shown that depression and bulimia nervosa are distinct entities even though there are some notable similarities between these two disorders such as changes in appetite, sleep difficulties, agitation, mood swings, helplessness, hopelessness and general disinterest, negative self concept and a distorted body image (Beck, 1967).
The similarity between depression and eating disorders lies in the presence of cognitive distortions. Beck (1967) accounts for cognitive distortion in depression in terms of the construct of a schema, representing a structural constellation of negative attitudes toward self worth and the future. The schema proposedly serves as a framework for the perception and evaluation of new information. Beck (1967) described the cognitive manifestation of depression as the following: low self-evaluation or viewing oneself as deficient in attributes important to one; negative expectations including a gloomy outlook and pessimism; self-blame and self-criticism, indecisiveness, including the difficulty in making decisions, vacillating between alternatives, changing decisions and lastly, distortions of body image. These symptoms are also present in bulimia nervosa. The cognitive structures of these two disorders are thus similar despite manifesting in two distinct conditions.

Cooper and Fairburn (1986) found that the key distinguishing factor that separates bulimia nervosa from major depressive disorder is the obsessional ideas and ruminations around food, eating, weight and shape. Bulimia nervosa revolves around an obsessive relationship with food and eating, the perpetual pursuit of thinness, disturbed self concept and a distorted body image. Cognitive specificity thus exists which discriminates between cognitive process and content of those diagnosed as having an eating disorder, and those diagnosed as clinically depressed.
However, depressed mood has been implicated in the development of bulimia nervosa in body conscious individuals (Keel, Mitchell, Davis & Crow, 2001; Cooper & Taylor, 1988). Where high personal value is placed on body shape and weight, the presence of depressed mood and low self-esteem could lead to body image dissatisfaction. Depressed mood accentuates body weight concerns and leads to body image distortion. Severe body image distortion results in the development of bulimia nervosa (Cohen-Tovee, 1993; Cooper & Taylor, 1988). This is supported by research where normal non-eating disordered women participated in a negative mood induction experiment. Depressed mood was shown to exacerbate body consciousness only in those women who placed great emphasis on appearance, body shape and weight (Cohen-Tovee, 1993).

Several limiting factors of this research render the results as tentative indicating the need for further research studies to be conducted. The small sample size (n=17 for high concern for body shape and n=16 for low concern for body shape) used in this study as well as the sample being drawn from a university undergraduate population mean that the findings are not representative of all women. A reversible association between depression and bulimia nervosa has been suggested but better sampling is required to include not only university students in order to establish the mechanisms involved in the apparent causal relationship between these two disorders (Christensen, 1993; Crow, Zander, Crosby & Mitchell, 1996; Joiner, Wonderlich, Metalsky & Schmidt, 1995; Pollice, Kaye, Greeno & Weltzin, 1997).
Depression has been shown to be a unique predictor of body dissatisfaction (Joiner, Wonderlich, Metalsky & Schmidt, 1995). Body dissatisfaction leads to body image distortions and this has been associated with failure to respond to treatment or to relapse after therapy. From this it appears that body dissatisfaction is associated with bulimia because it is associated with depression. Joiner et al. (1995) suggest that bulimics are dissatisfied with their bodies as a function of the depressed symptoms that they experience. This suggestion is in need of considerably more research especially since depression is not a diagnostic factor as many bulimics do not report the presence of depression. To date the research has not attempted to examine the body weights of bulimics who report depression compared to those who do not report depression. Clinical experience suggests that underweight bulimics are less likely to feel depressed and to have a more positive body image but this needs to be validated by research.

Depression, bulimia nervosa and body dissatisfaction are closely linked in a seemingly inseparable way. The question arises as to how these three conditions are related and if they are causally interactive. This has implications for treatment if it can be established where to focus intervention strategies to ensure a superior treatment outcome and long term recovery. Treatment approaches do however need to address the cognitive aspects of bulimia
nervosa that involve negative automatic thoughts and dysfunctional assumptions that manifest in distorted beliefs about food, weight and body shape (Powell & Thelen, 1996; Waller, Ohanian, Meyer & Osman, 2000). The core of bulimia nervosa lies in the specific cognitive schemas that lead to disturbed self concept and distorted body image.

3.5 COGNITIVE SCHEMAS AND BULIMIA NERVOSA

A cognitive schema is the set of hypothetical constructs that include all the individual's knowledge at any given moment about themselves and their world (Young, 1990). Cognitive schemas, also known as cognitive structures, are thus all the beliefs and rules under which individuals operate and around which they organise their lives. A specific schema consists of an ideational component and an affective component. An important subtype of schemata is the self-schema. Self-schemas represent structural constellations of knowledge and attributes about oneself as derived from previous experience, including one's behaviour in different situations. Cognitive processes are integrally related to cognitive schemas. Cognitive processes are involved in the actual manipulation of information both in the environment and in existing schemas (Young, 1990).

Organised cognitive structures have been implicated in the development and maintenance of eating disorders (Channon, Hemsley & de Silva, 1988; Ruderman, 1986; Vitousek & Hollon, 1990). It is also possible that different
cognitive structures could lead to different forms and manifestations of the
different eating disorders. Because cognitive factors in eating disorders appear
to be so prominent, many theoretical models have assigned a central role to the
meaning of weight and shape for the eating disordered individual (Crisp, 1980;

Theoretical models of bulimia nervosa differ in many respects. However, an
important similarity that is held by all theories lies in the view that the eating
disordered individual's body weight is central to the individual's thinking and is
endowed with rich connotations that contaminate all aspects of daily functioning.
Personal value is equated with the weight and shape of the body. The
continuous striving for and preoccupation with reducing body weight is used to
fulfil all aspects of personal functioning (Vitousek & Hollon, 1990). Thus eating
disordered women experience a very precarious body image due to the
emphasis placed on body weight and shape. Fluctuations in weight, alteration of
mood, and changes in eating behaviour all impact negatively on the bulimic's
sense of self which in turn impacts on body image. Schematic content revolve
around weight and dictate how bulimic individuals think and talk about
themselves. This is reflected in their choice and use of language (Powell &
Thelen, 1996).
Vitousek and Hollon (1990) suggest that schematic content and processing in eating disorders lead to organised cognitive schemas that influence the perceptions, thoughts, affect and behaviour of bulimic individuals. It follows that the persistence of eating disorder symptomatology can be accounted for by the operation of these schemas. The existence of a specific weight and body schema may thus play a role in supporting the maladaptive behaviour associated with eating disorders (Vitousek & Hollon, 1990).

Vitousek and Hollon (1990) suggest that schematic principles may be useful in understanding the “choice” (p192) of eating disorder symptomatology. The schematic principles explain why the maladaptive and often pathological patterns are considered to serve a valued function for the bulimic individual. Bulimia nervosa with its abnormal practice of binge eating and compensatory behaviours is defended by afflicted individuals who experience the disorder as egosyntonic. This also sheds some light on the high dropout rates for therapy and of the reluctance to seek help in the first place. According to the schematic model (Vitousek & Hollon, 1990) the content of a particular schema is not necessarily purposeful and the persistence of schemas need not be motivated. Schematic processing is assumed to fulfil a function for the perceiving individual in that it acts to simplify, organise and stabilise their environment (Vitousek & Hollon, 1990).
The persistence of eating disorder symptomatology can thus be partially accounted for by the operation of the schemas that support the maladaptive behaviour associated with eating disorders. These schemas lead to poor body and self image that are reflected in the content of the bulimic's thoughts that revolve around issues of weight and shape.

Negative self depreciating thoughts are a habitual part of the bulimic's cognitive functioning. The bulimic individual is not necessarily aware of the presence of these negative thoughts or the impact that these thoughts have on their internal distress. Many eating disordered individuals appear to have a limited awareness of the constant stream of negative, irrational thoughts that interfere with their functioning (Vitousek & Hollon, 1990). Furthermore, these individuals are unaware of emotional triggers that lead to their specific eating pattern (Young, 1990). In addition to this, they fail to conceptualise and accurately assess their automatic thoughts, their food intake and the effects that stress has upon their eating habits.

Dysfunctional thinking impacts on moods and actions. Thus the role of negative self statements is critical in determining behaviour. The implication of this postulate is that if dysfunctional thinking can be remediated then behavioural change should accompany this. Treatment protocols that address this need to be developed and researched.
3.6 TREATING BULIMIA NERVOSA

Bulimia nervosa is not simply a disorder that affects food intake, body weight and the practice of stringent compensatory behaviours. The desire to lose weight becomes a chronic focus of effort and worry, with the adverse effects of this impacting on the individual’s general well-being and overall functioning. It is the severe impairment in social, emotional and occupational functioning that eventually propels the individual to voluntarily seek help for the eating disorder. The following section deals briefly with the treatment of bulimia nervosa with specific reference to cognitive behavioural therapy. An abbreviated listing of treatment options for bulimia nervosa acknowledges that there are many ways to treat this problem but because of the current trend being in favour of cognitive behavioural therapy the focus will be thereon. A brief review of the research on prognosis and outcome will be given because of the highly refractory nature of this disorder. The process of cognitive behavioural therapy (CBT) will then be detailed.

3.6.1 TREATMENT OPTIONS FOR BULIMIA NERVOSA

There is still considerable uncertainty about the appropriate treatment for bulimia nervosa despite over fifteen years of research on therapy for this form of distorted eating behaviour (Herzog, Keller, Strober, Yeh & Pai, 1992; Jager, Liedtke, Kunsebeck, Lempa, Kersting & Seide, 1996; Mitchell, Hoberman, Peterson, Mussell & Pyle, 1996). A wide range of psychological therapies have
been used to treat bulimia nervosa including cognitive behavioural therapy (Bulik, Sullivan, Carter, McIntosh & Joyce, 1999; Eldredge, Agras, Arnow, Telch, Bell, Castonguay & Marnell, 1997; Fairburn & Cooper, 1993; Ordman & Kirschenbaum, 1985), psychodynamic therapy (Bruch, 1961, 1974, Orbach, 1984, 1988; Zerbe, 1995), family therapy, experiential therapy, group therapy (Hobbs, Birtchnell, Harte & Lacey, 1989; McKisack & Waller, 1997), and the 12-Step approach (Johnson & Sansone, 1993) based on the alcoholics anonymous programme. In addition to these therapies, a wide variety of pharmacological treatments have been used, including antidepressants such as fluoxetine (Crow & Mitchell, 1996; Goldstein, Wilson, Ascroft, Al-Banna, 1999; Jacobi, Dahme & Dittmann, 2002), anticonvulsants, and opiate antagonists (Mitchell, Specker & de Zwaan, 1991). Most bulimic sufferers respond to outpatient therapy and in less than 5% of cases is hospitalisation necessary (Fairburn & Cooper, 1993). All of these therapeutic approaches have reported success but the long term effects are not well documented (Gowers, Norton, Halek & Crisp, 1994).

What is clear from the literature is that most bulimics will respond to treatment regardless of the therapeutic approach taken. To date the research has not been able to differentiate between the specific versus the common aspects of different treatment modalities. Cognitive behavioural therapy has received the most research attention, and is widely considered the treatment of choice. Fairburn
and Cooper (1993) point out that the evidence for cognitive behavioural therapy being superior and more effective is weak. What has been shown is that cognitive behavioural therapy is more effective in the treatment of bulimia nervosa than no treatment at all (Blouin, Carter, Blouin, Tener, Schnare-Hayes, Zuro, Barlow & Perez, 1994). However, because cognitive behavioural therapies have been the most extensively evaluated of all the available treatments, it has consequently become the therapy most implemented. The structured nature of cognitive behavioural therapy along with the use of record or diary keeping by clients makes this treatment approach ideally suited to research because quantifiable data is generated that can be evaluated. Such research has shown that whilst short term results are promising, the long term results are inconclusive. Prognosis and outcome of cognitive behavioural therapy is thus an important area for researchers to focus on in order to assess the effectiveness of such treatment.

3.6.2 PROGNOSIS AND OUTCOME OF COGNITIVE BEHAVIOURAL THERAPY

Bulimia nervosa is a disorder of poor prognosis and little is known about the natural history of the condition especially where left untreated. Studies that have included wait listed controls show that in the short term bulimic behaviour of untreated controls remains stable (Fahy & Russell, 1993). Considerable research effort has been directed at therapy outcome for bulimia nervosa in an
attempt to establish prognostic indicators for treatment and for overall outcome assessment of treatment. Most therapy research has examined cognitive behavioural therapy. This is probably due to the structured and finite process of this approach that makes it easy to investigate.

A unique study by Bulik, Sullivan, Carter, McIntosh and Joyce (1999) set out to identify characteristics of bulimic individuals who were most likely to respond to cognitive behavioural therapy and maintain treatment gains at the one-year follow-up interval. The rapid responders were not distinguishable from those individuals with more variable response on dimensions such as age, age of onset, duration of illness, current or desired body mass index (BMI = weight divided by the square of the height), lifetime Axis I comorbidity, or personality disorder symptoms. The factor associated with rapid response was lower frequencies of bingeing and purging at baseline and lower scores on the bulimia subscale of the Eating Disorder Inventory. Rapid responders also scored significantly higher on the personality dimension of harm avoidance and the character scale of self-directedness than did nonrapid responders. The identification of rapid responders is useful in clinical practice as this could assist with treatment planning. It is also likely to be beneficial when informing patients of the likely trajectory of their recovery when in treatment (Bulik, Sullivan, Carter, McIntosh & Joyce, 1999).
Freeman, Beach, Davis and Solyom (1985) found that the most potent predictor of relapse was body image dissatisfaction at the end of treatment. This finding highlights the importance of addressing body image in therapy if treatment gains are to be maintained after therapy is concluded.

There is also a high dropout rate from therapy for bulimia nervosa and researchers have attempted to identify predictors of this problem (Blouin, Schnare, Carter, Blouin, Tener, Zuro & Barlow, 1995; Steel, Jones, Adcock, Clancy, Bridgford-West & Austin, 2000; Waller, 1997). Whilst these research efforts have not replicated findings, they have identified different factors predicting dropout, all of which may be relevant. Factors such as high levels of depression, hopelessness, external locus of control, borderline psychopathology, family functioning, and more severe perceived bulimic characteristics have been implicated in high dropout rates. The incidence of dropout has been estimated to be from 28% to 43%.

The outcome studies for cognitive behavioural therapy have shown favourable results and relatively good maintenance at six months and one year follow ups (Wilson & Pike, 1993; Wolf & Crowther, 1992). There is no data available for recovery status beyond the one year mark.
Cognitive behavioural therapy is a multifaceted treatment approach and possibly helps different patients through different mechanisms that cannot be isolated in any research study (Fairburn, 1991; Wilson & Pike, 1993). The process of this treatment approach warrants further explanation.

3.6.3 COGNITIVE BEHAVIOURAL THERAPY FOR BULIMIA NERVOSA

Cognitive behavioural therapy is renowned for the application of specific procedures designed to effect specific and measurable outcomes. Thus in bulimia nervosa the treatment aims revolve around the facilitation, the reduction or elimination of binge eating and purging. The approach used in cognitive behavioural therapy has been described as collaborative empiricism (Beck, Rush, Shaw & Emery, 1979). This approach has substantial advantages in the treatment of bulimia nervosa because by actively collaborating with the client, the therapist minimises the resistance and oppositionality that usually occur in this highly refractory disorder.

The rationale for cognitive behavioural therapy for bulimia nervosa is based on two related issues. One is the individual's attitude toward weight and shape. The second is restrained eating. Modern western women are under extreme pressure to be thin as the culture reveres the ultra slender female body. Thinness has become synonymous with beauty, success, competence and self control. These conditions have set the stage for fear of fatness in women and the overvaluing of
weight and shape. In bulimic women weight and shape inordinately influence self-esteem and this is thought to lead to restrained eating that in turn begets binge-eating. Self-induced vomiting and laxative abuse is then employed in a desperate attempt to compensate for overeating and to avoid weight gain. The aim of cognitive behavioural therapy is to focus on these two related issues.

The cognitive behavioural approach to the treatment of bulimia nervosa begins with a clinical interview whereby the patient's eating disorder is assessed. These interviews vary widely with many therapists developing their own protocols. Cognitive behavioural therapy then proceeds, which is problem orientated and focuses primarily on the present and the future. The process of cognitive behavioural therapy usually proceeds according to Fairburn's (1981) first formulation of this approach to the treatment of bulimia nervosa. This model offers guidelines to treating bulimia nervosa, and is easily adapted and tailored to each individual patient's needs.

Cognitive behavioural therapy is structured and goal orientated, and requires patient participation, collaboration and co-operation at all times. Self-monitoring is usually initiated at the outset of therapy in order for patient and therapist to track eating habits, frequencies of compensatory behaviour and for assessing or identifying situations that trigger binge eating and purging. This self-monitoring is done by means of a daily diary that the patient completes and brings to the
weekly therapy sessions. The patient is given a structure for record keeping. Complete daily records of food intake and purging behaviour are kept. Each time the patient eats they are required to make an entry that indicates the time of eating, setting or place where food was eaten, degree of hunger, type and amount of food consumed and whether or not purging (vomiting or laxative abuse) took place. This self-monitoring is a crucial part of the therapy because these diaries or daily record sheets are used in each therapy session to guide subsequent intervention strategies and techniques aimed at decreasing disordered or restrained eating patterns and compensatory behaviours. This forms the behavioural management component of the therapy and is useful in identifying patterns and tracking progress over time. It also compels the patient to confront their eating patterns and behaviours on a daily basis thereby increasing self awareness that is often absent in bulimic sufferers. Once bulimia nervosa moves from the developmental stage into a well established eating disorder, food consumption and compensatory behaviours become habitual, automatic and require little thought on the part of the sufferer (Freeman, Pretzer, Fleming & Simon, 1990). Self-monitoring and daily record keeping are potentially effective in that the sufferer is encouraged to be accountable for their daily food intake and consequent behaviours (Fairburn & Cooper, 1993). This is only the case when patients are committed to the treatment and comply with the therapy requirements (Arnow, 1996).
The cognitive focus of the therapy is a process that takes place simultaneously with the behavioural component. Dysfunctional thoughts and attitudes regarding shape, weight and eating are identified and patient and therapist work towards altering this (Wilson & Pike, 1993). Perfectionism and dichotomous thinking are well documented cognitive distortions in bulimia nervosa and become cognitive disinhibitors that perpetuate problematic behaviours such as binge eating (Davis, Claridge & Fox, 2000; Davis & Katzman, 1999; Fairburn & Cooper, 1993; Freeman, Pretzer, Fleming & Simon, 1990; 1990; Hewitt, Flett & Ediger, 1995). Cognitive distortions and maladaptive thinking patterns must be identified and changed in order to achieve behavioural improvements thereby remediating the eating disorder. Cognitive change is achieved by prompting the patient to engage in behavioural experiments designed to challenge their dysfunctional assumptions.

When behavioural and cognitive improvements are achieved the therapy then focuses on relapse prevention strategies to ensure that treatment gains are maintained after termination of the therapy.

3.7 SUMMARY

The experience of bulimia nervosa encompasses a host of maladaptive behaviours and dysfunctional cognitive processes. The hallmark features of bulimia nervosa are recurrent episodes of binge eating followed by purging and
the undue influence that body weight and shape have on self-evaluation (Garfinkel, 1992). Compensatory behaviours that include self-induced vomiting, laxative abuse, dieting, fasting, appetite suppressants and excessive exercise are used to avoid weight gain. The consequences of the binge-purge cycle are both psychological and emotional. Dieting, fasting and restricted eating also effect the physical health of bulimic sufferers. Self starvation thus exacerbates the existing psychological and emotional problems that are present in bulimia nervosa.

The effects of starvation were studied in an experiment conducted by Keys, Brozek, Heschel, Mickelsen and Taylor (1950). The results of this experiment showed conclusively that inadequate nutritional intake caused bulimia, physical decline as well as negative changes in attitude, behaviour, emotional status, social and cognitive functioning. These findings are relevant to the understanding, treatment and management of bulimia nervosa because they highlight the importance of nutritional rehabilitation in the treatment of this disorder. However, the cognitive features of bulimia nervosa remain at the core of the disorder and need to be confronted and remediated during treatment.

The treatment of choice for bulimia nervosa is cognitive behavioural therapy. This approach is based on Beck's (1979) cognitive model of psychopathology that stresses the importance of automatic thoughts, underlying assumptions and
cognitive distortions in the treatment of psychological disorders. Garner and Bemis (1982) applied Beck's (1979) model to eating disorders and developed a treatment approach that is widely used. Fairburn (1985) also developed a similar model emphasizing the treatment of cognitive distortions in the eating disorders. These cognitive distortions are similar to those exhibited in depression. Eating disorders and depression are closely associated in terms of cognitive content and schemas. Organized cognitive schemas in bulimia nervosa play a key role in the development and maintenance of the disorder and have thus been identified as the core of eating pathology. Vitousek and Hollon's (1990) schematic model of eating disorders demonstrates how organized cognitive structures bind views of the self with beliefs about body weight. Bulimic symptoms are usually defended by sufferers who experience their symptoms as serving a highly valued function. Treatment is thus avoided by the bulimic sufferer or approached with ambivalence. The outcome of therapy is consequently poor where patients experiences their symptoms as egosyntonic.

There are numerous therapy options that are used to treat bulimia nervosa. The treatment of choice is cognitive behavioural therapy although other treatment modalities have been shown to be as effective. Psychodynamic, family, experiential, and group psychotherapy have all been used to treat bulimia nervosa with varying degrees of success. Pharmacological treatment is also used but seem to be most beneficial when used in conjunction with
psychotherapy. Controlled studies have shown that any treatment is better than no treatment at all. Whilst short term outcome is good there are no statistics available for sustained recovery beyond the one year follow-up mark and long term prognosis for bulimia nervosa remains poor.

The success of cognitive behavioural therapy for bulimia nervosa is well documented. This is a collaborative approach that requires the patient to actively participate in the therapeutic process that involves treatment planning and decision making. This gives the bulimic patient considerable control over the direction and course of therapy (Waller & Hodgson, 1996). Bulimic sufferers often have issues around control and by sharing the therapeutic control the process becomes less threatening thereby improving compliance and overall outcome of treatment (Freeman, Pretzer, Fleming & Simon, 1990).

Compliance with record keeping is an essential aspect of cognitive behavioural therapy for bulimia nervosa. Record keeping and self-monitoring are techniques used by cognitive behavioural therapists to promote self-awareness and to initiate behavioural change. Bulimic patients who commit to cognitive behavioural therapy are required to attend weekly therapy sessions. They are also required to keep a diary wherein daily records are kept to reflect food intake and the occurrence of compensatory behaviours. In addition to this the patient is required to document their thoughts and emotions experienced in conjunction
with eating and with the compensatory behaviours. The daily diary records are used in the therapy sessions to identify problem areas and behavioural patterns. These records also uncover automatic thoughts, assumptions and underlying beliefs related to food, eating, body weight and body image. Cognitive distortions are also targeted by this method. Appropriate techniques are then used to challenge and change the thinking style and beliefs that lead to and maintain bulimia nervosa.

To conclude, bulimia nervosa is a disorder of eating behaviour that revolves around bingeing and purging. Bulimic sufferers overvalue the concept of low body weight or thinness. Their self worth is dependent on their weight and shape. As a result bulimics have a very poor body image and often suffer from depression (Wiederman & Pryor, 2000). Body image and depression are enmeshed in bulimia nervosa and both play a role in the development and maintenance of the disorder. The cognitive aspects of bulimia nervosa are prominent. Bulimic sufferers are preoccupied with negative self depreciating thoughts and feelings concerning body weight.

From the literature on bulimia nervosa, it is clear that poor body image and depression play an important role in this disorder. The literature on cognitive behavioural therapy for bulimia nervosa does not indicate if body image distortion and depressed mood are reflected in the diaries of patients who record
their daily thoughts, feelings and behaviours associated with their bulimia for this method of treatment. The scrutiny of diary content as recorded by bulimic patients has not previously been attempted although the technique of self-monitoring is widely used in the cognitive behavioural approach to the treatment of bulimia nervosa. The cognitive behavioural treatment of bulimia nervosa is currently regarded as the treatment of choice for this disorder but investigators have neglected to examine the contents of the diaries kept by bulimic patients. There is a good success rate reported in the research literature for patients who participate in cognitive behavioural therapy. There is however also a high dropout rate from therapy in patients with bulimia nervosa.

The question that thus arises for the present study is whether the language used in the diaries of bulimic sufferers would reflect thoughts and feelings of poor body image and depression and if there would be significant differences between bulimic patients who succeed in therapy versus those bulimic patients who do not succeed in therapy. Furthermore, as the bulimic recovers the question is whether there will be corresponding decreases in the frequency of these thoughts and feelings pertaining to poor body image and depression as reflected in their specific use of language, and also in their frequency of bingeing, vomiting, laxative abuse and exercise abuse. Where sufferers do not recover the question is whether there will be no evidence of change in their thoughts and feelings pertaining to poor body image and depression and in
compensatory behaviours such as bingeing, vomiting, laxative abuse and exercise abuse.

This study hopes to be valuable in terms of contributing to the existing body of research. This unique approach of diary analyses is the harbinger of future studies and the study is thus confronted by numerous challenges because there are no existing studies that directly support this work. The rationale for this study is to thus initiate a new approach to the study of the cognitive behavioural treatment of bulimia nervosa in order to shed light on the thoughts, feelings and behaviours experienced during such treatment.

In chapter 4 the aims and the empirical investigation for the present study are discussed.
In this chapter the empirical investigation is discussed. The research questions and the aims of the study are presented. A description of the subjects and the criteria for their inclusion in the study is followed by an explanation of the subject grouping. The procedure for data collection describes how the information was obtained. The therapeutic format that subjects participated in is described in order to explain how the data were obtained and subsequently analysed. The hypotheses of the study are outlined. The section on data analysis illustrates briefly the difficulties encountered with the type of data used and explains how the data were eventually quantified. Thereafter the statistical analysis is described and finally the chapter summary is presented.

4.1 RESEARCH QUESTIONS
The following research questions were formulated:
Are there statistically significant differences between two groups of bulimic patients in terms of subject variables, average usage of eating disordered words and affective disordered words, average total word output and compensatory
behaviours where the one group had successful outcome at the end of therapy while the other group had an unsuccessful outcome at the end of therapy.

The specific questions arising from the above are as follows:

In terms of subject variables, the research question asks: Are there differences in variables such as duration of illness, weight, body mass index, and number of diary days recorded in the successful group and in the unsuccessful group?

In terms of specific word usage, the research question asks: Are there specific eating disordered words and affective disordered words that appear frequently in the diaries of bulimic subjects so as to reflect the cognitive structures of these subject groups? If so, are there changes that occur in the frequency of these eating disordered words and affective disordered words at the beginning and at the end of therapy for subjects who succeed in therapy compared to subjects who are unsuccessful in therapy?

In terms of total word output, the research question asks: Are there differences in total word output at the beginning versus the end of therapy between subjects who succeed in therapy compared to subjects who are unsuccessful in therapy?

In terms of the compensatory behaviours the research question asks: Are there changes in the frequency of compensatory behaviours at the beginning versus
the end of therapy and if so are these changes statistically significant for the successful group compared to the unsuccessful group?

The rationale for the above research questions is based on the current literature that shows that the cognitive behavioural therapy technique of self-monitoring through the use of a daily diary is effective and beneficial to the recovery of bulimic patients (Fairburn & Cooper, 1993). Many research studies acknowledge the presence of self-statements that reflect underlying beliefs and automatic assumptions of bulimic patients but the specific content and language used has not been detailed (Waller, Ohanian, Meyer & Osman, 2000). The present study thus hopes to identify differences between patients who succeed versus those who do not succeed in cognitive behavioural therapy. If there are statistically significant differences between successful and unsuccessful therapy patients in terms of subject variables, specific use of eating disordered and affective disordered words, total word output and frequency of compensatory behaviours then predictors of therapy outcome could be established thereby assisting therapists in their management of bulimic patients.

The aims of the study are based on these research problems and are detailed below.
4.2 AIMS OF THE STUDY
The aims of the present study are discussed in two parts. The first part presents an overview of the general aim of the proposed research. The second part elucidates the specific aims of the study.

4.2.1 GENERAL AIM OF THE STUDY
The general aim of this study is to contribute to the growing body of research that focuses on the cognitive processes of bulimia nervosa and subsequently to add to, and improve, the treatment protocols of this disorder.

The present study aims to provide empirical research data on the changes that may or may not occur in cognitive content and compensatory behaviours in bulimic subjects as a result of cognitive behavioural therapy. Furthermore, the study hopes to identify differences between those individuals who succeed in therapy and recover versus those who do not, thus providing valuable prognostic indicators for clinicians working with bulimic clients.

4.2.2 SPECIFIC AIMS OF THE STUDY
The primary aim of the study is to identify changes in cognitive content and compensatory behaviours as recorded in weekly self-report diaries of bulimic subjects who have completed a process of cognitive behavioural therapy. Further to this the study aims to compare two groups of bulimic subjects who had
either a successful outcome (Group S) or an unsuccessful outcome (Group U) at the end of cognitive behavioural therapy. Given the idiosyncratic approach of the present study the aims are detailed extensively in order to promote clarity.

Four areas of the diary content will be identified in order to be compared between and within the successful and the unsuccessful groups. The four areas are subject variables, number of average total words used, average use of specific eating and affective disordered words and average frequency of compensatory behaviours. The specific aim of the present study is to determine if statistically significant differences exist:

- between and within two groups of white western female bulimic patients from a similar middle class socio-economic status
- who had completed a course of cognitive behavioural therapy as private patients
- regarding certain personal data and certain diary entries as summarised below
- and written up during their therapy
- the first group (n=21 females) having had a successful outcome (Group S)
- and the second group (n= 7 females) having had an unsuccessful outcome (Group U)
Patients were all fluent in English and able to express themselves adequately in writing as was required in the keeping of daily diaries. The Personal data and diary entries are as follows:

(i) Subject variables:
Four subject variables were compared between the successful group and the unsuccessful group. These were duration of illness, weight loss goal, body mass index and number of diary days recorded.

Duration of illness was calculated by subtracting the subject’s age at intake from the reported age of onset of the bulimia nervosa. Intake refers to the initial consultation with the therapist prior to the commencement of the cognitive behavioural therapy.

Weight loss goal was established by subtracting the subject’s reported ideal weight from their actual weight at intake.

Body mass index (BMI) is derived using the BMI formula where the subject’s body weight expressed in kilograms is divided by the square of the subject’s height expressed in meters.
**Number of diary days recorded** is the total number of daily diary entries for the duration of the therapy.

(ii) The average total eating disordered words:

These words are defined as the total number of eating disordered (ED) words that referred to negative body image (e.g. fat, disgusting, ugly), food, eating and appetite (e.g. hungry, bingeing) and poor self image (e.g. guilty, hate myself, pathetic, useless). Due to the extensive list of words that this selection process produced, similes were clustered together and a single word was chosen to represent each cluster. For example, all words that made reference to the subject’s body size and weight such as big, blimp, bloated, blubbery, bulging, chubby, enormous, fat, flabby, gigantic, heavy, hippo, huge, massive, obese and overweight were grouped and the word fat was selected to represent that cluster of words. The clustering of similes was manually done then cross checked with a dictionary and thesaurus (Tulloch, 1995).

The following average total eating disordered words were compared for the successful group and for the unsuccessful group:

- the average total number of eating disordered words used in Quarter 1 of the therapy
- the average total number of eating disordered words used in Quarter 4 of the therapy
(iii) The average total affective disordered (AD) words.

These words were defined as all words that referred to negative mood (e.g. sad, unhappy, tired, angry) and words indicating the presence of depression (e.g. down, miserable, anxious, negative). Due to the extensive list of words that this selection process produced, similes were clustered together and a single word was chosen to represent each cluster. For example, all words used that made reference to the subject's feelings of unhappiness such as depressed, sad, down, miserable and dejected were grouped and the word unhappy was selected to represent that cluster of words. The clustering of similes was manually done then cross checked with a dictionary and thesaurus (Tulloch, 1995).

The following average total affective disordered words were compared for the successful group and for the unsuccessful group:

- the average total number of affective disordered words used in Quarter 1 of the therapy
- the average total number of affective disordered words used in Quarter 4 of the therapy
- the average total number of affective disordered words used in all the Quarters of the therapy
- the average total number of affective disordered words used in Quarter 1 minus Quarter 4

(iv) The average total word output

The total word output was derived by counting all the words written down each day to give a daily total. By adding up the daily totals for every day recorded the total word output was derived. Total word output in Quarters 1 and 4 of therapy for the successful group was compared to the total word output in Quarters 1 and 4 of therapy for the unsuccessful group:

- the average total word output in Quarter 1 of therapy
- the average total word output in Quarter 4 of therapy
- the average total word output in Quarter 1 minus Quarter 4

(v) Specific eating disordered words in Quarter 1 versus Quarter 4 of therapy for the successful group (Group S).

The eating disordered words were ranked from one to twenty, where one was the most frequently used eating disordered word and twenty the least frequently
used eating disordered word. Only the five most frequently used words were considered for the specific eating disordered word count because the occurrence of words six to twenty was too low for statistical purposes:

- **fat**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **hungry**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **guilty**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **excessive**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **weak**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy

(vi) Specific affective disordered words in Quarter 1 versus Quarter 4 of therapy for the successful group (Group S).

The affective disordered words were ranked from one to twenty, where one was the most frequently used eating disordered word and twenty the least frequently used affective disordered word. Only the five most frequently used words were considered for the specific affective disordered word count because the occurrence of words six to twenty was too low for statistical purposes:
- unhappy: the average use of this word in Quarter 1 compared to Quarter 4 of therapy

- anxious: the average use of this word in Quarter 1 compared to Quarter 4 of therapy

- angry: the average use of this word in Quarter 1 compared to Quarter 4 of therapy

- tired: the average use of this word in Quarter 1 compared to Quarter 4 of therapy

- negative: the average use of this word in Quarter 1 compared to Quarter 4 of therapy

(vii) Specific eating disordered words in Quarter 1 versus Quarter 4 of therapy for the unsuccessful group (Group U).

The eating disordered words were ranked from one to twenty, where one was the most frequently used eating disordered word and twenty the least frequently used eating disordered word. Only the five most frequently used words were considered for the specific eating disordered word count because the occurrence of words six to twenty was too low for statistical purposes:

- fat: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **hungry**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **guilty**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **excessive**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **weak**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy

(viii) Specific affective disordered words in Quarter 1 versus Quarter 4 of therapy for the unsuccessful group (Group U).

The affective disordered words were ranked from one to twenty, where one was the most frequently used eating disordered word and twenty the least frequently used eating disordered word. Only the five most frequently used words were considered for the specific affective disordered word count because the occurrence of words six to twenty was low for statistical purposes:

- **unhappy**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **anxious**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **angry**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **tired**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy
- **negative**: the average use of this word in Quarter 1 compared to Quarter 4 of therapy

(ix) Specific compensatory behaviours occurring in Quarter 1 versus Quarter 4 of therapy for the successful group (Group S):

- **binges**: the average number of binges occurring in Quarter 1 compared to Quarter 4 of therapy
- **vomiting**: the average number of self induced vomiting episodes occurring in Quarter 1 compared to Quarter 4 of therapy
- **laxative abuse**: the average number of times that laxatives were ingested in Quarter 1 compared to Quarter 4 of therapy
- **exercise**: the average number of exercise sessions performed (with the specific aim of compensating for food consumption) in Quarter 1 compared to Quarter 4 of therapy
- **total compensatory behaviours**: the average number of the total compensatory behaviours occurring in Quarter 1 compared to Quarter 4 of therapy
(x) Specific compensatory behaviours occurring in Quarter 1 versus Quarter 4 of therapy for the unsuccessful group (Group U):

- **binges**: the average number of binges occurring in Quarter 1 compared to Quarter 4 of therapy
- **vomiting**: the average number of self induced vomiting episodes occurring in Quarter 1 compared to Quarter 4 of therapy
- **laxative abuse**: the average number of times that laxatives were ingested in Quarter 1 compared to Quarter 4 of therapy
- **exercise**: the average number of exercise sessions performed (with the specific aim of compensating for food consumption) in Quarter 1 compared to Quarter 4 of therapy
- **total compensatory behaviours**: the average number of the total compensatory behaviours occurring in Quarter 1 compared to Quarter 4 of therapy

It is evident that the counting and verifying of words for each of the 28 subject's set of diaries was enormously time consuming. The process of collecting words and incidences of compensatory behaviours took place over a period of 20 months.
4.3 THE SUBJECTS AND GROUPS

The availability of bulimic women who are willing to participate in research is poor (Beglin & Fairburn, 1992; Burket & Hodgin, 1993), and even where women do volunteer, the drop out rate is high and compliance is usually problematic (Blouin, Schnarre, Carter, Blouin, Tener, Zuro & Barlow, 1995; Steel, Jones, Adcock, Clancy, Bridgeford-West & Austin, 2000; Waller, 1997). Random sampling of bulimic subjects is not an option for researchers because of the unwillingness of patients to participate and because there are insufficient numbers of patients presenting for therapy. To overcome the problems of obtaining bulimic subjects for research purposes an Eating Disorder Clinic in South Africa was approached for assistance with obtaining subjects to participate in the present study.

After discussing the research question with the senior consulting psychiatrist it was suggested that an ex post facto design be used for the study by using the data available from existing case files of private patients who had been diagnosed with and treated for bulimia nervosa and who had already completed a course of cognitive behavioural therapy. The ex post facto design was chosen as data for 30 bulimic subjects were available immediately meaning that the problems that occur with obtaining a subject group could be bypassed. The study would also be a double blind study as both the therapist and patients were
unaware at the time that the therapy had taken place, of the possibility of a future study being conducted related to this therapy.

Due to the heterogeneity of bulimic patients the selection of subjects was non-random and took place purely on availability of completed therapy files where such files contained self-report diaries recorded during the therapy. The population from which these files were obtained was white western middle class females who were the self referred private outpatients of a therapist specialising in the treatment of eating disorders that included anorexia nervosa, bulimia nervosa and binge eating disorder. Only the 30 files belonging to bulimic patients who had already completed a course of cognitive behavioural therapy were used for the present study.

The same therapist had conducted cognitive behavioural therapy with all the subjects thus ensuring consistency in the therapeutic approach and process. All subjects had completed self-report diaries for the duration of therapy and these diaries remained the property of the therapist. The anonymity of patients was protected and the present researcher and author who is a clinical psychologist, considered herself bound by the same ethical code of confidentiality had these been patients in her own practise.
Thirty subject files containing completed self-report diaries were reviewed for the study of which two were excluded on the grounds of poor compliance. These two subjects failed to complete the daily diaries as instructed, making the available information vague, incomplete and unusable. The twenty eight remaining files were considered suitable for the present study. After the 28 suitable cases were identified they were assigned to one of two groups according to the outcome at the end of therapy which was either successful or unsuccessful.

The successful group (Group S) was considered either asymptomatic or significantly improved as indicated by the therapist at the end of the therapy and constituted 21 female subjects. The successful group was aged 17-35, with a mean age of 23.52. Actual body weight varied from 47-80kgs with a mean weight of 58kgs. This translates into an average body mass index (BMI) of 20.46, with a range of 17.7 to 24.7 where BMI is the weight divided by the square of the height. On average this group wanted to lose 6.7kg. Thus the mean for ideal body weight for this group gave a BMI of 18.4 (underweight). The following table adapted from Bray (1978) clarifies the BMI categories:

<table>
<thead>
<tr>
<th>BMI</th>
<th>CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 or less</td>
<td>very underweight</td>
</tr>
<tr>
<td>18 - 20</td>
<td>underweight</td>
</tr>
<tr>
<td>21 - 25</td>
<td>acceptable weight range</td>
</tr>
<tr>
<td>26 - 30</td>
<td>overweight</td>
</tr>
<tr>
<td>31 - 40</td>
<td>obese</td>
</tr>
</tbody>
</table>
The unsuccessful group (Group U) were subjects who either terminated the therapy themselves or were hospitalised due to the increasing severity and rapid deterioration of the bulimia nervosa and constituted 7 of the 28 female bulimic subjects. The unsuccessful group were aged 19 to 28, with a mean age of 21.71. Actual body weight varied from 43.9 to 59.7kgs with a mean weight of 54.12 for this group. This gives an average body mass index of 19.36 (underweight), with a range of 18.2 to 21. On average this group did not report wanting to lose any weight but expressed a desire to maintain their current low weight.

After the preliminary assessment and organisation of the subjects and available data, the diaries were examined further. The procedure for the data collection and subsequent analysis will be discussed in the following section.

4.4 PROCEDURE FOR DATA COLLECTION

The format for cognitive behavioural therapy is outlined to show how data were originally recorded by bulimic patients whose therapy diaries were used for the present study. The procedure for obtaining diary data from the self-report diaries that each subject completed on a weekly basis is then discussed.

4.4.1 OUTLINE OF THE COGNITIVE BEHAVIOURAL THERAPY FORMAT

The format for the therapy was based on the cognitive behavioural model (Beck, 1979; Fairburn 1985; Garner & Bemis, 1982). Patients attended weekly therapy
sessions. Each therapy session lasted for one hour. The therapist provided each patient with a seven day diary at the beginning of each week (see Appendix 1). In this diary the patient was required to keep a detailed daily record of their food intake, number of binges, vomiting episodes, laxatives taken, appetite suppressants taken, and exercise frequency and duration. In addition to this, notes were kept regarding their behaviours and emotions pertaining to each day, particularly those associated with binge eating and consequent compensatory behaviour. Feelings, thoughts and emotions before and after binge eating and the subsequent compensatory behaviours were also documented. At the end of each week the patient was required to make comments about their week, thereby encouraging the subject to self assess their progress or lack thereof.

The completed diary was handed in at the weekly therapy session and became the property of the therapist. The diary contents were used to structure and guide each therapy session. The diary contents reflected problem areas for individual patients that were related to food, eating, bingeing, compensatory behaviours, feelings, thoughts and emotions. This enabled the therapist to identify behavioural patterns and emotional triggers that caused the eating pathology. Appropriate behavioural management techniques would then be discussed with the patient so as to promote alternative coping mechanisms to deal with specific problems that trigger binge eating and compensatory behaviours.
Diary contents were significant for the therapy and provided useful information about the patient on a daily and weekly basis. The contents of each patient's set of diaries were therefor examined for the purpose of this study. The total number of weekly diaries produced by each patient varied largely, the least being 4 and the greatest number completed being more than 40. The procedure for extracting and obtaining the relevant data is detailed in the next section.

4.4.2 PROCEDURE FOR OBTAINING DIARY DATA

In order to obtain the relevant data to investigate the research problems as stated above, the self report diaries of 28 bulimic women were examined. The diaries described above contained qualitative self-report data. The 7 day diary was structured so that the left page was used for recording daily food intake and frequency of daily compensatory behaviours. On the right hand page a daily account of the patient's subjective experience of the day and how it affected her were written down. Feelings, emotions and cognitions pertaining to food and eating behaviour as well as feelings, emotions and cognitions pertaining to any compensatory behaviours were diarised by the patient. The patient thus produced a daily thoughts record.

Whilst the daily food intake records showed many interesting themes and trends as well as reflecting behavioural, and possible prognostic patterns, there
appeared to be no statistically valid and reliable way of quantifying and comparing this data. Food intake records were therefore excluded.

The qualitative daily thoughts record contents were quantified by counting the words written each day in each diary and allocating them to the following groups as follows:

- **Total word count** (daily output number): total number of all words written on each day.
- **Eating disorder (ED) word count**: total number of 'eating disordered' words written on each day.

Eating disordered (ED) words were defined as all words (and their similes) that referred to negative body image (e.g. fat, disgusting, ugly), food, eating and appetite (e.g. hungry, bingeing) and poor self image (e.g. guilty, weak). All eating disordered words were identified for each daily thoughts record that subjects were required to diarise. These words were then entered into a computer data base called a 'dictionary' for sorting purposes (see Appendix 3). Similes were clustered together in order to condense the word count into a more usable form. A group word was then chosen to represent each cluster of similes. To illustrate this the eating disordered word 'fat' was the group word for the following cluster of similes that were used by the subjects in their diaries: big,
blimp, bloated, blubbery, bulging, chubby, enormous, fat, flabby, gigantic, heavy, hippo, huge, massive, obese and overweight. This procedure was done for all the eating disordered words (mainly adjectives) until all words had been clustered, each with a group word to represent that cluster. Single words and infrequently used words that could not be clustered with any of the main clusters of adjectives were discarded. These clusters and the word count for the eating disordered words for the successful group and for the unsuccessful group can be found in Appendix 3.

All the eating disordered (ED) words were totalled for each group of subjects. These words were then ranked in descending order from 1 to 20 where 1 was the most frequently used word and 20 the least frequently used word. Only the top five ranking eating disordered words were used for the specific eating disordered word analysis because the frequency of the words ranked 6 to 20 was too low for statistical analyses to be performed. The top five ranking eating disordered words were fat, hungry, guilty, excessive and weak.

- **Affective disorder (AD) word count**: total number of affective disordered words written on each day.

Affective disordered (AD) words were defined as all words that referred to negative mood (e.g. sad, unhappy, tired, angry) and words indicating the
presence of depression (e.g. down, miserable, anxious, negative). The procedure described above for clustering the eating disordered words was applied to the affective disordered words. These clusters and the word count for the affective disordered words for the successful group and for the unsuccessful group can be found in Appendix 3.

All the affective disordered (AD) words were totalled for the subjects in each group. These words were then ranked in descending order from 1 to 20 where 1 was the most frequently used word and 20 the least frequently used word. Only the top five ranking affective disordered words were used for the specific affective disordered word analysis because the frequency of the words ranked 6 to 20 was too low for statistical analyses to be performed. The top five ranking affective disordered words were unhappy, anxious, angry, tired and negative.

To illustrate how the word count was done, the following example provides an extract from day three of a subject's first diary:

Example: 'Annie' wrote the following on day 3 week 1:

"I'm so fat and disgusting that I just want to cry all the time. I really hate myself. The bigger I get the more miserable and depressed I get. When ever there is food around I stuff myself like a fat pig. I'm hungry all the time. I get so angry and tense after binging that I have to get rid of it all. It makes me feel dirty and
ugly No wonder I'm so heavy. I deserve to be so unhappy because I'm so weak and fat."

Thus data obtained and recorded for day 3 week 1:

Total word output = 88

Total Eating Disordered words (Bold type) used = 13;

Specific Eating Disordered words used:
FAT = 6 (fat, bigger, fat, pig, heavy, fat);
EXCESSIVE = 2 (stuff, bingeing);
HUNGRY = 1 (hungry);
WEAK = 1 (weak).

Total Affective Disordered words (Underlined) = 6

Specific Affective Disordered words:
UNHAPPY = 4 (cry, miserable, depressed, unhappy);
ANXIOUS = 1 (tense);
ANGRY = 1 (angry).

The counting of daily word use, and the identification of eating disorder (ED) and affective disorder (AD) words was done manually. The data thus obtained was recorded in a computer database with each record reflecting a single day per diary per subject.
- **Compensatory behaviours**: total number of each of the compensatory behaviours occurring each day that included bingeing, vomiting, laxative abuse and exercise abuse.

Subjects were required to make daily records showing which of these behaviours had occurred and at what frequency. The occurrence of bingeing, vomiting, laxative abuse and exercise abuse were counted separately for each day. This data was also recorded in the computer database mentioned above for each day along with the total word count per day, eating disorder (ED) and affective disorder (AD) words. All of this information could then be analysed to produce comparative data.

The problems encountered with this heterogeneous sample of unstructured self report diaries were numerous. The first problem was the conversion of qualitative and descriptive information into quantitative data suitable for basic statistical analysis. Secondly, the length of each patient's therapy varied significantly, making any direct comparisons or correlations difficult. These and other problems necessitated the development of a unique analytical process:

Once the prolonged manual task of counting words and compensatory behaviours was completed, database structures were designed to accommodate this information, and a customised computer program written to assimilate the
data available. The data obtained from each diary was written to the database so that each record reflected the data collected per day per patient. So for patient 1, week 1, day 1, the following was entered into the database: case number, word count (total number of words used that day), total number of each eating disorder (ED) and affective disorder (AD) word used for the day, and frequency of each of the compensatory behaviours occurring that day. This was then done for every day of every week that each subject had recorded until all diary data per patient were captured.

The duration of therapy varied from patient to patient. Consequently the number of diaries varied as well. This factor made the direct comparison of subject's diary data impossible. To overcome this problem, the duration of therapy was divided into Quarters. Regardless of the number of weeks in treatment, the averages of the corresponding Quarters could then be compared.

The word count, eating disorder (ED) and affective disorder (AD) word count, and the individual compensatory behaviours were all totalled for each subject for each Quarter. The averages for the first and last Quarters of treatment were then compared per group in order to establish if any significant changes had occurred during the process of cognitive behavioural therapy.
In addition to the above, the following variables were extracted from the patient files to provide the personal data: age, age at onset of illness, actual body weight, ideal body weight, height and body mass index.

4.5 HYPOTHESES

Null hypotheses are used specifically for statistical analysis of results. For the purpose of the present research, alternate hypotheses (research hypotheses) will be formulated, which reflect expected outcome based on the literature.

The null hypothesis is the hypothesis that is tentatively held to be true. For the Mann-Whitney test which is used to establish between group differences, the null hypothesis states that populations from which the two samples have been drawn are identical and therefore there will be no statistically significant differences between the two research groups. The alternative hypothesis is that these two populations are not identical and therefore there will be statistically significant differences between the groups. The Mann-Whitney test will be used for hypotheses 1 to 15 (see further on) to determine between group differences.

The Wilcoxon Signed Rank Test is used to establish within group differences. The null hypothesis for the Wilcoxon Signed Rank Test states that the population distributions under the two conditions are identical and therefore
The alternative hypothesis is that they are not and therefore there will be statistically significant differences within the research groups. The Wilcoxon Signed Rank Test will be used for hypotheses 16 to 45 (see further on) to determine within group differences.

**Hypotheses Related to Subjects' Personal Information - Subject Variables**

**Hypothesis 1:** There are statistically significant differences between the successful group (Group S) and the unsuccessful group (Group U) regarding the duration of the illness.

The duration of the eating disorder is measured by subtracting the subject's age at presentation for treatment from the subject's age at onset of the illness. Hypothesis 1 therefore states that there will be statistically significant differences between Group S and Group U in relation to the average age at intake for Cognitive therapy minus average age at onset of the eating disorder.

**Hypothesis 2:** There are statistically significant differences between Group S and Group U regarding the discrepancy between the averages of what the subjects actually weigh and what they ideally would like to weigh. This is the weight loss goal.
This gives an indication of how much weight the subject is trying to lose. Hypothesis 2 therefore states that there will be statistically significant differences between Group S and Group U regarding the averages of the actual weight minus perceived ideal weight (weight loss goal).

Hypothesis 3: There are statistically significant differences between Group S and Group U regarding the averages of actual body mass index (BMI) minus the perceived ideal body mass index (BMI).

Hypothesis 4: There are statistically significant differences between Group S and Group U regarding the averages of the number of diary days completed.

**Hypotheses Related to the Average Total Eating Disordered (ED) Words**

Hypothesis 5: There are statistically significant differences between Group S and Group U regarding the average total number of eating disordered (ED) words used in Quarter one (Q1).

Hypothesis 6: There are statistically significant differences between Group S and Group U regarding the average total number of eating disordered (ED) words used in Quarter four (Q4).
Hypothesis 7: There are statistically significant differences between Group S and Group U regarding the average total number of eating disordered words in the first Quarter minus the total number of eating disordered words used in the fourth Quarter (Q1- Q4).

Hypothesis 8: There are statistically significant differences between Group S and Group U regarding the average total number of eating disordered words used in all four Quarters.

Hypotheses Related to the Average Total Affective Disordered (AD) Words

Hypothesis 9: There are statistically significant differences between Group S and Group U regarding the average total number of affective disordered (AD) words used in Quarter one (Q1).

Hypothesis 10: There are statistically significant differences between Group S and Group U regarding the average total number of affective disordered (AD) words used in Quarter 4 (Q4).

Hypothesis 11: There are statistically significant differences between Group S and Group U regarding the average total number of affective disordered words used in the first Quarter (Q1) minus the total number of affective disordered words used in the fourth Quarter (Q4) (Q1-Q4).
Hypothesis 12: There are statistically significant differences between Group S and Group U regarding the total number of affective disordered words used in all four Quarters.

**Hypotheses Related to the Average Total Word Output**

Hypothesis 13: There are statistically significant differences between Group S and Group U regarding the average total word output in Quarter One (Q1).

Hypothesis 14: There are statistically significant differences between Group S and Group U regarding the average total word output in Quarter four (Q4).

Hypothesis 15: There are statistically significant differences between Group S and Group U regarding the average total word output in Quarter one minus all the total words used in Quarter four (Q1-Q4).

**Hypotheses Related to the Average Specific Eating Disordered (ED) Word Usage for the Successful Group (Group S)**

Hypothesis 16: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word FAT in Group S.
Hypothesis 17: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word HUNGRY in Group S.

Hypothesis 18: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word GUILTY in Group S.

Hypothesis 19: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word EXCESSIVE in Group S.

Hypothesis 20: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word WEAK in Group S.

Hypotheses Related to the Average Specific Affective Disordered (AD) Word Usage for the Successful Group (Group S)

Hypothesis 21: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the AD word UNHAPPY in Group S.
Hypothesis 22: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the AD word **ANXIOUS** in Group S.

Hypothesis 23: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the AD word **ANGRY** in Group S.

Hypothesis 24: There are statistically significant differences between Quarter one and Quarter four regarding the use of the AD word **TIRED** in Group S.

Hypothesis 25: There are statistically significant differences between Quarter one and Quarter four regarding the use of the AD word **NEGATIVE** in Group S.

Hypotheses Related to the Average Specific Eating Disordered (ED) Word Usage for the Unsuccessful Group (Group U)

Hypothesis 26: There are statistically significant differences between Quarter one and Quarter four regarding the use of the ED word **FAT** in Group U.

Hypothesis 27: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word **HUNGRY** in Group U.
Hypothesis 28: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word **GUILTY** in Group U.

Hypothesis 29: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word **EXCESSIVE** in Group U.

Hypothesis 30: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the ED word **WEAK** in Group U.

**Hypotheses Related to the Average Specific Affective Disordered (AD)**

**Word Usage for the Unsuccessful Group (Group U)**

Hypothesis 31: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the AD word **UNHAPPY** in Group U.

Hypothesis 32: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the AD word **ANXIOUS** in Group U.
Hypothesis 33: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the AD word ANGRY in Group U.

Hypothesis 34: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the AD word TIRED in Group U.

Hypothesis 35: There are statistically significant differences between Quarter one and Quarter four regarding the average use of the AD word NEGATIVE in Group U.

Hypotheses Related to the Average Total Compensatory Behaviours for the Successful Group (Group S)

Hypothesis 36: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of bingeing in Group S

Hypothesis 37: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of vomiting in Group S
Hypothesis 38: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of laxative abuse in Group S.

Hypothesis 39: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of exercise abuse in Group S.

Hypothesis 40: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of the total compensatory behaviours combined in Group S.

Hypotheses Related to the Average Total Compensatory Behaviours for the Unsuccessful Group (Group U)

Hypothesis 41: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of bingeing in Group U.

Hypothesis 42: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of vomiting in Group U.
Hypothesis 43: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of laxative abuse in Group U.

Hypothesis 44: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of exercise abuse in Group U.

Hypothesis 45: There are statistically significant differences between Quarter one and Quarter four regarding the average frequency of all compensatory behaviours combined in Group U.

4.6 STATISTICAL ANALYSIS
The data will be analyzed to ascertain if there are statistically significant differences between the two groups (the successful group and the unsuccessful group), in terms of the personal data and total word output. The Mann-Whitney test is used to establish between group differences. The data will be further analyzed to establish if there are statistically significant differences within the groups regarding the use of eating disordered words, affective disordered words and compensatory behaviours when comparing these variable at the beginning and at the end of therapy. The Wilcoxon Signed Rank Test is used to establish within group differences.
The Mann-Whitney test is a nonparametric statistical test for the difference between two independent samples having a continuous dependent variable measured with at least an ordinal scale. The null hypothesis for the Mann-Whitney test is that the populations from which the two samples have been drawn are identical. The alternative hypothesis is that these two populations are not identical. The Mann-Whitney test will thus be used to establish if there are statistically significant differences between the successful and unsuccessful groups (McCall, 1986).

The Wilcoxon Signed Rank Test is a nonparametric test of differences between the central tendency of samples of related interval level data that is particularly suitable when the sample or subject group is small. It is thus a nonparametric test for two correlated samples having a dependent variable measured with at least an ordinal scale. The null hypothesis for the Wilcoxon Signed Rank Test is that the population distributions under the two conditions are identical. The alternative hypothesis is that they are not. The Wilcoxon Signed Rank Test will therefore be used to establish if there are statistically significant differences within the subjects in the successful group and within the subjects in the unsuccessful group (McCall, 1986).
4.7 SUMMARY

Chapter 4 gives an overview of the aims of the study, then goes on to describe the research style, the subjects and their selection, the groups, the therapy, as well as the procedure employed to collect and utilize the data from 28 case files. The data collected from the case files was extracted from self report diaries which formed part of the cognitive behavioural therapy that each subject underwent. This is followed by an explication of the hypotheses as well as the methods utilized for quantifying the qualitative data used in this study. The results are presented in Chapter 6 and the discussion of these results follows in Chapter 7.
Chapter 5 presents the results of the statistical procedures performed on the data obtained for the two groups. These results will be presented in conjunction with the relevant Tables. Section 5.1 deals with hypotheses 1 to 4 which is a comparison of the successful subjects versus the unsuccessful subjects regarding the subjects’ personal data. The results are tabulated in Table 5.1. Section 5.2 to 5.4 deals with hypotheses 5 to 15 which are concerned with the average total number of eating disordered words, affective disordered words and the average total word output in Quarter 1 and Quarter 4 of treatment for the successful group and for the unsuccessful group. The results are tabulated in Tables 5.2 to 5.4. Section 5.5 to 5.8 deals with hypotheses 16 to 35 which concern within group differences regarding the average total number of Eating Disordered words and Affective Disordered words used in the first and last Quarters of treatment for the successful and the unsuccessful groups. The results are tabulated in Tables 5.5 to 5.8. Section 5.9 to 5.10 deals with hypotheses 36 to 45 which concern within group differences regarding the frequency of the compensatory behaviours of bingeing, vomiting, laxative abuse
and exercise abuse in the first and last Quarters of treatment for the successful and the unsuccessful groups. The results are tabulated in Tables 5.9 and 5.10.

5.1 SUBJECTS' PERSONAL DATA

Hypotheses 1 to 4 concern a comparison of the successful subjects versus the unsuccessful subjects regarding the subjects' personal data.

Hypothesis 1 is a comparison of the duration of the illness before seeking treatment between subjects in the successful group and subjects in the unsuccessful group. Hypothesis 2 concerns the subjects' weight loss goal which is the difference between actual weight and perceived ideal weight. Hypothesis 3 examines and compares the difference between actual body mass index (BMI) and the perceived ideal body mass index of the two groups. Hypothesis 4 concerns the number of diary days completed by subjects in each group.

The results of the Mann-Whitney U test for hypotheses 1-4 are presented in Table 5.1, along with the z score and the significance.
Table 5.1 Significance of differences between Group S (Successful) and Group U (Unsuccessful) regarding subjects' personal data.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group S (n=21)</th>
<th>Group U (n=7)</th>
<th>Mann Whitney Test</th>
<th>z</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of illness: intake age minus onset age</td>
<td>5.58 5.36 14.39 273.5</td>
<td>3.43 3.41 11.07 77.5</td>
<td>49.5</td>
<td>-0.998</td>
<td>0.318</td>
</tr>
<tr>
<td>Weight Loss Goal: actual weight minus ideal weight</td>
<td>6.79 5.42 10.7 160.5</td>
<td>2.53 4.99 7.38 29.5</td>
<td>19.5</td>
<td>-1.051</td>
<td>0.293</td>
</tr>
<tr>
<td>Actual BMI minus ideal BMI</td>
<td>1.96 1.61 10.61 148.5</td>
<td>1.02 1.61 8.3 41.5</td>
<td>26.5</td>
<td>-0.788</td>
<td>0.431</td>
</tr>
<tr>
<td>Number of diary days recorded</td>
<td>74.38 70.55 15.57 327</td>
<td>26.67 18.52 8.5 51</td>
<td>30</td>
<td>-1.926</td>
<td>0.054</td>
</tr>
</tbody>
</table>
Table 5.1 shows:

- that there are no statistically significant differences between the successful group and the unsuccessful group for duration of illness (p=0.318).
- that there are no statistically significant differences between the successful group and the unsuccessful group for weight loss goal (p=0.293).
- that there are no statistically significant differences between the successful group and the unsuccessful group for actual BMI minus ideal BMI (p=0.431).
- that there are no statistically significant differences between the successful group and the unsuccessful group for number of diary days recorded (p=0.054).

Null hypotheses 1 to 4 are thus accepted.
Section 5.2 deals with hypotheses 5, 6, 7 and 8. These hypotheses are concerned with the total number of eating disordered words in Quarter 1 and Quarter 4 of treatment and the difference between these two as well as the total number of eating disordered words used across all four Quarters for the successful and the unsuccessful groups. The results are tabulated in Table 5.2.

Hypothesis 5 concerns the differences between the successful group and the unsuccessful group regarding the average total number of eating disordered words used in Quarter 1 of therapy while hypothesis 6 concerns the differences between the successful group and the unsuccessful group regarding the average total number of eating disordered words used in Quarter four of therapy. Hypothesis 7 concerns the differences between the successful group and the unsuccessful group regarding the average total number of eating disordered words in the first Quarter minus the total number of eating disordered words used in the fourth Quarter. Hypothesis 8 concerns the differences between the successful group and the unsuccessful group with regard to the average total number of eating disordered words used in all four Quarters.

The results of the Mann-Whitney U test for hypotheses 5 to 8 are presented in Table 5.2 along with the z score and the significance.
Table 5.2  Significance of differences between Group S (Successful) and Group U (Unsuccessful) regarding the use of the average total number of Eating Disordered (ED) words used in Quarter 1 (Q1) and Quarter 4 (Q4) of treatment.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group S  (n=21)</th>
<th>Group U (n=7)</th>
<th>Mann Whitney Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Rank</td>
<td>34.19 41.87</td>
<td>15.67 329.00</td>
<td>18.43 30.22</td>
</tr>
<tr>
<td>Average Total Number of ED words used in Quarter 1</td>
<td>15.33 16.93</td>
<td>15.95 335.00</td>
<td>10.00 18.01</td>
</tr>
<tr>
<td>Average Total Number of ED words used in Quarter 4</td>
<td>18.86 32.37</td>
<td>14.05 295.00</td>
<td>-8.43 15.35</td>
</tr>
<tr>
<td>Average Total Number of ED words used in Quarters 1 minus Quarter 4</td>
<td>93.81 107.51</td>
<td>15.62 328.00</td>
<td>52.71 71.43</td>
</tr>
<tr>
<td>Average Total Number of ED words used in all Quarters</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5.2 shows:

- that there are no statistically significant differences between the successful group and the unsuccessful group for the average total number of eating disordered words used in Quarter 1 ($p=0.919$).
- that there are no statistically significant differences between the successful group and the unsuccessful group for the average total number of eating disordered words used in Quarter 4 ($p=0.104$).
- that there are no statistically significant differences between the successful group and the unsuccessful group for the total number of eating disordered words used in Quarter 1 minus Quarter 4 ($p=0.614$).
- that there are no statistically significant differences between the successful group and the unsuccessful group for the total number of eating disordered words used in all four Quarters ($p=0.212$).

Null hypotheses 5 to 8 are thus accepted.
5.3 AVERAGE TOTAL NUMBER OF AFFECTIVE DISORDERED WORDS
USED FOR THE SUCCESSFUL GROUP AND THE UNSUCCESSFUL GROUP

Hypotheses 9 to 12 concern the average total number of affective disordered words used in Quarters 1 and 4 in the successful and unsuccessful groups as well as the difference between these two Quarters for both groups in relation to affective disordered word usage. The average total number of affective disordered words used across all four Quarters is also considered.

Hypothesis 9 is concerned with differences between the successful and unsuccessful groups regarding the average total number of affective disordered words used in Quarter one of treatment while hypothesis 10 concerns the average total number of affective disordered words used in Quarter four of treatment for both groups. Hypothesis 11 is concerned with differences between the average total number of affective disordered words in the first Quarter minus the average total number of affective disordered words used in the fourth Quarter for both groups. Hypothesis 12 is concerned with differences between the two groups regarding the average total number of affective disordered words used in all four Quarters.

The results of the Mann-Whitney U test for hypotheses 9 to 12 are presented in Table 5.3 along with the z score and the significance.
Table 5.3  Significance of differences between Group S (Successful) and Group U (Unsuccessful) regarding the use of the average total number of Affective Disordered (AD) words used in Quarter 1 (Q1) and Quarter 4 of treatment

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group S (n=21)</th>
<th>Group U (n=7)</th>
<th>Mann Whitney Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Total Number of AD words used in Quarter 1</td>
<td>32.29, 38.34, 15.14, 318.00</td>
<td>18.57, 23.09, 12.57, 88.00</td>
<td>60.00, -0.720, 0.472</td>
</tr>
<tr>
<td>Average Total Number of AD words used in Quarter 4</td>
<td>14.14, 20.10, 14.24, 299.00</td>
<td>9.71, 11.27, 15.29, 107.00</td>
<td>68.00, -0.293, 0.770</td>
</tr>
<tr>
<td>Average Total Number of AD words used in Quarters 1 minus Quarter 4</td>
<td>18.15, 24.50, 15.24, 320.00</td>
<td>8.86, 14.79, 12.29, 86.00</td>
<td>58.00, -0.823, 0.410</td>
</tr>
<tr>
<td>Average Total Number of AD words used in all Quarters</td>
<td>85.57, 101.44, 14.81, 311.00</td>
<td>52.86, 51.82, 13.57, 95.00</td>
<td>67.00, -0.345, 0.730</td>
</tr>
</tbody>
</table>
Table 5.3 shows:

- that there are no statistically significant differences between Group S and Group U for the average total number of affective disordered words used in Quarter 1 (p=0.472).
- that there are no statistically significant differences between Group S and Group U for the total number of affective disordered words used in Quarter 4 (p=0.770).
- that there are no statistically significant differences between Group S and Group U for the average total number of affective disordered words used in Quarter 1 minus Quarter 4 (p=0.410).
- that there are no statistically significant differences between Group S and Group U for the average total number of affective disordered words used in all four Quarters (p=0.730).

Null hypotheses 9 to 12 are thus accepted.
5.4 AVERAGE TOTAL WORD OUTPUT FOR THE SUCCESSFUL GROUP AND THE UNSUCCESSFUL GROUP

Hypotheses 13 to 15 concern the average total word output in Quarters 1 and 4, and the difference between these two as well as the average total word output across all four Quarters for the successful and the unsuccessful groups.

Hypothesis 13 examines differences between the two groups regarding the average total number of every word used in Quarter 1 whilst hypothesis 14 examines differences between the two groups regarding the average total number of every word used in Quarter 4. Hypothesis 15 looks at differences between the two groups regarding the average total number of every word used in Quarter one minus the average total number of every word used in Quarter 4.

The results of the Mann-Whitney $U$ test for hypotheses 13-15 are presented in Table 5.4 along with the z score and the significance.
Table 5.4  Significance of differences between Group S (Successful) and Group U (Unsuccessful) regarding the average total word output in Quarter 1 (Q1) and Quarter 4 (Q4) of treatment

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group S (n=21)</th>
<th>Group U (n=7)</th>
<th>Mann Whitney u Test</th>
<th>z</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Total Word Output in Quarter 1</td>
<td>1534.24, 1514.91, 15.71, 330.00</td>
<td>889.43, 1031.83, 10.86, 76.00</td>
<td>48.00</td>
<td>-1.353</td>
<td>0.176</td>
</tr>
<tr>
<td>Average Total Word Output in Quarter 4</td>
<td>1147.10, 1479.26, 14.95, 314.00</td>
<td>279.33, 217.42, 10.67, 64.00</td>
<td>43.00</td>
<td>-1.166</td>
<td>0.243</td>
</tr>
<tr>
<td>Average Total Word Output in Quarters 1 minus Quarter 4</td>
<td>387.14, 1290.44, 14.29, 300.00</td>
<td>241.17, 462.12, 13.00, 78.00</td>
<td>57.00</td>
<td>-0.350</td>
<td>0.726</td>
</tr>
</tbody>
</table>
Table 5.4 shows:

- that there are no statistically significant differences between the successful group and the unsuccessful group in terms of the average total word output in Quarter 1 (p=0.176).
- that there are no statistically significant differences between the successful group and the unsuccessful group in terms of the average total word output in Quarter 4 (p=0.243).
- that there are no statistically significant differences between the successful group and the unsuccessful group in terms of the average total word output in Quarters 1 minus Quarter 4 (p=0.726).

Null hypotheses 13 to 15 are thus accepted.
5.5 SPECIFIC EATING DISORDERED WORDS USED IN QUARTER 1 VERSUS QUARTER 4 FOR THE SUCCESSFUL GROUP

In section 5.5 hypotheses 16 to 20 are dealt with which concern within group differences regarding the average total number of specific eating disordered words used in the first and last Quarters of treatment for the successful group. The relevant eating disordered words are fat, hungry, guilty, excessive, and weak. The results are tabulated in Table 5.5.

Hypothesis 16 is concerned with the difference in the average frequency of the use of the eating disordered word FAT in Quarter 1 versus Quarter 4 in the successful group. Hypothesis 17 is concerned with the difference in the average frequency of the use of the eating disordered word HUNGRY between Quarter 1 and Quarter 4 in the successful group. Hypothesis 18 is concerned with the difference in the average frequency of the use of the eating disordered word GUILTY between Quarter 1 and Quarter 4 in the successful group. Hypothesis 19 is concerned with the difference in the average frequency of the use of the eating disordered word EXCESSIVE between Quarter 1 and Quarter 4 in the successful group. Hypothesis 20 is concerned with the difference in the frequency of the use of the eating disordered word WEAK between Quarter 1 and Quarter 4 in the successful group.
The results of the Wilcoxon Signed Rank Test for hypotheses 16-20 are presented in Table 5.5.
Table 5.5  Significance of differences between Q 1 versus Q 4 regarding Specific Eating Disordered (ED) Words (fat, hungry, guilty, excessive, weak) for Group S (successful : n=21).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Quarter</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pos</td>
<td>Neg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pos</td>
<td>Neg</td>
</tr>
<tr>
<td>FAT</td>
<td>Q 1</td>
<td>7.05</td>
<td>8.71</td>
<td>8.83</td>
<td>79.5</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>4.05</td>
<td>6.22</td>
<td>5.1</td>
<td>25.5</td>
</tr>
<tr>
<td>HUNGRY</td>
<td>Q 1</td>
<td>5.19</td>
<td>6.73</td>
<td>10.5</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>2.52</td>
<td>3.36</td>
<td>5.4</td>
<td>27</td>
</tr>
<tr>
<td>GUILTY</td>
<td>Q 1</td>
<td>6.29</td>
<td>8.89</td>
<td>9.1</td>
<td>136.5</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>1.81</td>
<td>2.25</td>
<td>8.25</td>
<td>16.5</td>
</tr>
<tr>
<td>EXCESSIVE</td>
<td>Q 1</td>
<td>3.76</td>
<td>5.54</td>
<td>10.65</td>
<td>106.5</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>1.9</td>
<td>2.62</td>
<td>6.64</td>
<td>46.5</td>
</tr>
<tr>
<td>WEAK</td>
<td>Q 1</td>
<td>2.38</td>
<td>5.16</td>
<td>6.35</td>
<td>63.5</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>0.43</td>
<td>1.36</td>
<td>2.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Table 5.5 shows:

- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word FAT for the successful group (0.09).

- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word HUNGRY for the successful group (p=0.018; the mean decreasing from 5.19 in Q1 to 2.52 in Q4).

- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word GUILTY for the successful group (p<0.004; the mean decreasing from 6.29 in Q1 to 1.81 in Q4).

- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word EXCESSIVE for the successful group (p=0.152)

- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word WEAK for the successful group (p<0.006; the mean decreasing from 2.38 in Q1 to 0.43 in Q4).

Null hypotheses 16 and 19 are thus accepted.

Null hypotheses 17, 18 and 20 are rejected.
5.6 SPECIFIC AFFECTIVE DISORDERED WORDS USED IN QUARTER 1 VERSUS QUARTER 4 FOR THE SUCCESSFUL GROUP

In section 5.6 hypotheses 21 to 25 are dealt with which concern within group differences regarding the average total number of specific affective disordered words used in the first and last Quarters of treatment for the successful group. The relevant specific affective disordered words are unhappy, anxious, angry, tired, and negative. The results are tabulated in Table 5.6.

Hypothesis 21 is concerned with the difference in the frequency of the use of the affective disordered word UNHAPPY between Quarter 1 and Quarter 4 in the successful group. Hypothesis 22 is concerned with the difference in the frequency of the use of the affective disordered word ANXIOUS between Quarter 1 and Quarter 4 in the successful group. Hypothesis 23 is concerned with the difference in the frequency of the use of the affective disordered word ANGRY between Quarter 1 and Quarter 4 in the successful group. Hypothesis 24 is concerned with the difference in the frequency of the use of the affective disordered word TIRED between Quarter 1 and Quarter 4 in the successful group. Hypothesis 25 is concerned with the difference in the frequency of the use of the affective disordered word NEGATIVE between Quarter 1 and Quarter 4 in the successful group.
The results of the Wilcoxon Signed Rank Test for hypotheses 21 to 25 are presented in Table 5.6.
Table 5.6  Significance of differences between Q 1 versus Q 4 regarding Specific Affective Disordered (AD) Words (unhappy, anxious, angry, tired, negative) for Group S (successful : n=21)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Quarter</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
<th>z</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td>Neg</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pos</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Neg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pos</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNHAPPY</td>
<td>Q 1</td>
<td>6.57</td>
<td>8.74</td>
<td>8.57</td>
<td>128.5</td>
<td>-3.149</td>
<td>0.002</td>
</tr>
<tr>
<td>UNHAPPY</td>
<td>Q 4</td>
<td>3.52</td>
<td>5.33</td>
<td>7.5</td>
<td>7.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANXIOUS</td>
<td>Q 1</td>
<td>6.38</td>
<td>8.74</td>
<td>7.46</td>
<td>89.5</td>
<td>-3.077</td>
<td>0.002</td>
</tr>
<tr>
<td>ANXIOUS</td>
<td>Q 4</td>
<td>1.71</td>
<td>3.02</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANGRY</td>
<td>Q 1</td>
<td>2.68</td>
<td>4.65</td>
<td>7.33</td>
<td>66</td>
<td>-2.136</td>
<td>0.33</td>
</tr>
<tr>
<td>ANGRY</td>
<td>Q 4</td>
<td>1.38</td>
<td>2.85</td>
<td>4</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIRED</td>
<td>Q 1</td>
<td>2.9</td>
<td>4.81</td>
<td>5.44</td>
<td>43.5</td>
<td>-2.499</td>
<td>0.012</td>
</tr>
<tr>
<td>TIRED</td>
<td>Q 4</td>
<td>1.62</td>
<td>3.72</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEGATIVE</td>
<td>Q 1</td>
<td>1.76</td>
<td>2.12</td>
<td>6.7</td>
<td>67</td>
<td>-1.514</td>
<td>0.13</td>
</tr>
<tr>
<td>NEGATIVE</td>
<td>Q 4</td>
<td>1.14</td>
<td>2.22</td>
<td>8</td>
<td>24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5.6 shows:

- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered AD word UNHAPPY for the successful group (p<0.002; the mean decreasing from 6.57 in Q1 to 3.52 in Q4).
- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word ANXIOUS for the successful group (p<0.002; the mean decreasing from 6.38 in Q1 to 1.71 in Q4).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word ANGRY for the successful group (p=0.33).
- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word TIRED for the successful group (p=0.012; the mean decreasing from 2.9 in Q1 to 1.62 in Q4).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word NEGATIVE for the successful group (p=0.13).

Null hypotheses 23 and 25 are thus accepted.

Null hypotheses 21, 22 and 24 are rejected.
5.7 SPECIFIC EATING DISORDERED WORDS USED IN QUARTER 1 VERSUS QUARTER 4 FOR THE UNSUCCESSFUL GROUP

In section 5.7 hypotheses 26 to 30 are dealt with which concern within group differences regarding the average total number of specific eating disordered words used in the first and last Quarters of treatment for the unsuccessful group. The specific eating disordered words are fat, hungry, guilty, excessive, and weak. The results are tabulated in Table 5.7.

Hypothesis 26 states that there are statistically significant differences between Quarter 1 and Quarter 4 regarding the use of the eating disordered word FAT in the unsuccessful group. Hypothesis 27 states that there are statistically significant differences between Quarter 1 and Quarter 4 regarding the use of the eating disordered word HUNGRY in the unsuccessful group. Hypothesis 28 states that there are statistically significant differences between Quarter 1 and Quarter 4 regarding the use of the eating disordered word GUILTY in the unsuccessful group. Hypothesis 29 states that there are statistically significant differences between Quarter 1 and Quarter 4 regarding the use of the eating disordered word EXCESSIVE in the unsuccessful group. Hypothesis 30 states that there are statistically significant differences between Quarter 1 and Quarter 4 regarding the use of the eating disordered word WEAK in the unsuccessful group.
The results of the Wilcoxon Signed Rank Test for hypotheses 26 to 30 are presented in Table 5.7.
Table 5.7  Significance of differences between Q 1 versus Q 4 regarding Eating Disordered (ED) Words (fat, hungry, guilty, excessive, weak) for Group U (unsuccessful : n=7).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Quarter</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pos</td>
<td>Neg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pos</td>
<td>Neg</td>
</tr>
<tr>
<td>FAT</td>
<td>Q 1</td>
<td>4.43</td>
<td>7.39</td>
<td>3.5</td>
<td>2.25</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>2.86</td>
<td>5.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HUNGRY</td>
<td>Q 1</td>
<td>1</td>
<td>1.91</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>1.14</td>
<td>3.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GUILTY</td>
<td>Q 1</td>
<td>3.86</td>
<td>6.49</td>
<td>2.5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>1.43</td>
<td>2.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXCESSIVE</td>
<td>Q 1</td>
<td>5.29</td>
<td>10.77</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>2.14</td>
<td>3.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEAK</td>
<td>Q 1</td>
<td>0.43</td>
<td>1.13</td>
<td>0</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>0.71</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5.7 shows:

- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word FAT for the unsuccessful group (p=0.416).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word HUNGRY for the unsuccessful group (p=0.655).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word GUILTY for the unsuccessful group (p=0.285).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word EXCESSIVE for the unsuccessful group (p=0.102).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the eating disordered word WEAK for the unsuccessful group (p=0.157).

Null hypotheses 26 and 30 are thus accepted.
5.8 SPECIFIC AFFECTIVE DISORDERED WORDS USED IN QUARTER 1 VERSUS QUARTER 4 FOR THE UNSUCCESSFUL GROUP

In section 5.8 hypotheses 31 to 35 are dealt with which concern within group differences regarding the total number of specific affective disordered words used in the first and last Quarters of treatment for the unsuccessful group. The specific affective disordered words are unhappy, anxious, angry, tired, and negative. The results are tabulated in Table 5.8.

Hypothesis 31 is concerned with the difference in the average frequency of usage of the affective disordered word UNHAPPY between Quarter 1 and Quarter 4 of therapy in the unsuccessful group. Hypothesis 32 is concerned with the difference in the average frequency of usage of the affective disordered word ANXIOUS between Quarter 1 and Quarter 4 of therapy in the unsuccessful group. Hypothesis 33 is concerned with the difference in the average frequency of usage of the affective disordered word ANGRY between Quarter 1 and Quarter 4 of therapy in the unsuccessful group. Hypothesis 34 is concerned with the difference in the average frequency of usage of the affective disordered word TIRED between Quarter 1 and Quarter 4 of therapy in the unsuccessful group. Hypothesis 35 is concerned with the difference in the average frequency of usage of the affective disordered word NEGATIVE between Quarter 1 and Quarter 4 of therapy in the unsuccessful group.
The results of the Wilcoxon Signed Rank Test for hypotheses 31 to 35 are presented in Table 5.8.
Table 5.8  Significance of differences between Q 1 versus Q 4 regarding Specific Affective Disordered (AD) Words (unhappy, anxious, angry, tired, negative) for Group U (unsuccessful : n=7)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Quarter</th>
<th>Mean</th>
<th>SD</th>
<th>Neg</th>
<th>Pos</th>
<th>Neg</th>
<th>Pos</th>
<th>z</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNHAPPY</td>
<td>Q 1</td>
<td>5.86</td>
<td>8.15</td>
<td>6</td>
<td>2.5</td>
<td>18</td>
<td>10</td>
<td>-0.681</td>
<td>0.496</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>2.57</td>
<td>2.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANXIOUS</td>
<td>Q 1</td>
<td>1.17</td>
<td>2.06</td>
<td>3.25</td>
<td>2</td>
<td>13</td>
<td>2</td>
<td>-1.518</td>
<td>0.129</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>0.71</td>
<td>0.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANGRY</td>
<td>Q 1</td>
<td>1.86</td>
<td>2.67</td>
<td>6</td>
<td>2.5</td>
<td>18</td>
<td>10</td>
<td>-0.69</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>0.57</td>
<td>0.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIRED</td>
<td>Q 1</td>
<td>2.86</td>
<td>5.4</td>
<td>2.25</td>
<td>1.5</td>
<td>4.5</td>
<td>1.5</td>
<td>-0.816</td>
<td>0.414</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>1.43</td>
<td>1.9</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEGATIVE</td>
<td>Q 1</td>
<td>2.57</td>
<td>4.39</td>
<td>2.5</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>-1.841</td>
<td>0.066</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>1.29</td>
<td>2.63</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5.8 shows:

- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word UNHAPPY for the unsuccessful group (p=0.496).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word ANXIOUS for the unsuccessful group (p=0.129).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word ANGRY for the unsuccessful group (p=0.49).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word TIRED for the unsuccessful group (p=0.414).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for the affective disordered word NEGATIVE for the unsuccessful group (p=0.066).

Null Hypotheses 31, 32, 33, 34 and 35 are thus accepted.
5.9 COMPENSATORY BEHAVIOURS IN QUARTER 1 VERSUS QUARTER 4
FOR THE SUCCESSFUL GROUP

Section 5.9 deals with hypotheses 36 to 40 which concern within group differences regarding the frequency of the compensatory behaviours of bingeing, vomiting, laxative abuse and exercise abuse in the first and last Quarters of treatment for the successful group. The results are tabulated in Table 5.9.

Hypothesis 36 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of BINGEING in the successful group. Hypothesis 37 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of VOMITING in the successful group. Hypothesis 38 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of LAXATIVE ABUSE in the successful group. Hypothesis 39 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of EXERCISE ABUSE in the successful group. Hypothesis 40 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of the AVERAGE TOTAL COMPENSATORY BEHAVIOURS combined in the successful group.

The results of the Wilcoxon Signed Rank Test for hypotheses 36 to 40 are presented in Table 5.9.
Table 5.9 Significance of differences between Q 1 versus Q 4 regarding Compensatory Behaviours (binges, vomiting, laxative abuse, exercise) for Group S (successful, n=21).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sig</th>
<th>z</th>
<th>Sum of Ranks</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td>Sum of Neg</td>
<td>Pos</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Neg Mean</td>
<td>Pos Mean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SD</td>
<td>SD</td>
</tr>
<tr>
<td>Quarter</td>
<td>Q 1</td>
<td>Q 4</td>
<td>Q 1</td>
<td>Q 4</td>
</tr>
<tr>
<td>BINGES</td>
<td>8.43</td>
<td>2.24</td>
<td>14.4</td>
<td>3.69</td>
</tr>
<tr>
<td>VOMITING</td>
<td>7</td>
<td>1.81</td>
<td>123</td>
<td>3.12</td>
</tr>
<tr>
<td>LAXATIVE ABUSE</td>
<td>2.62</td>
<td>0.24</td>
<td>7.17</td>
<td>1.09</td>
</tr>
<tr>
<td>EXERCISE</td>
<td>2</td>
<td>0.95</td>
<td>3.78</td>
<td>2.31</td>
</tr>
<tr>
<td>TOTAL COMPENSATORY BEHAVIOUR</td>
<td>20.05</td>
<td>9.24</td>
<td>11.25</td>
<td>5.28</td>
</tr>
</tbody>
</table>

Note: Sig values correspond to p-values, indicating statistical significance.
Table 5.9 shows:

- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for BINGEING in the successful group (p=0.003; the mean decreasing from 8.43 in Q1 to 2.24 in Q4).
- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for VOMITING in the successful group (p=0.013; the mean decreasing from 7 in Q1 to 1.81 in Q4).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for LAXATIVE ABUSE in the successful group (p=0.144).
- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for EXERCISE in the successful group (p=0.027; the mean decreasing from 2 in Q1 to 0.95 in Q4).
- that there is a statistically significant difference between Quarter 1 versus Quarter 4 for AVERAGE TOTAL COMPENSATORY BEHAVIOURS in the successful group (p=0.001; the mean decreasing from 20.05 in Q1 to 5.24 in Q4).

Null hypothesis 38 is thus accepted.

Null hypotheses 36, 37, 39 and 40 are rejected.
Section 5.10 deals with hypotheses 41 to 45 which concern within group differences regarding the frequency of the compensatory behaviours of bingeing, vomiting, laxative abuse and exercise abuse in the first and last Quarters of treatment for the unsuccessful group. The results are tabulated in Table 5.10.

Hypothesis 41 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of BINGEING in the unsuccessful group.

Hypothesis 42 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of VOMITING in the unsuccessful group.

Hypothesis 43 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of LAXATIVE ABUSE in the unsuccessful group. Hypothesis 44 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of EXERCISE ABUSE in the unsuccessful group. Hypothesis 45 concerns the differences between Quarter 1 and Quarter 4 of treatment in relation to the frequency of AVERAGE TOTAL COMPENSATORY BEHAVIOURS combined in the unsuccessful group.

The results of the Wilcoxon Signed Rank Test for hypotheses 41 to 45 are presented in Table 5.10.
Table 5.10  Significance of differences between Q 1 versus Q 4 regarding Compensatory Behaviours (binges, vomiting, laxative abuse, exercise) for Group U (unsuccessful : n=7).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Quarter</th>
<th>Mean</th>
<th>SD</th>
<th>Neg</th>
<th>Pos</th>
<th>Sum of Ranks</th>
<th>z</th>
<th>Sig</th>
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<tbody>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BINGES</td>
<td>Q 1</td>
<td>7.71</td>
<td>12.67</td>
<td>3.83</td>
<td>1.75</td>
<td>11.5</td>
<td>3.5</td>
<td>-1.084</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>5.57</td>
<td>9.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOMITING</td>
<td>Q 1</td>
<td>7.29</td>
<td>11.79</td>
<td>2.5</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>-1.826</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>4.86</td>
<td>9.23</td>
<td></td>
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<tr>
<td>LAXATIVE ABUSE</td>
<td>Q 1</td>
<td>1.57</td>
<td>4.16</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>-1</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>0.86</td>
<td>2.27</td>
<td></td>
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<tr>
<td>EXERCISE</td>
<td>Q 1</td>
<td>0.71</td>
<td>1.89</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Q 4</td>
<td>0.71</td>
<td>1.89</td>
<td></td>
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<tr>
<td>TOTAL COMPENSATORY</td>
<td>Q 1</td>
<td>17.29</td>
<td>25.79</td>
<td>4.25</td>
<td>2</td>
<td>17</td>
<td>4</td>
<td>-1.363</td>
</tr>
<tr>
<td>BEHAVIOUR</td>
<td>Q 4</td>
<td>12</td>
<td>19.53</td>
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</tbody>
</table>
Table 5.10 shows:

- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for BINGEING in the unsuccessful group (p=0.279).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for VOMITING in the unsuccessful group (p=0.068).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for LAXATIVE ABUSE in the unsuccessful group (p=0.317).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for EXERCISE in the unsuccessful group (p=1).
- that there is no statistically significant difference between Quarter 1 versus Quarter 4 for AVERAGE TOTAL COMPENSATORY BEHAVIOURS in the unsuccessful group (p=0.173).

Null hypotheses 41, 42, 43, 44 and 45 are thus accepted.

The above results will be discussed in Chapter 6 along with the evaluation and recommendations.
CHAPTER 6

DISCUSSION OF THE RESULTS

"Life itself is the proper binge"

Julia Child

In the previous chapter the results were presented. This chapter discusses the findings as shown in Tables 5.1 to 5.10. A brief overview of the study is offered, followed by the interpretation, evaluation and the application of the study’s findings to clinical practise. Limitations of the study, recommendations for further research and a conclusion follow.

6.1 OVERVIEW OF THE STUDY

Chapter 2 presented an overview of the literature pertaining to the diagnostic criteria, epidemiology, aetiology and theoretical models of bulimia nervosa. Further to this the modern influences on body weight and shape, body image and the collision of physiology and culture were also presented in chapter 2. The experience and theory of bulimia nervosa were presented in chapter 3. Included here were the cognitive processes and depression in bulimia nervosa, the cognitive model of psychopathology, cognitive schemas and treatment of this disorder. In chapter 4 the empirical investigation was described. The results of these investigations were presented in chapter 5. These results will now be
discussed, interpreted and evaluated in the following section (6.2). This will be followed by a discussion of the limitations of the study along with recommendations for further research. The chapter will be closed with the conclusion in 6.4.

6.2 INTERPRETATION AND EVALUATION OF RESULTS

The first set of hypotheses concerns the personal data of the bulimic subjects used for this study. It was hypothesised that there would be differences between the successful and the unsuccessful groups in relation to the personal data. The four variables considered for the personal data included duration of illness, weight loss goal, body mass index and the number of diary days completed. Hypotheses 1 to 4 reflect these variables and the results of the statistical analysis for the personal data are shown in Table 5.1.

Clinical evidence suggests that individuals with a longer history of bulimia nervosa are more likely to succeed when they seek treatment. The literature does not indicate whether duration of illness plays any role in the recovery process and eventual outcome of therapy. Clinical anecdotes do however suggest that where individuals have lived with the secretive problem of bulimia nervosa for an extended period of some years, that the disorder gradually impacts on all levels of their functioning producing significant distress that drives the individual to seek help. Under such circumstances there is perhaps greater
motivation to recover from the debilitating consequences of this disorder and possibly increasing the chances of recovery. It was thus hypothesised that individuals who succeed in therapy will have a greater duration of illness than individuals who are unsuccessful in therapy. There were however no statistically significant differences between the successful and the unsuccessful groups in relation to duration of illness (hypothesis 1: \( p = 0.318 \)). Visual inspection of the data suggests that the successful group’s subjects had a greater duration of illness than subjects in the unsuccessful group. This may simply be peculiar to this data or possibly the smaller size of the unsuccessful group (n= 7) compared to the successful group (n= 21) made these results non-significant. Further research needs to be conducted to establish if duration of illness is indeed a factor in the outcome of therapy.

Weight loss and the relentless drive for thinness is a key feature of bulimia nervosa. It was hypothesised that the unsuccessful group would want to lose significantly more weight than the successful group. It was postulated that the unsuccessful group would be more determined to lose more weight than the successful group thus making this group less likely to succeed in therapy. It was hypothesised that there would be a significant difference between the successful and the unsuccessful groups in relation to the difference between actual weight and ideal weight (weight loss goal) (hypothesis 2). There would therefore also be a difference in body mass index (BMI = weight divided by the square of the
height) between these two groups based on their weight (actual BMI) and their ideal weight (ideal BMI) (hypothesis 3).

Contrary to the above expectations, there were no statistically significant differences between the successful and the unsuccessful groups in relation to weight loss goals and BMI discrepancies (hypothesis 2: $p=0.293$; and hypothesis 3: $p=0.431$). This outcome could partially be attributed to the very small size of the unsuccessful group where $n=7$ compared to the size of the successful group where $n=21$. Although not statistically significant, the difference in actual weight and in the weight loss goals of the two groups indicates that where weight loss is achieved through the maladaptive mechanisms of bulimia nervosa, as is evident in the average low weight of the unsuccessful group, there may be reluctance to give up these behaviours that have produced the much desired result of weight loss. Larger therapy outcome groups need to be studied to test the assumption that arises from this: that weight loss reinforces and maintains bulimic behaviour, especially in treatment resistant cases. It may also be postulated that individuals who did not previously lose weight by non-bulimic means will be reluctant to give up their disorder if weight loss is achieved by the maladaptive methods that bulimics engage in.

A statistically significant difference between the successful and the unsuccessful groups in relation to the number of diary days recorded throughout the therapy...
was expected to be found (hypothesis 4). The successful group was expected to have completed more diary days compared to the unsuccessful group who was expected to be less compliant thus completing fewer diary days. The unsuccessful group was also expected to attend therapy for a much shorter time than the successful group which would be reflected in the number of diary days completed.

There were however no statistically significant differences at the 0.05 level of significance between the successful and the unsuccessful groups in relation to the total number of diary days recorded (hypothesis 4, p=0.054). This result implies that poor compliance with therapy requirements was not a factor responsible for the unsuccessful outcome. It also implies that there was no statistically significant difference between the duration of therapy between the two groups. Thus no inferences regarding duration of therapy can be made in terms of therapy outcome. Since the difference between the two groups was significant at the 0.10 level of significance, with the successful group completing on average more diary days ($\bar{x} = 74.38$ vs. $\bar{x} = 26.67$) possibly future research needs to investigate this variable utilising larger groups of bulimic clients.

The next set of hypotheses concern the average total output of eating disordered words, affective disordered words as well as the average total word output of subjects in each group. It was hypothesised that there would be
differences between the first and fourth Quarters of treatment for the successful and the unsuccessful groups in relation to the total number of eating disordered and affective disordered words used and the total word output for the successful and unsuccessful groups. Hypotheses 5 to 15 reflect these variables and the results of the statistical analyses are shown in Table 5.2 to 5.4.

The use of eating disordered words (Table 5.2) and affective disordered words (Table 5.3) was expected to differ between the two groups. The total number of eating and affective disordered words used in Quarter 1, Quarter 4, the difference between Quarter 1 and 4 and across all four Quarters were calculated for the two groups. There were no statistically significant difference between the groups in terms of their use of eating and affective disordered words in any of the Quarters.

The average total word output in Quarter 1, Quarter 4 and the difference between Quarter 1 and 4 for the successful and unsuccessful groups was also compared. There were no statistically significant difference between the groups in terms of their total word output in any of the Quarters.

These results for hypotheses 5 to 15 imply that the descriptive language that bulimics use about themselves does not offer any indication of therapy outcome. Eating disordered words that reflect concerns with weight, shape, eating, body
and self-image are thus consistent in the expressive language of the bulimic individuals in both groups. The same holds true for affective disordered words used that reflect mood disturbances and a tendency towards depression. The general presence of eating disordered and affective disordered words thus offers no prognostic indication for treatment.

The average total word output in the diaries kept by bulimic individuals as part of cognitive behavioural also offers no indication of treatment outcome. Both the successful and unsuccessful groups were compliant with record and diary keeping yet the response to the same treatment was different. Compliance with diary keeping does not indicate that outcome will be positive or successful. Whilst the self-monitoring techniques used by cognitive behavioural therapists have been shown to have therapeutic benefits, the results found here suggest that other factors contribute to the success of this diary approach. These factors could be the individual temperament and personality of both patient and therapist which were not controlled for in this study. It is also possible that the patients’ own experience of the bulimia nervosa and its impact on their functioning will determine how they respond to treatment. Habit, secondary gains, ambivalence and fear that recovery will lead to weight gain contribute to poor outcome. Future research could examine patient attitudes regarding their disorder by using a structured interview that addresses the patient’s specific feelings and attitudes about recovery.
The focus of the next set of hypotheses (16 to 35) is on the use of **specific eating and affective disordered words** in each group at the beginning and at the end of therapy. The most frequently used words were identified and their usage over the course of treatment was analyzed. Hypotheses 16 to 35 refer to the use of these specific words in the two groups and the results are reflected in Tables 5.5 to 5.8.

The **specific eating disordered words** analyzed in Quarter 1 versus Quarter 4 of treatment for the successful and unsuccessful groups were: **fat, hungry, guilty, excessive** and **weak**. It was hypothesized that there would be a statistically significant difference in the frequency of eating disordered words used between the first and last Quarters of treatment in the successful group. No significant differences were expected to be found between the Quarters for the unsuccessful group in terms of specific eating disordered word usage.

The **specific affective disordered words** analyzed in Quarter 1 versus Quarter 4 of treatment for the successful and unsuccessful groups were: **unhappy, anxious, angry, tired** and **negative**. It was hypothesized that there would be a statistically significant difference in the frequency of affective disordered words used between the first and last Quarters of treatment in the successful group. No significant differences were expected to be found between the Quarters for the unsuccessful group in terms of specific affective disordered word usage.
Specific word usage in the successful group for both eating disordered words (hypotheses 16 to 20) and affective disordered words (hypotheses 21 to 25) showed significant differences for most words between Quarter 1 (the beginning) and Quarter 4 (the end) of therapy (see Tables 5.5 and 5.6).

The most frequently used eating disordered word was fat and the synonyms thereof, such as big, bloated, chubby, enormous, heavy, huge, obese and overweight (hypothesis 16) which is a body image related adjective. The use of this word did not differ significantly between Quarter 1 and Quarter 4 of therapy at the 0.05 level of significance. There was however a decline in the use thereof that is significant at the 0.10 level of significance (fat: $p=0.09$). The mean for the average use of the word fat decreased from 7.05 in Quarter 1 to 4.05 in Quarter 4. The eating disordered word ranked fourth in terms of frequency of use was excessive and the synonyms thereof such as binge, overindulge, cannot stop eating, ate too much, stuffed, pigged out and greedy (hypothesis 19) which is an adjective used in the context of food and appetite. The use of this word did not differ significantly between the Quarters either (excessive: $p=0.152$). The mean for the average use of the word excessive decreased from 3.76 in Quarter 1 to 1.9 in Quarter 4, but should not be interpreted since it was not statistically significant.
There were statistically significant differences between the first and last Quarters of therapy for the eating disordered words hungry (p=0.018) and the synonyms thereof such as starving, ravenous and glutton; guilty (p=0.004) and the synonyms thereof such as ashamed and felt bad; and weak (p=0.006) and the synonyms thereof such as powerless, no control, no strength and undisciplined (hypotheses 17, 18 and 20). The mean for the average use of the word hungry (p=0.018) decreased from 5.19 in Quarter 1 to 2.52 in Quarter 4. The mean for the average use of the word guilty (p=0.004) decreased from 6.29 in Quarter 1 to 1.81 in Quarter 4. The mean for the average use of the word weak (p=0.006) decreased from 2.38 in Quarter 1 to 0.43 in Quarter 4. These three eating disordered words are food and appetite related adjectives. The use of the words guilty and weak were used in response to the inability to refrain from bingeing, vomiting and abusing laxatives.

The most frequently used affective disordered word was unhappy (and the synonyms thereof such as bleak, blue, down, miserable, depressed, sad, and upset) (hypothesis 21) which indicates low mood and depressive tendencies. The use of the word unhappy (p=0.02) differed significantly between Quarter 1 and Quarter 4 of therapy with the mean decreasing from 6.57 to 3.52. The second and fourth most frequently used affective words were anxious (and the synonyms thereof such as afraid, dread, distressed, fear, nervous, panic and scared) (hypothesis 22); and tired (and the synonyms thereof such as burnt out,
drained, exhausted, fatigued, flat and lethargic) (hypothesis 24) both of which decreased significantly between the first and last Quarters of treatment (anxious: \(p=0.02\) and tired: \(p=0.012\)). The mean for the average use of the word anxious decreased from 6.38 in Quarter 1 to 1.71 in Quarter 4. The mean for the average use of the word tired decreased from 2.9 in Quarter 1 to 1.62 in Quarter 4. These two words also indicate low mood and depressive tendencies but may also be representative or a resultant of purging behaviour. The word ranked second was angry (and the synonyms thereof such as annoyed, cross and furious) (hypothesis 23) and the word ranked fifth was negative (and the synonyms thereof such as bad and pessimistic) (hypothesis 25) did not show a significant difference between the Quarters (angry: \(p=0.33\) and negative: \(p=0.13\)).

In the context of bulimia nervosa and the diaries from which these words were taken, these adjectives were used when describing eating, bingeing (hungry), the attempt to avoid eating and the resulting feelings (guilty and weak) when this is not achieved. The words guilty and weak are also feelings that result from purging behaviour that the bulimic is actively trying to avoid. Bulimics report being preoccupied with food and eating. Their thoughts revolve around dieting, planning avoidance strategies and daily food allowances all of which are self determined and self imposed. When the bulimic deviates from the elaborate daily dieting and weight loss plan, the response is to binge eat and then to
engage in compensatory behaviours such as vomiting, laxative abuse, and excessive exercise. Bulimics often report feelings indicative of low mood, as is indicated by the most frequently used affective disordered words identified in this study (unhappy, anxious, angry, tired and negative). This associated depression is caused by or secondary to restricted eating, strenuous dieting, bingeing, purging, and, body shape and weight dissatisfaction. Thus the use of eating and affective disordered words are closely linked and interdependent.

The bulimic pattern of dieting, restrained eating, fasting, binge eating, vomiting and laxative abuse is cyclical and has emotional sequelae such as depression. Due to the perpetual pursuit of thinness the bulimic is constantly trying to diet or eat less. As a result many bulimic are always hungry which is exacerbated by vomiting. Hunger leads to binge eating which leads to further vomiting. This arouses feelings of guilt and personal weakness. It is not coincidental then that the most frequently used eating disordered words are fat, hungry, guilty, excessive and weak. Coupled with these words are the affective disordered words that reflect mood states that are both a cause and an effect of the binge-purge cycle.

The bulimic is self loathing and despises her body, her shape and her weight. This leads to unhappiness and the pursuit of thinness through any means possible (except a healthy balanced eating plan!). Symptoms of depression can
include anger, tiredness and negative thoughts and outlook. In bulimics, depression is most often related to body dissatisfaction and the inability to achieve the desired weight and shape. The extreme maladaptive compensatory behaviours have also been shown to cause the same symptoms. Laxative abuse is known to cause extreme fatigue, tiredness and anxiety (Weltzin, Bulik, McConaha & Kaye, 1995). Restrained eating and dieting also lead to fatigue, tiredness and anxiety. Vomiting has the same effect causing physical weakness, exhaustion and fatigue. All these ill side effects of being undernourished were well demonstrated by Keys, Brozek, Heschel, Mickelsen and Taylor (1950), Green and Rogers (1995), Warren and Cooper (1988) and Laessles, Platte, Schweiger and Pirke (1996).

These affective disordered words (unhappy, anxious, angry, tired and negative) as well as eating disordered (fat, hungry, guilty, excessive and weak) words were thus hypothesised to decrease in frequency if therapy was successful but not where the outcome was unsuccessful. As sited above these words did decrease over the course of therapy with 60% of the words showing a statistically significant difference between the beginning and end of therapy. There were also statistically significant decreases in the frequencies of total compensatory behaviours (p=0.001), binges (p=0.003), vomiting (p=0.013) and exercise abuse (0.027) (see discussion further on). The process of recovery thus involves the improvement of mood status, the restructuring of body
dissatisfaction and the relentless and unrealistic drive for thinness as well as a reduction in compensatory behaviours. These results further indicate that the self report of hunger decreased over therapy implying that these subjects were possibly dieting less rigorously and therefore binging and vomiting less frequently. This would then translate into decreased feelings of guilt and weakness. The concomitant improvements in mood could be attributed to the decrease in eating disordered behaviour and thinking styles which would have been addressed in the therapy.

The question arising from the specific word usage in the successful group is why significant decreases at the 0.05 level only occurred in six of the ten most frequently used words. The answer may lie in the core nature of bulimia nervosa where individuals assign a critical role to body weight that affects all aspects of their functioning. This results in a constant striving for weight loss and thinness in the face of a continuous feeling of fatness. Dieting, food, eating, fasting, binging and vomiting preoccupy the bulimic patient. What appears to happen during the process of recovery is that the patient retains the feelings and attitudes about fatness hence the use of this word does not sharply decline as expected but because the compensatory behaviours decrease the patient feels less guilty and hunger subsequently decreases as meals are consumed without vomiting. Constant vomiting is necessarily going to result in constant hunger and a preoccupation with food. The word excessive did not decrease significantly
which may be the result of the decreased vomiting that leaves the patient feeling empty. The physical sensation of having ingested a normal meal without vomiting makes the patient feel as though they are eating too much which in turn could lead to negative feeling regarding the recovery process hence the word negative did not decrease significantly. The word angry did not decrease significantly either but it is not clear why this is so. The process of therapy and of recovery which for the bulimic patient implies significant changes in behaviour and lifestyle that requires a tremendous amount of commitment, concentration and energy. This may cause a host of problems in the individual’s social, occupational and interpersonal functioning that possibly results in lowered frustration tolerance and anger. The qualitative study of the experience of successful therapy with eventual recovery could shed more light on the individuals emotional challenges during therapy.

**Specific word usage in the unsuccessful group** for both of eating disordered words (hypotheses 26 to 30) and affective disordered words (hypotheses 31 to 35) did not differ significantly between Quarter 1 (the beginning) and Quarter 4 (the end) of therapy (see Tables 5.7 and 5.8). Whilst there were slight decreases in use of all the affective disordered words and most eating disordered words, these decreases were not statistically significant. The use of two of the eating disordered words (hungry and weak) showed slight increases between Quarter 1 and Quarter 4 of therapy. This could be indicative of
continued attempts to lose weight that result in hunger and the failure to adhere to a weight loss plan that results in feelings of personal weakness and inadequacy.

The implication of this for the clinician working with bulimics is that they are challenged to find ways to keep impatient bulimic clients engaged in the therapeutic process long enough to demonstrate the beneficial results and improvements such as those observed in the present study where there were significant decreases in the use of the eating disordered word fat at the 0.01 level of significance and the eating disordered words hungry, guilty and weak at the 0.05 level of significance; there were significant decreases at the 0.05 level of significance in the use of affective disordered words unhappy, anxious and tired; and finally there were significant decreases at the 0.05 level of significance in the compensatory behaviours of bingeing, vomiting and exercise abuse. It also means that patient expectations should be explored at the outset of therapy so as to ensure a realistic time frame within which to work. This includes factoring relapses and ‘bad days’ into the client’s expectations which is extremely difficult to do with bulimic clients due to the common occurrence of perfectionism and dichotomous thinking that makes them intolerant of even the slightest transgression or deviation from daily goals.
The prevention and cessation of compensatory behaviours is a critical part of treatment because these behaviours represent the external manifestations of the disorder. These can be seen as behavioural markers that indicate the presence and severity of bulimia nervosa. By reducing and ultimately eliminating these behaviours the therapist and bulimic patient have tangible evidence that the problem is improving and that recovery is possible. The results of the analysis of these compensatory behaviours (hypotheses 36 to 45 as reflected in Tables 5.9 and 5.10) shows that for the successful group this was achieved with all but one showing statistically significant reduction in frequency between Quarter 1 and Quarter 4. There was a significant decrease in binges (p=0.003), vomiting (p=0.013), exercise (p=0.027) and total compensatory behaviours (p=0.001), the means decreasing from 8.43 to 2.24 for binges; from 7 to 1.81 for vomiting; from 2 to 0.95 for exercise abuse; and from 20.05 to 5.24 for total compensatory behaviours in Quarter 1 versus Quarter 4 of therapy. Only laxative abuse (p=0.144) was not significantly different although there was a decrease in their usage over the therapy where the mean for Quarter 1 was 2.62 that decreased to 0.24 in Quarter 4. Laxative abuse is one of the more difficult behaviours to remediate in therapy and withdrawal usually requires an extended period of weaning to avoid rebound oedema and anxiety (Muller-Lissner, 1993). There were no significant decreases in compensatory behaviours in the unsuccessful group: binges (p=0.279), vomiting (p=0.068), laxative abuse (p=0.317) exercise (p=1) and total compensatory behaviours (p=0.173). This is consistent with the
lack of statistically significant changes in the use of eating and affective disordered words for the unsuccessful group.

In summary, the results of the present study show that the process of cognitive behavioural therapy leads to positive cognitive changes for bulimic patients in the successful therapy outcome group. This is evident in the choice of language used in the daily diaries of bulimic patients. The language used is reflective of the self denigrating thoughts and feelings that bulimic patients have on a daily basis. The process of cognitive behavioural therapy significantly improves their use of such negative language by the end of treatment. The dysfunctional behaviours of bingeing, vomiting and exercise abuse also decrease significantly as a result of cognitive behavioural therapy. These changes are critical in improving the quality of bulimic individuals’ daily lives. As was expected there were no significant differences found in the unsuccessful group for specific language use or for compensatory behaviours.

This study further demonstrates the usefulness of the self-monitoring diary technique used in the cognitive behavioural approach to the treatment of bulimia nervosa. The value for therapists and patients is that a written baseline of behaviours can be established and progress can be quantitatively assessed throughout the treatment thus creating a tangible record of improvements achieved. This is encouraging and motivating for therapists and patients alike as
bulimia nervosa is a frustrating disorder to have and to treat so even the smallest improvements are significant in gaining a sense of control over this debilitating problem.

6.3 LIMITATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH
The single most limiting factor of this study was the very small number of subjects available for use in the study particularly in the unsuccessful group. (It is however a good reflection of the particular therapist conducting the therapy, where 21 out of 28 patients had a successful outcome; approximately 75% success rate).

Gathering a large number of bulimic patients is a common problem sited in eating disorder research. The secretive nature of the disorder makes bulimic sufferers reluctant to seek treatment or to voluntarily participate in research studies (Beglin & Fairburn, 1992; Burket & Hodgin, 1993). This means that for larger groups of bulimics to be collected for research purposes the time period could be protracted thus hampering research efforts. This is even more difficult when studies revolve around the therapeutic process and the outcome and efficacy thereof.

Another limiting factor is that the specific group of subjects used for this study is not a representative group that was randomly selected. Comments and
conclusions regarding the statistical results are thus limited to this specific group of subjects with both successful and unsuccessful outcomes and cannot be generalised to all bulimic women at this stage. Future research needs to consider how to overcome this problem.

There is no supporting data or research that is remotely similar to that undertaken in this research study. The uniqueness of the research design thus makes it difficult to interpret and contextualise the data obtained for this study. There are no comparative studies to either support or negate this work. This research approach of analysing the self-report diaries of bulimic patients in cognitive behavioural therapy needs to be replicated to establish its usefulness and relevance to therapy. Longitudinal studies need to be designed to gather sufficient data to replicate this work.

This study was further limited by its retrospective design. It can be seen as a completely blind study as therapist and patient did not follow any set of criteria for proceeding with treatment other than that implicit in the cognitive behavioural therapy approach. There was also therefore no baseline data prior to the commencement of the therapeutic intervention. The establishment of baseline data makes comparative analyses easier and more meaningful for both intra- and inter individual differences and intra- and inter group differences. Future studies need to address these difficulties.
The diary analysis focused on the use of eating and affective disordered words that have negative meanings and connotations. The presence of positive language regarding body image and mood was not monitored at all. Such positive language and the gradual increase in usage thereof may offer a more complete picture of the subjects’ progress in therapy. This could also be considered in future studies or analyses of diary contents.

Future studies could also consider ways in which to incorporate control groups such as normal dieters (with no history of an eating disorder), normal non-dieters, restrained eaters, anorexics, obese individuals with and without eating pathology and individuals with binge eating disorder. As shown in chapter 2, body image issues are rampant among the vast majority of women and not restricted to eating disordered women. Comparative data needs to be gathered for other groups of women and men with and without eating pathology to establish how thoughts and feelings towards body weight, food eating and dieting vary among these other groups.

6.4 CONCLUSION

The findings of this research suggest that the cognitive content of bulimic women is centered around negative thoughts, ideas and feelings related to body image, food, eating and low mood state. Through the process of cognitive behavioural therapy, the cognitive content shows significant amelioration in
subjects who have a successful outcome at the end of therapy. The results also indicated that compensatory behaviours decreased significantly in the successful group by the end of therapy. No significant improvements were detected in the cognitive content or the compensatory behaviours of bulimic subjects with an unsuccessful outcome at the end of therapy.

These research findings suggest that cognitive behavioural therapy has a significant impact on the cognitive schemas of recovered bulimic subjects in the successful group. Due to the limiting factors of the research as explicated in the previous section and the small number of subjects used in this study further studies of diary content that can lend support or redirect the current work are needed.

It is hoped that this approach to the evaluation of cognitive content and cognitive behavioural therapy will inspire further investigations to focus on these issues and to explore new directions in the research of eating disorders. It is also hoped that the approach of combining qualitative data with quantitative measures will prompt researchers to look beyond traditional views that make exclusive use of only one style of research. Qualitative and quantitative research methods both have strengths and limitations. Neuman (2000) discusses the merits of these two approaches and concludes that the best research often combines features of both. For the present study qualitative data was condensed
using a quantitative methodology. The present study demonstrates how features of both styles can be successfully combined.

The benefits of using cognitive behavioural therapy are also demonstrated and this study will hopefully promote this approach. Bulimia nervosa is not a disease; it is a disorder that resides in the automatic assumptions and underlying beliefs of the individual. This means that prevention and treatment are of paramount importance. Once afflicted with bulimia nervosa cure is difficult because

"it is hard to fight an enemy who has outposts in your head"

Sally Kempton (American writer).
APPENDIX 1: SELF REPORT DIARY USED BY BULIMIC PATIENTS IN WEEKLY COGNITIVE BEHAVIOURAL THERAPY
ACTIVITIES FOR THE WEEK: Social/occupational/academic/exercise

Weight before breakfast:

MONDAY:
Morning:
Afternoon:
Evening:

TUESDAY:
Morning:
Afternoon:
Evening:

WEDNESDAY:
Morning:
Afternoon:
Evening:

THURSDAY:
Morning:
Afternoon:
Evening:

FRIDAY:
Morning:
Afternoon:
Evening:

SATURDAY:
Morning:
Afternoon:
Evening:

SUNDAY:
Morning:
Afternoon:

COMMENTS ABOUT THE WEEK
## INTAKE:

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Number of Binges</th>
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</thead>
<tbody>
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### Breakfast
- Quantity
- Type of Food
- Place of eating
- Length of time

### Tea

### Lunch

### Tea

### Dinner

## BEHAVIOUR & EMOTIONS

Behaviour pertains to binges and/or compensatory purging/behaviour, i.e. vomiting/laxative or other substance abuse, as well as exercising. Emotions pertain to feelings associated with behaviour; both before and after. Reasons for emotions preceding behaviour must be documented, e.g. argument. Mention methods used to avoid behaviour.
**ACTIVITIES FOR THE WEEK:** Social/occupational/academic/exercise  
Weight before breakfast: 54 kg

<table>
<thead>
<tr>
<th>Day</th>
<th>Activities</th>
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| **MONDAY:** 22/9/97 | Morning: **OFFICE**  
Afternoon: **OFFICE**  
Evening: **TV + PIANO** |
| **TUESDAY:** 23/9/97 | Morning: **OFFICE**  
Afternoon: **OFFICE, Piano lesson**  
Evening: **Piano, TV** |
| **WEDNESDAY:** 24/9/97 | **Public holiday**  
Morning: **Cleared car, cooked, watched video, played with friends**  
Afternoon: **had a nap**  
Evening: **TV, listened to music** |
| **THURSDAY:** 25/9/97 | **Day off!** |
| **FRIDAY:** 26/9/97 | Morning: **Non’s work**  
Afternoon: **Shopping**  
Evening: **Dinner, Piano, TV** |
| **SATURDAY:** | Morning:  
Afternoon:  
Evening:  |
| **SUNDAY:**  | Morning:  
Afternoon:  
Evening:  |

**COMMENTS ABOUT THE WEEK**

On the whole the week has been a good one; I enjoyed the break from work & it was good spending a few days with my Non. Quiet, but relaxing & I’m looking forward to the weekend to visit a friend.

The Bulletin has been rampant and my eating patterns extremely erratic.
**INTAKE:**

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<th>DATE: 19/9/97</th>
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<tr>
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<td>-</td>
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<tr>
<td>Number of Vomits:</td>
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</tbody>
</table>

**BREAKFAST**
- Quantity
- Type of Food
- Place of eating
- Length of time

**TEA**

**LUNCH**

**TEA**

**DINNER**
- 15 mouthfuls, 5-6 mouthfuls.
- First on roast
- Bedroom
- 10 minutes

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**BEHAVIOUR & EMOTIONS**

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I had already decided before that I wasn't going to eat anything. The food didn't appeal to me. Nope, if it was hamburgers I would have given it a second thought. Thought I just don't feel like food at all. I'm not at all hungry. So I drank alcohol and now my appetite is really gone. I rely on that when I need to forget the desire of food.

I feel good. Maybe, just maybe if I keep this up I'll lose another few kilos. I feel so (full) now from the alcohol that the thought of food is unbearable.

Today I have been controlled, e.g. I had a pint of chips but no breakfast and not much lunch and no supper - and no hungry pangs. So at least tonight I don't have to take laxatives.

Looking at the food I feel like it, I desire it but I know I can't so I won't one mouthful is enough.

I just had another mouthful, I let myself down. No more very food in cupboard.
**DATE:** 20/9/97  **DINNER:** 2
**DAY:** Saturday  **DINNER:** 2
**Number of Binges:** —  **DINNER:** 2

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### Breakfast

- **Quantity:** 1 piece toast, jam, tea (sweeter)
- **Type of Food:** Bedroom
- **Place of eating:** I 5 minutes
- **Length of time:**

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### Tea

- **piece of cheese**

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### Lunch

- **1 potato**
- **pork chop, 4 mouthfuls milk tart + ice cream, tea to drink.**
- **Bedroom:** I 15 minutes
- **Length of time:** (2b laxatives)

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### After Dinner:

- **2 1/2 codd tomatoes w, salt, pepper, vinegar.**
- **Cheese 2 savoury biscuits.**

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### Dinner

- **2 pieces toast (jam, cheese + tomato), tea**
- **With family watching TV**
- **10-12 minutes**

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### BEHAVIOUR & EMOTIONS

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IF I didn't take the laxatives I would feel like I'm slipping. I can't let myself down by eating minimal and by taking laxatives more... I lose everything on that's what I want. I've already taken 12 now but that's not enough. I know I have to take the rest. I'm afraid that I'll feel sick and dizzy... weak tonight but I suppose that's the price I have to pay. If I want to be thin and I don't have a natural slim figure, this is what I have to do.

I've just taken the rest. I feel like crying... I know what tonight is going to hold, but I want to feel thin and have people comment on me being weight.

The year had a thought, what if on Monday, I've lost another kilo and I can stabilise or break? I feel even to sick of myself to vomit.
**INTAKE:**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Type of Food</th>
<th>Place of eating</th>
<th>Length of time</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Bedroom</td>
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<td>5 - 6 minutes</td>
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**Date:** 21/9/97  
**Day:** Sunday  
**Number of Binges:** 0

**BEHAVIOUR & EMOTIONS**

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I'm a real failed anorexic, bulimic, a failure, a wrecker at the amount of food I've consumed today. I don't even have laxatives to purgee. Why does food control me so much? I'm so angry. I've let myself down again and it wasn't even important. I know I would eat everything, where are my days of my control, determination to not eat? I controlled my food, it didn't control me. How on earth I feel like an absolute fool, a joke, a standing on that scale and seeing how much more I weigh instead of less; and less. I might as well just face it, I'm a non-success as far as anorexia is concerned. I feel like the thin me is dead, I killed it. I only have myself to blame.

I found some laxatives. I guess at least some of my food I consumed today will be lost.
**DATE: 22/7/19**  
**DAY: Monday**  
**Number of Binges: 0**

### Breakfast
- **Quantity:** 1 Naughful  
- **Type of Food:** Toast & Jam  
- **Place of eating:** Bedroom

### Tea
- 2 cream crackers  
- 1 cup coffee, 2 min  
- **Office**

### Lunch
- **3 pickles chips**  
- 1 Roll sweats  
- **Office**  
- 10 min

### Tea
- **1**  
- Tomato sliced, unger 1 salt, pepper 1  
- **Kitchen**  
- 10 min

### Dinner
- **24 laxatives**  
- Colored & snacks (tomato, berrics, cucumber, bread, corn)  
- **Bedroom**  
- 15 minutes

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I feel like I'm getting thinner, I feel guilty for eating all this junk food today. Lorashires are a necessity - I felt relieved after taking the lorashires but I'm really wondering if I'll be able to control myself to not eat tonight. We're having soups, I keep thinking its only soups, but I've eaten enough today. Well done, Margaret, you did it again.

I yawned before I ate, I felt so bloated. I had to. Physically, I felt much better and within myself - relief.
I feel so helpless. I feel like such a victim.
I feel so weak and so depressed. I hate this control food has over me. Vomiting is only a temporary to alleviate my guilt. I thought I was getting thinner but I looked or myself today and I looked huge.

There can be no in-between. I either don't eat a thing, but then I take a mouthful and throw it. I've given in. I'm trying so hard, but it feels like I'm fighting a losing battle. If I hadn't eaten, I wouldn't have had to vomit and on top of that taking laxatives. Yes, my stomach hurts, but there's no better 'high' than seeing on that scale the next morning (like this morning) and just seeing how its dropped. It was so good this morning - 55kg. I weighed 65kg. I suppose that's why now I feel so good.

I am out that means I'm no longer sick. I'm beginning to think its easier vomiting than taking laxatives - immediate relief and less discomfort. I'm so sick of being caught up in this spiral.
**BEHAVIOUR & EMOTIONS**

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I cooked lunch, it was nice, my way my mom makes it, so I couldn’t resist eating it. I didn’t have enough appetites, so I had to vomit. I just feel so good to be getting thinner. This morning my mom said my eyes were looking hollow, I had to lose more weight. I thought I looked good, sure I have kept last weight with purging, but this is not something I want now. Although I’m feeling very weak as I have no energy. It’s not to such an extent that it’s unbearable. I have this intense desire for salty, greasy, toney food. This morning I ate beetroot piled with salt, the egg sandwich tonight was really nice – piled with salt & pepper. I have such a desire for pizza! I’m so off sweet things, sure I ate the ice cream but I didn’t really want it. Tonight I’m really depressed a tired but I just can’t sleep. My mum & I had a fight, I said I hadn’t taken her outcry, now I’m a hypocrite. If I had pizza now, I would eat it all.
INTAKE:

Number of lsa: 28
Number of Vomits: 1

DATE: 25/11/97    DAY: Thursday    Number of Binges: 0 (1?)

Breakfast

- Quantity: 2
- Type of Food: minimum, kind of jam
- Place of eating: Pascott
- Length of time: 30 min.

Tea

- 1 piece toast, 1 slice cheese, 1 cup coffee
- Nails were
  - 10 min.

Lunch

- 1/2 sandwich
  - tomato sauce, cheese, tomato
  - Naps were

Tea

- Tomato sauce, vinegar, salt, pepper
- Bedroom
  - 10 min.

Dinner

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BEHAVIOUR & EMOTIONS

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Today felt like a binge (because I just keep eating randomly). I suppose it isn’t really a binge, but for me it is.

I’m a little bit scared of taking 2.5 (the medication). I have a really hard time to sleep tonight. I want to be out, but with the purging, I was very happy today at work, with my mum and I bought (literally) eating greasy salty food.

I couldn’t eat tonight, I felt so full x my stomach started to ache x was hungry after taking the laxatives.

I felt so let itchy x so sore x sensitive x it was good to have a break from work. The vomiting definitely seems to be becoming more frequent. I think it’s less painful to vomit when it is taking 2x laxatives.
### Intake

**Number of lax.:**

**Number of Vomits:** 1

**Number of Binges:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
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<tbody>
<tr>
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<tr>
<td><strong>Quantity</strong></td>
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<td><strong>Type of Food</strong></td>
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<td><strong>Place of eating</strong></td>
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### Behaviour & Emotions

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It is becoming easier to vomit now and the 25 laxatives I took last night worked well! I feel so good, eating as much as I want and gaining relief and losing weight by purging. It's almost a challenge to take more laxatives, the more I take the better it works.
APPENDIX 3 : EXTRACT FROM DICTIONARY- WORD COUNT FOR THE SUCCESSFUL GROUP AND FOR THE UNSUCCESSFUL GROUP
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