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**COGNITIVE-BEHAVIORAL TREATMENT OUTCOME IN BULIMIA:
THE IMPACT OF COMORBID PERSONALITY DISORDERS.**

by
Sandra Comer, M.A.

A Thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy

Department of Psychology

Carleton University
Ottawa, Ontario
May 1997
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acceptance of the thesis:

**"COGNITIVE-BEHAVIORAL TREATMENT OUTCOME IN BULIMIA:
THE IMPACT OF COMORBID PERSONALITY DISORDERS"**

submitted by

Sandra Leanne Comer, M.A.

in partial fulfillment of the requirements
for the degree of Doctor of Philosophy

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Thesis Supervisor

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May, 1997

Abstract

Recent estimates suggest that the prevalence of bulimia nervosa among adolescent and young adult females is 1% - 3%. Outcome studies suggest that only a subgroup of bulimic patients are treated effectively, and that the rate of relapse is high. The literature indicates that axis II pathology has repeatedly been found to complicate the course and treatment of various axis I disorders. This is especially significant given the high rate of comorbidity of personality disorders with axis I disorders. In the eating disordered population approximately two-thirds meet criteria for at least one personality disorder, and two-thirds of those individuals receive more than one personality disorder diagnosis. It may be that personality disorders play an important prognostic role in eating disorders. The significance of personality disorder comorbidity in eating disorders and the impact on treatment outcome was investigated in the present study. The subject sample (n=114) consisted of patients presenting to an outpatient Eating Disorder Clinic at a large urban hospital. Since patients frequently have co-existing personality disorders, it is difficult to examine the impact of any particular personality disorder on treatment outcome. Therefore, in the present study subjects were classified into three groups on the basis of their responses to the Computerized Personality Disorder Interview (C-PDI). Those subjects who failed to meet criteria for any personality disorder comprised one group. A second group was made up of those who met criteria for one or two personality disorders. The last group was comprised of those who met criteria for three or more personality disorder diagnoses. Half of the subjects completed a 10-week cognitive behavioral program while the other half served as a wait-list control group. Prior to and immediately following treatment subjects were evaluated on bulimic symptomatology, which was measured using a weekly Bulimic Symptoms Checklist (BSCL). Subjects were also required to complete the Beck Depression Inventory, and the Eating Disorder Inventory. According to the results axis II psychopathology failed to demonstrate any relationship to the severity of

bulimic symptoms or to treatment outcome in bulimia as measured by bulimic symptomatology. Nevertheless, a relationship was found between the extent of personality disorder and concurrent psychiatric disturbances. These results are discussed in terms of the role that personality disorders may play in increasing an individuals vulnerability to the development of an axis I disorder, such as bulimia.

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Introduction

At present eating disorders are best understood from a framework that incorporates psychological, sociocultural and biological factors (Garfinkel & Garner, 1982; Johnson & Connors, 1987). The cognitive model proposes that the characteristic attitudes to shape and weight are of primary importance in the maintenance of eating disorders (Fairburn, Cooper, & Cooper, 1986). These attitudes comprise a belief system about the importance of thinness. This belief system has undoubtedly arisen out of the complex interplay between individual factors (ie. personality, temperament, physiology) and external pressures from the family and society as a whole. Most researchers would agree that dieting and restrained eating play a central role in the initial expression of the bulimic syndrome (Abraham & Beumont, 1982; Agras & Kirkley, 1986; Davis, Freeman, & Garner, 1988; Garfinkel & Garner, 1982; Johnson & Connors, 1987; Polivy & Herman, 1985; 1987; Russell, 1979; Wardle & Beinart, 1981; Williamson, 1990). The beliefs of the bulimic are difficult to alter because they are held in place by behavioral (ie. restrained eating, binge eating, and purging), cognitive (If I am not thin then....), and affective (depression, anxiety, interpersonal sensitivity) components. The cognitive model is not simply that thoughts cause feelings and actions; emotions can influence cognitive processes and behaviors can influence the evaluation of a situation by modifying the situation itself or by eliciting responses from others (Freeman, Pretzer, Fleming & Simon, 1990). This dissertation is based on a cognitive model for eating disorders which incorporates cultural, family, individual, and biological factors. As noted by Yates (1989) "a theory that would speak to the diversity and complexity of these disorders would necessarily involve interactions between sociocultural, psychological, and biological forces."

Bulimia nervosa is characterized by repeated episodes of binge eating (currently

defined as eating, in a discrete period of time, an amount of food that is definitely larger than most individuals would eat under similar circumstances) alternating with inappropriate compensatory behaviors to prevent weight gain. These behaviors might include self-induced vomiting, laxative or diuretic abuse, fasting, or excessive exercise. Anorexics and bulimics are virtually identical in certain critical ways: both evaluate their self-worth in terms of their weight and shape, both fear weight gain and fatness, and both devote a large proportion of their voluntary behavior and psychic energy to the management of their weight (Fairburn & Garner, 1988).

Both anorexics and bulimics fear weight gain; the primary differences between the eating-disorder subtypes is the presence of low weight in the case of anorexia nervosa and the binge-purge cycle in bulimia nervosa. The question of why individuals with similar views of the self have developed such seemingly opposite behaviors in the quest for the goal of thinness has yet to be adequately answered. Much of the literature has been driven by the delineation of differences between the anorexic, who rigidly controls their intake, and the bulimic, who becomes caught up in a cycle of overeating and purging or restricting. Nevertheless, it is important to note that considerable heterogeneity remains within and across eating disorder subgroups divided by bulimic behavior or weight status. Furthermore, since movement across categories is not uncommon, much of the heterogeneity within subgroups may be accounted for by the instability of weight and symptom patterns. This heterogeneity across subtypes may account for much of the confusion in the literature.

The assumption that disparate personality traits must account for the division of similarly weight-preoccupied individuals into anorexia or bulimia has shaped much of the field's interest in personality variables (Vitousek & Manke, 1994). Earlier studies found the restricting anorexic to exhibit more obsessional and avoidant features while the bulimic subtypes were found to be impulsive and dramatic (Casper, Eckert, Halmi, Goldberg, & Davis, 1980; Garfinkel, Moldofsky, & Garner, 1980; Strober, Salkin, Burroughs, &

Morrell, 1982). Similarly, those who binge, regardless of weight status, have been found to have a history of stealing, alcohol and drug use, self-mutilation, suicide attempts, and labile mood when compared to restricting anorexics (Garner, Garfinkel, & O'Shaughnessy, 1985). Other studies which have used the Minnesota Multiphasic Personality Inventory, have found bulimics to generate profiles with elevations on depression and anxiety as well as on additional scales which reflect an expressive-dramatic characterological disturbance (Casper, Hedeker, & McClough, 1992; Norman & Herzog, 1983; Shisslak, Pazda, & Crago, 1990). Nevertheless, investigators who have examined code-type frequencies and clusters in bulimic populations have failed to find a single modal profile (Root & Friedrich, 1989). Again, this highlights the heterogeneity that is evident in eating disorder groups who have been divided on the basis of the bulimic-restricting dimension.

Recently interest has shifted from an examination of personality traits in bulimia nervosa to personality disorders. Personality disorders have been defined as “enduring patterns of perceiving, relating to, and thinking about the environment and oneself” which are exhibited in a wide range of important social and personal contexts” and which “are inflexible and maladaptive and cause either significant functional impairment or subjective distress” (Diagnostic and Statistical Manual of Mental Disorders [DSM], 1987, p.335). One explanation for this shift in focus is the fact that with the third revision of the DSM (1980) personality disorders were placed on a separate axis. This forced attention to the relationships of personality disorders to symptomatic disturbances on axis I. Currently the DSM consists of five axes: Axis I - clinical disorders (such as bulimia nervosa and anorexia nervosa); Axis II - personality disorders and mental retardation; Axis III - general medical conditions; Axis IV - psychosocial and environmental problems; and, Axis V - global assessment of functioning. This multiaxial system was developed as a response to the criticism that individual patients are more complex and diverse than their assignment to a single diagnostic class can indicate (Klerman, 1988). Each axis refers to a

different domain of information and as such provides a more complete portrayal of the individual. The rationale for multiple diagnoses lies in a growing appreciation of the clinical and research usefulness of documenting clinical heterogeneity (Skodol, Hyler, et al., 1993).

In the eating disordered population approximately two-thirds meet criteria for at least one concurrent personality disorder, and two-thirds of those individuals receive more than one personality disorder diagnosis (Johnson & Wonderlich, 1990). Studies have shown that bulimics are more likely to have a co-occurring personality disorder than a control group matched on age and sex (Yates, Sieleni, & Bowers, 1989) or those with a sub-diagnostic level of eating disorder (Schmidt & Telch, 1990; Yager, Landsverk, Edelstein & Hyler, 1989). While a variety of personality disorder diagnoses have been found in samples of bulimics, some consistent findings have begun to emerge. Cluster C personality disorders (avoidant, dependent, obsessive-compulsive) have more commonly been described in patients with anorexia nervosa (Herzog, Keller, Lavori, Kenny, & Sacks, 1992; Kennedy, McVey, & Katz, 1990; Piran, Lerner, Garfinkel, Kennedy, & Brouillette, 1988; Wonderlich, Swift, Slotnick, & Goodman, 1990) with cluster B diagnoses (antisocial, borderline, histrionic, and narcissistic) tending to be more prominent in subjects with bulimic symptomatology (Gartner, Marcus, Halmi, & Loranger, 1989; Levin & Hyler, 1986; Skodol, Oldham et al., 1993; Yates et al., 1989). The significance of these findings is not yet understood.

A number of studies have noted that borderline personality disorder is a frequent diagnosis in bulimic patients (Cooper et al., 1988; Gartner et al., 1989; Johnson, Tobin, & Enright, 1989; Levin & Hyler, 1986; Sansone, Seufferer, Fine, & Bovenzi, 1989; Schmidt & Telch, 1990; Yager et al., 1989; Zanarini et al., 1990). However the fact that there is overlapping criteria for bulimia nervosa and borderline personality disorder may be partially responsible. Pope and Hudson (1989) observed that when studies used the DSM-III (1980) criteria for borderline personality disorders two criteria (compulsive acts such as

overeating, overspending, or shoplifting and affective instability) match two of the DSM-III criteria for bulimia. Borderline personality disorder has also been criticized for being less specific in content than the other personality disorders with individuals exhibiting a wide range of difficulties (Beck & Freeman, 1990). Sixty percent of borderlines in one study (Clarkin, Widiger, Frances, Hurt, & Gilmore, 1983) met criteria for other personality disorders as well, even when the consensus of three raters on the presence or absence of each of the DSM-III-R criteria was required for diagnosis. This suggests that it may not be the borderline personality disorder per se that is problematic but rather the extent of personality disorder psychopathology in those who also meet criteria for borderline personality disorder.

The significance of personality disorder diagnoses comorbid with bulimia nervosa has yet to be discovered. When bulimics with personality disorders have been compared to those without they have also been found to be significantly more likely to have a history of major depression and suicide attempts in addition to higher scores on the Eating Disorder Inventory (Yates et al., 1989). This suggests the possibility that the occurrence of a personality disorder with bulimia has an influence on the severity of the disorder and may as a result be more difficult to treat.

The fact that axis II pathology has been found to complicate the course and treatment of other axis I disorders provides another explanation for the increased interest in the comorbidity between bulimia nervosa and personality disorders (Reich & Green, 1991; Reich & Vasile, 1993). Treatment outcome studies of bulimia suggest that only a subgroup of bulimics are abstinent from bulimic symptomatology following treatment and that many patients resume symptomatic behavior soon after successful intervention (Garner, Fairburn, & Davis, 1987; Mitchell, 1991). It may be that personality disorders play an important prognostic role in eating disorders. This may explain the chronicity of bulimia and suggest the need for additional or different treatment modalities for those bulimics with a co-existing personality disorder(s).

The objective of the present study is to investigate personality psychopathology in the bulimic population. More specifically the questions which will be addressed are (1) does extensive personality disorder comorbidity complicate the course of treatment in bulimia; (2) is symptom severity in bulimia a confounding factor in personality assessment; and (3) what is the relationship between personality disorder and depression in the bulimic population. Additionally, since subjects are to be assessed both pre and post treatment, the effectiveness of cognitive-behavioral treatment in a group format will be evaluated.

Bulimia as a Psychiatric Disorder

In the present study bulimia nervosa was defined according to the diagnostic scheme (DSM-III-R) of the American Psychiatric Association (1987). According to this scheme bulimia is designated as one of three eating disorders - anorexia nervosa, bulimia, and atypical eating disorder. The DSM-III-R diagnostic criteria for bulimia nervosa include:

- A. recurrent episodes of binge eating (rapid consumption of a large amount of food in a discreet period of time).
- B. A feeling of lack of control over eating behavior during the eating binges.
- C. The person regularly engages in either self-induced vomiting, use of laxatives or diuretics, strict dieting or fasting, or vigorous exercise in order to prevent weight gain.
- D. A minimum average of two binge eating episodes a week for at least three months.
- E. Persistent overconcern with body shape and weight.

Significant changes have taken place in the criteria necessary for a diagnosis of bulimia from the DSM-III to the DSM-III-R (APA, 1980, 1987). The 1980 version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) was criticized for lacking

a minimum binge/purge frequency (Herzog, 1988) and as a result being overinclusive (Fairburn & Beglin, 1990). With the 1987 version (DSM-III-R) frequency of binge eating became a pivotal criterion in the diagnosis of bulimia. The revised version stipulates that there be an average of two binge eating episodes a week for at least 3 months and include purging as a required symptom. The arbitrariness of this criterion has been noted (Wilson & Walsh, 1991), and some have suggested that it is too restrictive (Herzog, Norman, Rigotti, & PePOSE, 1986). Nevertheless this criterion was retained in the latest edition of the DSM (DSM-IV; American Psychiatric Association, 1994) since there was insufficient evidence suggestive of a more accurate alternative (Wilson & Walsh, 1991). With the DSM-III-R, the importance of attitudes to weight and shape were also recognized. There is ample evidence for the continued inclusion of this criterion (Wilson & Walsh, 1991)

With introduction of the DSM-IV the definition for binge eating changed in an effort to operationalize the definition of 'large'. In the DSM-IV (American Psychiatric Association, 1994) an episode of binge eating is characterized by "eating, in a discreet period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances." This definition is an improvement over the definition of binge eating used in the DSM-III-R (rapid consumption of a large amount of food in a discreet period of time) since 'large' is so open to interpretation. The point at which eating becomes binge eating may be considered in terms of: the amount consumed; frequency; speed of eating; whether or not eating takes place in isolation; affective state during and after the eating; and whether or not some type of purging behavior takes place (Connors & Johnson, 1987). However, as Connors and Johnson note, it is difficult to draw conclusions about characteristics of eating such as speed, frequency, and amount consumed since so little is known about the eating habits of normal eaters.

The most significant distinction between groups of eating disordered patients seems to be whether the women rigidly restrict their intake or whether they typically consume

large quantities of food (Garner et al., 1985). A single patient may move back and forth between diagnoses. Forty-seven percent of patients with anorexia nervosa demonstrate bulimic behaviors (Garfinkel et al., 1980) and thirty to eighty percent of patients with bulimia have a history of anorexia nervosa (Mitchell, Pyle, & Eckert, 1985). While this distinction between restricting and bulimic types does not address the issue of whether the pathology lies in the binge or the purge phase of bulimia (Yates, 1989) binge eating commonly precedes vomiting by a year (Johnson & Berndt, 1983). Furthermore, when those who limit themselves to bingeing have been compared to those who binge and vomit, they have been found to be very similar (Garfinkel et al., 1980; Grace, Jacobson, & Fullager, 1985; Vanderheyden & Boland, 1987), suggesting that bingeing is of more importance than the vomiting. In fact, Vanderheyden & Boland (1987) found that on drive for thinness, restraint and negative self-image, the severe binge eaters and binge vomiters had indistinguishable scores. Post & Crowther (1987) found that the only variable that significantly distinguished between the groups was that purging bulimics viewed themselves as significantly more overweight, despite the absence of any significant difference in actual body weight deviation between groups.

Whether the criteria for bulimia nervosa should be revised to include only those who purge (ie. through vomiting, or misuse of laxatives, diuretics or enemas) has been the subject of much debate. In fact this was one of the major issues that was addressed by the work group responsible for reviewing and if necessary, revising the criteria for the eating disorders prior to the release of the 4th edition of the DSM. Obviously it is difficult to define strict dieting or vigorous exercise. While several studies that have found purging to associated with greater psychopathology in their eating disordered patients (Willmuth, Leitenberg, Rosen, & Cado, 1988; Wilson & Eldredge, 1991) others have found no differences between those bulimics who purge and those who do not (Garfinkel et al., 1980; Grace et al., 1985; Vanderheyden & Boland, 1987). This issue should eventually be resolved since the DSM-IV has included two subtypes of bulimia nervosa: a purging

type ('has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas'), and a nonpurging type ('other inappropriate compensatory behaviors, such as fasting or excessive exercise'). A distinction such as this should help to generate research to resolve the binge/purge debate. Nevertheless the importance of the binge is underscored by the suggestion that severe binge eating be classified as an eating disorder in its own right (Post & Crowther, 1987). With the release of the DSM-IV (APA, 1994) binge eating disorder was included under the 'Eating disorder Not Otherwise Specified' category although it is still unclear what frequency and for what duration constitutes severe binge eating (Wilson & Walsh, 1991).

The Role of Cognitions in Bulimia Nervosa

It was in the DSM-III-R (APA; 1987) that attitudes toward body weight and shape were first recognized as an important part of the bulimic syndrome and 'persistent overconcern with body shape and weight' was therefore included as a criterion for the diagnosis. With the release of the DSM-IV (1994) this criterion was revised slightly to become 'self-evaluation is unduly influenced by body shape and weight'. It is generally accepted that the bulimic, whose self-esteem is so dependent on approval from others and from performance accomplishments, seeks to increase their self-esteem via approval for attaining a thin body (Mizes & Christiano, 1995). Indeed, studies have repeatedly found that the patient suffering from bulimia has low self-esteem (Fairburn & Cooper, 1982; Johnson & Berndt, 1983; Johnson, Stuckey, Lewis & Schwartz, 1982; Norman & Herzog, 1984; Pyle, Mitchell, & Eckert, 1981a; Williamson, Kelly, Davis, Ruggiero, & Blouin, 1985). Cognitive-behavioral approaches to the eating disorders (Fairburn, Cooper et al., 1986; Garner & Bemis, 1982; Vitousek & Ewald, 1993; Vitousek & Hollon, 1990) suggest that the powerful reinforcement value that dieting and weight loss acquire, result from the combination of general self-schemas of inadequacy, perfectibility, and asceticism with beliefs about the relative importance of thinness (Vitousek & Manke,

1994).

While many women are 'persistently overconcerned with body shape and weight' many of them do not suffer from bulimic symptomatology. It is widely acknowledged that modern Western society places undue emphasis on the virtues of thinness. In the media, success and social acceptance is often equated with being thin. Women who are overweight are viewed as weak or as unable to take care of themselves (Wooley & Wooley, 1979). If this desire to be thin was sole cause of eating disorders they would be almost universal. While many people fear being or becoming fat, these fears are especially pronounced among bulimics (Bauer & Anderson, 1989; Johnson & Connors, 1987; Powers, Schulman, Gleghorn, & Prange, 1987). A cognitive perspective on bulimia nervosa considers that it is vital to address the underlying belief system of the bulimic in order to effectively treat them. Behavioral recovery can only take place when these dysfunctional cognitions and beliefs are modified (Beck & Weishaar, 1989).

How the belief system of the bulimic patient develops has yet to be fully understood. However evidence has been accumulating that suggests that the family environment may contribute to the development of eating disorders. Several studies have employed self-report instruments to compare perceived family relationships among bulimic family members with those of normal control subjects (Johnson & Flach, 1985; Ordman & Kirschenbaum, 1985). Results indicated that bulimics perceive their families to be less cohesive, expressive, and active in recreation and as more conflictual when compared with the perceptions of normal women. In one of the few laboratory studies, family interactions among anorexic, bulimic-anorexic, bulimic and normal families were videotaped, coded by trained observers, and compared (Humphrey, 1989). The families of bulimics failed to show any affection or support in their interactions but were rather found to be hostilely enmeshed. Both the parents and the daughters were found to be mutually blaming or controlling of each other, and mothers and daughters were sulky and resentful in their reactions to one another. According to Humphrey (1989) these interactions appeared to

impact the daughter in such a way as to undermine her efforts at separation and self-assertion. Similarly, Friedlander and Siegel (1990) recently found that dependency conflicts as well as difficulties with establishing a sense of individuality were strongly predictive of bulimic behaviors and various other indicators of eating disorders as measured by the Eating Disorder Inventory (Garner & Olmsted, 1984). Thus it appears from the existing empirical research that dysfunctional family relationships frequently co-occur with the development of and/or the persistence of eating disorders. What has yet to be determined is exactly how these phenomena facilitate or potentiate weight concern and dieting behavior (Strober & Humphrey, 1987).

Cognitive assessment in anorexia nervosa and bulimia nervosa has primarily involved compiling self-statements about eating and weight (Vitousek & Hollon, 1990). In "The Art and Science of Rational Eating" (Ellis, Abrams, & Dengelegi, 1992) the authors list some of the irrational beliefs of the bulimic. They acknowledge that given the multifaceted nature of the disorder and the differences among individuals suffering from it, not all bulimics will have all of the beliefs, but most have some of them and many have ones not included in the list. The beliefs are: I must purge if I feel full; the only way to feel better if I have been hurt by others is to eat and then to vomit; I must be loved by significant others; I cannot stand rejection; if I stop purging I will inevitably get very fat; others are always trying to hurt me, and I can't risk trusting any of them; being full makes me dirty and vulgar; keeping thin will keep men from bothering me; I must punish those who have hurt me; if I let my guard down, I will get hurt, and I couldn't stand that; purging is the only way they are going to comprehend my rage and disgust. These are very similar to the nine key constructs compiled by Bauer and Anderson (1989) based on a review of the literature and their own experience working with eating disordered clients. These include: being or becoming overweight is the worst thing that can happen to me; certain foods are good food while other foods are bad foods; I must have control over all my actions to feel safe; I must do everything perfectly or what I do is worthless; everyone

is aware of and interested in what I am doing; everyone must love and approve of what I do; external validation is everything; as soon as I _____ I will be able to give up bulimia; and, to be successful, a women must combine the traditional values of women with the aggressive career orientation of men. The beliefs are arranged in order of frequency and the authors note that not all individuals with bulimia will hold all the beliefs, but all will ascribe to at least some.

According to the cognitive model these beliefs are embedded in cognitive structures which have been labeled schemas. The core schema, or themes of the bulimic patient seem to be: I must be thin; I must be perfect; and, I can't tolerate rejection from others. The cognitive model hypothesizes that individuals with bulimia nervosa (and anorexia nervosa) develop organized cognitive structures (schema) around the issues of weight and its implications for the self that influence their perceptions, thoughts, affect, and behavior (Vitousek & Hollon, 1990).

Beck (1967, p.283) defines the schema as "a structure for screening, coding, and evaluating the stimuli that impinge on the organism". Schemas select and process information in such a way as to trigger an adaptive or maladaptive strategy or response (Beck, 1990). Schemas can be classified into a variety of categories or themes: personal, familial, cultural, religious, gender, and occupational (Freeman et al., 1990). They can also be described (Freeman et al.) in terms of qualities such as breadth (whether they are narrow, discreet or broad), flexibility (their capacity for modification), density (their relative prominence in the cognitive organization) and valence (the degree to which they are activated at any time).

Cognitive work in the eating disorder area has been criticized for focusing primarily on compiling self-statements about eating and weight (Vitousek & Hollon, 1990). Vitousek and Hollon (1990) suggest that these self-statements represent a low level of abstraction and as such fail to reveal the nature or influence of core schema. They propose that the eating disorders evolve out of disruptions in three classes of schemata: self-

schemata, weight-related schemata, and weight-related self-schemata. The self-schemata are general beliefs about the self which may or may not be unique to the psychopathology of the eating disorders (these probably include negative judgments of the self as being inadequate, unlovable, distrustful of others etc.). Weight-related schemata refers to cognitive structures that code information about what it means to be thin or fat. It is the weight-related self schemas, or those that combine views of the self with information about weight, that represent the core cognitive component of the eating disorders. It has been suggested that “the channeling of diffuse concerns into monolithic weight-related self-schemas imposes a welcome simplicity and organization on the cognitive processing of the affected individual” (Vitousek & Manke, 1994).

That the patient suffering from bulimia has low self-esteem, depression, anxiety, interpersonal sensitivity, and social maladjustment has been repeatedly demonstrated (Fairburn & Cooper, 1982; Johnson & Berndt, 1983; Johnson et al., 1982; Norman & Herzog, 1984; Pyle, Mitchell, & Eckert, 1981a; Williamson et al., 1985). In fact, self-esteem as measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965) has been found to be a significant predictor of treatment outcome in several studies (Fairburn, Kirk, O'Connor, Anastasiades, & Cooper, 1987; Fairburn, Peveler, Jones, Hope, & Doll, 1993). It is widely recognized that the difficulties of the bulimic patient extend beyond concerns about their weight and shape.

Cognitive behaviour therapy (CBT) for bulimia makes use of a variety of behavioral and cognitive techniques aimed at changing the patients' behavior, attitudes to shape and weight, as well as other cognitive distortions, such as low self-esteem and extreme perfectionism. According to cognitive theory, the modification of dysfunctional cognitions and assumptions is a necessary and sufficient condition for behavioral recovery (Beck & Weishaar, 1989). In fact, evidence for this premise was found in a recent study (Fairburn, Peveler et al., 1993) which discovered a significant relationship between the degree of attitudinal disturbance at the end of treatment and the likelihood of subsequent

relapse. The only significant predictors of outcome were the pre-treatment degree of concern about shape and weight and the pre-treatment level of self-esteem. The authors suggest that the level of self-esteem influences response to treatment either directly or through playing a role in the maintenance of the bulimia nervosa.

Cognitive therapy focuses on three aspects of cognition: automatic thoughts, underlying assumptions or beliefs (schemas), and cognitive distortions. Automatic thoughts shape both individuals' emotions and their actions in response to events whereas schemas shape their perception and interpretation of events (Freeman et al., 1990). Automatic thoughts are considered to be the product of the schema (Beck, Rush, Shaw, & Emery, 1979). Often people are not really aware of their automatic thoughts until they specifically focus their attention on them. Reactions that may seem incomprehensible can be understood through the identification of the automatic thoughts experienced by the individual.

Cognitive distortions are errors in logic and are quite prevalent in patients with a variety of disorders (Beck, 1976). The cognitive distortions serve as signposts that point to the schema (Freeman & Pretzer, 1990) and are the ways in which the schema get manifest into different problems. In fact cognitive distortions enable the eating disordered patient to regularly generate evidence which supports their underlying belief system. Dichotomous thinking is a cognitive distortion that is common in bulimics, especially with regard to thoughts about food. With dichotomous thinking things are seen in terms of two mutually exclusive categories, for example, food is either good food (i.e. diet) or bad food (i.e. desserts) and individuals are either fat or thin. Through the use of another cognitive distortion (filtering) the individual with bulimia nervosa will pay attention to all the evidence that shows that they are fat and discount any evidence that disconfirms it. In addition to dichotomous thinking and filtering, some of the other commonly observed cognitive distortions in bulimics (Johnson & Connors, 1987) are faulty attributions (i.e. fat people eat more than thin people), personalization (i.e. my husband is depressed because I

am fat), magnification (i.e. if I gain a pound I will be a complete failure), overgeneralization (i.e. if he rejected me then everyone will), and magical thinking (i.e. if I can just lose five pounds, then I'll be able to quit binge eating and purging).

In summary, the characteristic attitudes to shape and weight are of primary importance in the maintenance of eating disorders. Nevertheless, the cognitive-behavioral treatment approach, as advocated by Fairburn (1985), recognizes the importance of physiological factors in perpetuating the eating disorder. Therefore in the initial phase of treatment the emphasis is on normalizing eating using largely behavioral techniques.

Prevalence of Bulimia and Bulimic Behaviors

Epidemiological information on the prevalence of bulimia nervosa is limited due to inconsistencies in the criteria used to define bulimia nervosa, the methods of case detection, and the use of nonrandom and age restricted samples (Rand & Kulda, 1992). Past estimates have ranged from under one percent to nineteen percent of females studied being classified as bulimic (Szmukler, 1985). Most of these are based on self-report questionnaires and DSM-III criteria. Those estimates that are based on interviews tend to report substantially lower prevalence, from one to three percent (Fairburn & Beglin, 1990). Rand and Kulda (1992) reported a prevalence of bulimia of 1.1% in the adult population and 4.1% among women aged between 18 and 30 in their large (n=2,115) random sample of the general population. When DSM-III-R criteria were used to investigate bulimia in college women prevalence rates of 1.3% (Schotte & Stunkard, 1987) and 3.2% (Drewnowski, Yee, & Krahn, 1988) were found. Two studies examined the prevalence of bulimia among college females (DSM-III-R) longitudinally by assessing them at the beginning and end of the school year (Drewnowski et al., 1988; Striegel-Moore, Silberstein, Frensch, & Rodin, 1989). Both studies found that the prevalence remained stable (2.9% - 3.3% and 3.8%) as new cases were offset by partial remissions. In fact while numerous studies have specifically targeted college students in their investigations of

the prevalence of bulimia (Drewnowski et al., 1988; Gray & Ford, 1985; Hawkins & Clement, 1980; Healy, Ronan, & Walsh, 1985; Pyle et al., 1983; Schotte & Stunkard, 1987; Striegel-Moore et al., 1989; Zuckerman, Colby, Ware, & Lazerson, 1986) others have found no differences in the prevalence of bulimia between women students and same-aged nonstudents (Rand & Kuldau, 1992).

Studies have consistently reported that bulimia is more prevalent among women than men (Connors & Johnson, 1987; Fairburn & Beglin, 1990; Rand & Kuldau, 1992). While some studies have found bulimia nervosa to be more prevalent amongst white adolescents and young women than their non-white counterparts (Fairburn & Beglin, 1990) others have failed to find any racial differences (Rand & Kuldau, 1992). In terms of socioeconomic status (SES) the results are conflicting with some researchers indicating that bulimia and bulimic behaviors are more common among lower SES respondents (Rand & Kuldau, 1992), others among middle and upper class women (Fairburn & Cooper, 1984), while still others reporting SES distributions that reflect census data for the catchment area (Dolan, Evans, & Lacey, 1989).

Studies have reported widely differing estimates of the prevalence of bulimic behaviors. Estimates of the prevalence of binge eating in females has ranged from 24% in a family practice adult sample (Zincand, Cadoret, & Widman, 1984) to 90% in a population of college females (Hawkins & Clement, 1980). Cooper and Fairburn (1983) examined the frequency of binge eating in a community sample at a family planning clinic. They found that 26% of the sample reported ever having experienced an eating binge (an episode of uncontrollable excessive eating) while 20.9% reported having experienced such an episode in the previous two months. Furthermore, although only .5% reported binge eating at least daily, 6.8% did so at least weekly. Another study assessed the presence of binge eating with college student populations (Leon, Carroll, Chernyk, & Finn, 1985). It was found that 33.6% of the female students reported having had experienced occasions of eating excessive amounts of food (consuming 4,000 calories or more in a period of one or

two hours or less). When frequency of binge eating was examined 24.3% admitted to bingeing once a month; 43.2% between once a week and once a month; 2.7% once a week; and 5.4% twice a week. In this particular study, 21.6% reported that their binge frequency was variable. The presence of bulimia and bulimic behaviors was assessed in a large sample (n=1965) of university students (Schotte & Stunkard, 1987). Binge frequency was assessed by a 27-point scale that ranged from "never" to "six times daily". Binge eating on a monthly or more frequent basis was reported by 44.7% and twice weekly or more often by 10.1% of the women.

Part of the problem which makes the results of these studies difficult to compare stems from the lack of consistency in defining what constitutes a binge. In the Hawkins and Clement study (1980) binge eating was not defined at all which is not particularly suprising given the 90% affirmative response rate. Other studies have employed the DSM-III definition of a binge (Halmi, Falk, & Schwartz, 1981; Johnson, Lewis, Love, Lewis, & Stuckey, 1984; Pyle et al., 1983), asking if subjects consume large or enormous quantities of food within a short time period. Obviously some subjectivity is inevitable; a snack to one person may be considered an enormous quantity to another. With the release of the DSM-IV (American Psychiatric Association, 1994) an attempt was made to include an operational definition of a binge; hopefully this will result in more consistency across studies.

Another difficulty arises from the fact that studies differ in the time period they include in the assessment. Some ask about behavior ever performed in one's life (Johnson et al., 1984; Pope, Hudson, Yurgelun-Todd, & Hudson, 1984; Rand & Kuldau, 1992); others about the last month or two (Cooper & Fairburn, 1983; Katzman, Wolchik, & Braver, 1984); while others only inquire about current behavior (Hawkins & Clement, 1980).

Undoubtedly as we learn more about bulimia, the criteria will continue to be revised. The eating disorder diagnoses are somewhat arbitrary in definition and are likely

to continue to evolve over the next several decades (Yates, 1989). According to Vitousek and Manke (1992, p. 144) “bulimic symptomatology may impose a common label and superficial similarities on individuals who are heterogeneous across an array of background and personality variables, much as chronic drinking confers some likeness on the broad range of people who abuse alcohol.”

Personality Disorders and the DSM

Personality disorders have been the subject of considerable debate since they were first placed on a separate axis with the third revision of the DSM. Furthermore, the validity of these disorders has yet to be established. Nevertheless, given the adverse impact axis II pathology has demonstrated on treatment outcome in a wide range of axis I disorders, they have been the focus of much research. The purpose of this review is to outline the many issues and problems in personality disorder diagnoses and highlight the need for further empirical investigations.

Personality disorders have been defined as “enduring patterns of perceiving, relating to, and thinking about the environment and oneself” which are “exhibited in a wide range of important social and personal contexts” and which “are inflexible and maladaptive and cause either significant functional impairment or subjective distress” (DSM-III-R, 1987, p. 335). Although all individuals possess such patterns, disorders occur when the patterns become so rigid and maladaptive as to impair the functioning of the individual. Furthermore, just as it is possible for a person to exhibit many different personality traits it is also possible for a person to have many different inflexible and maladaptive personality traits (Widiger & Frances, 1985). It should not be surprising therefore that many individuals have been found to possess more than one personality disorder (Morey, 1988; Oldham et al., 1992; Pfohl, Stangl, Zimmerman, 1984;). Nevertheless, the issue continues to be embroiled in controversy.

The concept of Personality Disorders has developed through successive editions of the APA's Diagnostic and Statistical Manual of Mental Disorders (DSM). The theoretical view, range of problems, definitions, and terminology continue to evolve (Beck & Freeman, 1990) and new disorders are identified as others are eliminated. The DSM-III-R (1987) axis II disorders include: paranoid, schizoid, schizotypal, histrionic, narcissistic, antisocial, borderline, avoidant, dependent, obsessive-compulsive, and passive-aggressive (see appendix B for diagnostic criteria). It is of interest to note that in the recently released DSM-IV (1994) the personality disorder classifications remained essentially the same with the exception of passive-aggressive personality disorder which was no longer included.

Only a modest empirical base exists for the current personality disorder diagnoses and little research has been conducted to examine the validity of these disorders (Tyrer & Ferguson, 1987). The classifications and the criteria which define them are based on the decisions of a work group consisting of mental health professionals. These work groups attempt to weigh evidence gathered from literature reviews, analyses of existing data sets, results of field trials, and the general consensus of colleagues before proposing changes in the criteria. Some have suggested that there are high levels of overlap in meaning for several of the personality disorders (Blashfield & Breen, 1989) and that perhaps it would be more meaningful to collapse current categories into supraordinate groupings on the basis of factor analysis, multidimensional scaling, or other statistically based hierarchies (Oldham et al., 1992). Others have argued that the three clusters of disorders on axis II (odd/eccentric, dramatic/emotional, and anxious/fearful) which have been validated by factor analytic studies (Kass, Skodol, Charles, Spitzer, & Williams, 1985) may be the more fundamental underlying conditions (Oldham et al., 1992).

With the third edition of the Diagnostic and Statistical Manual of Mental Disorders published in 1980, personality diagnoses were placed on a separate axis. This multiaxial system was a response to the criticism that individual patients are more complex and diverse than their assignment to a single diagnostic class can indicate (Klerman, 1988). It

was thought that placing the personality disorders on a separate axis would ensure that in the evaluation of adults they are not overlooked when attention is being directed at the more obvious axis I disorder. Multiple diagnoses for describing patients are probably the rule now rather than the exception (Skodol, 1989). The rationale for multiple diagnoses lies in a growing appreciation of the clinical and research usefulness of documenting clinical heterogeneity (Skodol, Hyler, et al., 1993). However, the extent and meaning of the comorbidity between axis I and axis II disorders requires further empirical investigations.

The debate over a categorical vs. a dimensional model is a familiar issue in psychiatry (Frances, 1982; Widiger & Frances, 1985). Those who advocate a dimensional approach to personality disorders argue that many of the phenomena involved in diagnosis are extensions of normal phenomena. Although the boundaries between normal and abnormal personality styles and between the different personality disorders are to a large extent arbitrary it is not yet clear what the optimal set of dimensions to define the domain of personality disorder pathology are (Widiger, Frances, Spitzer, & Williams, 1988). Obviously there are no sharp boundaries dividing normal personality from abnormal personality. Reich (1989) suggests that perhaps some personality disorders are merely extreme forms of normal personality variants (ie. dimensional) whereas others are distinctly different and therefore are better conceived of in categorical terms. Classification or categorization is problematic in all disciplines, and is often not satisfactory when compared with the scientific definition of classes as being homogenous, mutually exclusive and jointly exhaustive (Frances, 1982). "Dimensional models have the advantage of providing more flexible, specific, and comprehensive information, whereas categorical systems tend to be procrustean, lose information, and result in many classificatory dilemmas when patients fall at the boundaries of categories" (Widiger & Frances, 1985). Despite these shortcomings, there is currently insufficient data to justify replacing the familiar and established diagnostic categories with an unfamiliar and unestablished dimensional system.

While there is no shortage of dimensional systems, there is also no consensus regarding basic personality dimensions. The difficult question that faces those who favor a dimensional system is to determine which dimensions optimally define the domain of personality disorders. While one possibility may be to rate individuals in terms of the extent to which they displayed each of the personality disorders outlined in the DSM-III-R, this may be cumbersome and inefficient in clinical practice (Widiger et al., 1988). With the introduction of the DSM-III operational criteria were specified for each disorder. This, it was hoped, would serve as a stimulus to further research both in the clinical domain as well as on issues of reliability and validity and to promote better communication between investigators. It has been suggested that at the present time it is perhaps more appropriate to consider ways to improve current classification (Livesley, 1985).

Many changes have taken place with each revision of the DSM based on new knowledge and clinical experience and this trend will undoubtedly continue. When the criteria sets for DSM-III-R were designed an attempt was made to further reduce subjectivity and inference (Widiger et al., 1988). In histrionic personality disorder, for example the item “vain and demanding” was replaced by “overconcern with physical attractiveness”. With the revision of the DSM-III it was also decided that each category would be polythetic rather than having some monothetic criteria sets and some polythetic criteria sets as was the case with the DSM-III. It was decided that each category would consist of seven to ten items, and the presence of four to six would be required for diagnosis. The polythetic nature of the DSM-III-R indicate that Axis II resembles a prototypic model of classification (Widiger & Frances, 1985). In prototypic models the members of a given class need not share the exact same features; it is assumed that there is a degree of heterogeneity among members of each diagnostic class. It has been suggested that monothetic criteria sets are overly restrictive and incompatible with the heterogeneity of personality disorder symptoms (Frances, 1982; Livesley, 1985). Furthermore, polythetic criteria allow for the inclusion of items that are not always present but are useful in

diagnosis (Widiger et al., 1988). With monothetic criteria, the reliability of the diagnoses may fall to the level of reliability in determining the presence or absence of any of the individual symptoms. Polythetic criteria ensure that the reliability of a diagnosis is influenced less by any one criterion (Widiger & Frances, 1985).

There are also problems inherent in using polythetic criteria sets. It may be that polythetic criteria sets allow for more heterogeneity than is acceptable. For example, one study (Clarkin, Widiger, Frances, Hurt, & Gilmore, 1983) found that there were 93 different ways to meet the DSM-III-R criteria for borderline personality disorder. Furthermore, it was possible to meet the criteria without possessing unstable-intense relations, identity disturbance, or affective instability, despite the fact that most clinicians would agree that these are the distinguishing features of the disorder. This highlights another problem with the polythetic nature of the DSM-III-R criteria sets. That is, the criteria that are generally accepted as being more central to a given diagnosis do not necessarily have to be present in order to be diagnosed with the disorder. To address this situation, Widiger and Frances (1985) have suggested that criteria be weighted in importance. Obviously many questions remain as to the optimal number of items and the cutoff points for establishing personality disorder diagnoses.

The lack of consistency in the emphasis on cognitive, affective, behavioral and interpersonal features in the operational criteria for the personality disorders has been noted (Widiger et al., 1988). While some of the criteria sets emphasize affective features (e.g. borderline), others emphasize cognitive (e.g. paranoid), behavioral (e.g. antisocial), or interpersonal (e.g. dependent) features. It may be that some personality disorders manifest themselves more in one area of functioning than others and that forcing consistency across diagnoses may not only be unnecessary but also distorting (Widiger & Frances, 1985). The criteria should crystallize as evidence accumulates and the personality disorders are better understood.

Personality disorders have been found to overlap extensively (Loranger, Susman, Oldham, & Russakoff, 1987; Morey, 1988; Oldham et al., 1992; Pfohl et al., 1986) and controversy persists regarding whether patterns of comorbidity on axis II represent independent disorders co-occurring in the same patients. When the same or similar items are present in more than one diagnosis some overlap is likely to occur. While content overlap can explain the co-occurrence of some of the personality disorders efforts were made to reduce the overlap when the DSM-III was revised. This was accomplished by deleting some of the overlapping items. However, whether deleting common items increases the validity of the various diagnoses or rather serves only to increase their differentiation is subject to controversy (Widiger et al., 1988).

Widiger, Frances, Harris, Jacobsberg, Fyer & Manning (1991) reviewed studies that assessed the comorbidity among personality disorders (as cited in Trull, 1993). They found that, averaged across studies, only obsessive-compulsive personality disorder was diagnosed by itself greater than 25% of the time. Another study examined the patterns of co-occurrence of personality disorders in a group of consecutive patients with two structured interviews (Oldham et al., 1992). While substantial overlap occurred among personality disorders, the two interview methods revealed different comorbidity patterns.

Most studies that have used semistructured interviews to evaluate patients for personality disorders (Pfohl et al., 1986; Morey, 1988) have found that at least 50% of patients have two or more coexisting personality disorders. While some of these intuitively make sense, for example high rates of co-occurrence of borderline and histrionic personality disorders (Dahl, 1986; Pfohl et al., 1986; Pope, Jonas, Laffer, Hudson, & Melby, 1983; Zanarini et al., 1987) others do not. With the introduction of the DSM-III-R specific efforts were made to reduce the degree of overlap between these disorders. Nevertheless, significant co-occurrence of borderline and histrionic personality disorders defined by DSM-III-R criteria was found in a recent study (Oldham et al., 1992). These researchers argue based on their data that there may be merit in maintaining the categorical

diagnostic system to allow further research to be done. The real question according to these investigators is whether each of the two diagnosed disorders contributes independently to some important clinical variable. They propose a two-level diagnostic system on axis II for clinical use. Those patients with more than two disorders would be given a single diagnosis of "extensive personality disorder" with a dimensional description of the predominant characteristics of the disorder while the current categorical system would be retained for those patients with two or fewer disorders (focal personality disorder).

The trait-state problem in personality assessment refers to the possibility that a patient in a dysphoric state may have a distorted perception of his usual self and a selective recall of his past. As a result some have suggested that prototypic acts should be sampled across various situations (e.g. at home, work, school, in leisure, with friends, and with family) and major time periods (e.g. during adolescence, young adulthood, and middle age). The personality diagnostic criteria in the DSM-III were criticized for not providing explicit criteria for establishing chronicity and cross-situational consistency (Widiger & Frances, 1985). The only exception was antisocial personality disorder which required demonstration of the personality disorder prior to age 15 as well as during adulthood. With the revision of the DSM-III however, this problem was addressed by specifying the need for a "pervasive pattern . . . beginning by early adulthood and present in a variety of contexts" for each of the personality diagnoses. It may be that some disorders may be readily assessed cross-sectionally while others may need longitudinal clinical observation for accurate assessment (Skodol, Rosnick, Kellman, Oldham, & Hyler, 1988). In a study which investigated trait-state artifacts in the context of personality disorders (Loranger et al., 1991) no evidence emerged that either anxiety or depression had affected the diagnosis of personality disorder.

Increased attention has been directed toward the personality disorders since they attained a more central role in the third edition of the Diagnostic and Statistical Manual of

Mental Disorders (DSM-III). Additionally, interest has been stimulated by the availability of various instruments, based on DSM criteria, for the assessment of personality disorders. As our knowledge base expands the personality disorder criteria will undoubtedly continue to change. With the release of the DSM-IV (APA, 1994) the personality disorder classifications remained essentially the same although some changes were made in terms of either wording, content or both. In histrionic personality disorder, for example, the criteria “is overly concerned with physical attractiveness” was changed to “consistently uses physical appearance to draw attention to self”. The personality types and the criteria which define them are the result of the deliberations of a task force consisting of a diverse group of mental health professionals. Nevertheless, little research has been conducted to examine the validity of these disorders (Tyrer & Ferguson, 1987). Despite these shortcomings, a guideline to clinical diagnosis such as the DSM is helpful in maintaining collaborative communications within the professional mental health community.

Methods of Personality Disorder Assessment

Numerous methods have been devised and used to assess the presence of personality disorders or rather characteristic, maladaptive personality styles. In fact researchers are forced to choose between five interviews and eight self-report questionnaires that purport to diagnose these disorders (Zimmerman, 1994). Unfortunately none of these instruments have been demonstrated to be superior to the others, partly due to the lack of a validity standard for personality disorders with which an assessment can be compared (Skodol et al., 1988). The researcher who is attempting to devise a reliable instrument for diagnosing Axis II disorders is faced with five problems (Zanarini, Frankenburg, Chauncey, & Gunderson, 1987). First, the meaning of many of the diagnostic criteria specified in the DSM are open to clinical interpretation. This is evident in the different questions used by different instruments to measure the same

criteria. In one study it was concluded, following a detailed item analysis, that the poor diagnostic agreement between two instruments was largely due to differences in content (Zimmerman & Coryell, 1990). Second, certain criteria reflect personality traits (ie. low self-esteem) that are quite common in the general population. Determining the threshold at which they become pathological can be both difficult and highly subjective. Third, while Axis II criteria are intended to assess the presence of enduring character traits, it is quite possible that they are over-reported when an Axis I disorder is present. Zimmerman (1994) concludes, following an analysis of the available data, that both interviews and self-report instruments designed to assess personality disorder diagnoses are susceptible to an overreporting bias due to the acute psychiatric state. Fourth, since certain criteria clearly reflect traits that have derogatory connotations (i.e. exploitiveness), it is not clear whether the denial of such a trait represents its true absence or an unwillingness to admit to its presence. Fifth, certain criteria require a level of self-awareness that many patients do not possess.

The diagnostic instrument used to assess personality disorders in the present study was the Computerized Personality Disorder Interview (C-PDI). The C-PDI is a new, structured, self-report interview which was developed by Blouin (1991) to classify according to DSM-III-R Axis II criteria. Before discussing the pros and cons of computerized interviews in general and this instrument in particular, it is important to review some of the other methods available for establishing personality disorder diagnoses. These methods include: unstructured interviews, structured interviews, and self-report instruments. The advantages and disadvantages of each these methods will be reviewed along with a summary of some of the more popular interviews or instruments in use. There is a great deal of variability among personality disorder instruments in terms of the extent of coverage of the DSM disorders, face validity, method of administration, recommended level of experience for the administrator, whether the measure is organized topically or diagnostically, the time frame covered, scoring, and guidelines for rating the

criteria (Zimmerman, 1994).

Unstructured interviews.

The reliability of unstandardized clinical evaluations to assess the presence of personality disorders is poor-fair (Zimmerman, 1994). In the DSM-III field trials, (Spitzer, Forman, & Nee, 1979) the k coefficient for the presence or absence of any personality disorder was .61 based on a joint-interview, and .54 in a test-retest design. When interrater reliability was investigated in another study (Mellsop, Varghese, Joshua, & Hicks, 1982) the k coefficients for the individual disorders were even worse, ranging from a low of .01 for schizotypal personality disorder to a high of .49 for antisocial personality disorder. These reliability coefficients are clearly inadequate for the purposes of research (Zanarini, Frankenburg, Chauncey, & Gunderson, 1987).

Semistructured interviews.

The primary advantage of interviews is that the clinician is able to explore the clients response in greater detail. Nevertheless, as a result, these interviews are time consuming and therefore expensive. Furthermore, the response of the patient is filtered through a clinician who may have preconceptions regarding the results. Administration variance is known to influence the reliability of information collected by interviews. This source of variance includes characteristics of the interviewer (age, sex, race, tone of voice), pacing of the interview, and responses of the interviewer to unscheduled questions made by the interviewee (Blouin, Perez, & Blouin, 1988). It has even been suggested that the interviewers' personality may have an impact on their evaluations (Zimmerman, 1994). A further problem with clinician administered interviews is that different raters may use different thresholds of severity for deciding the presence of a criterion. Similarly a disadvantage inherent in those interviews that are organized by diagnosis (SCID-II, DIPD, and PDQ) is that the assessment of each personality disorder in turn encourages halo

effects in which subsequent ratings are influenced by prior diagnostic assessments (Widiger & Frances, 1987). Finally, some researchers have suggested that the criteria for axis II disorders do not lend themselves to direct inquiry as easily as most axis I disorders since patients tend to deny socially unacceptable and/or unattractive traits (Stangl et al., 1985).

The Structured Clinical Interview for DSM-III-R Personality Disorders (SCID-II) was developed by Spitzer, Williams and Gibbon (1987) and designed to be preceded by an axis I instrument. The major advantages of the SCID-II are its speed of delivery and its inclusion within an interview schedule that assesses most of the Axis I syndromes (Widiger & Frances, 1987). The interview begins with a set of overview questions and then systematically covers each of the personality disorders in turn asking one or two questions for each symptom. The interviewer is instructed to always ask for clear evidence and examples for each symptom. To minimize the impact of halo effects, the authors recommend the use of adjunctive information gathered during the axis I interview or by the revised Personality Diagnostic Questionnaire (Hyler & Rieder, 1987) and suggests that positive findings from the PDQR be marked on the SCID-II before performing the interview.

The Structured Interview for DSM-III Personality Disorders (SIDP) (Pfohl, Stangl & Zimmerman, 1983) is comprised of 160 questions explicitly based on DSM-III criteria. These questions are grouped under 16 topical themes such as self-esteem, dependency and level of social interaction. Grouping questions this way, rather than grouping them based on specific personality disorders, results in less redundancy (Stangl, Pfohl, Zimmerman, Bowers, & Corenthal, 1985). Since many of the questions are open-ended the interviewer can ask additional questions for clarification purposes. Administration of the SIDP takes about 60 to 90 minutes. A separate interview of a knowledgeable informant is considered important to assessment and a final diagnosis results from synthesizing information provided by the patient and a significant other. Since patients' psychiatric condition or

personality may distort recall of their usual long-term functioning this informant interview can be important in the diagnosis of personality disorders (Nazikian, Rudd, Edwards & Jackson, 1990). The following interrater reliabilities were reported with the SIDP: avoidant (.45), compulsive (.30), schizotypal (.62), passive-aggressive (.63), histrionic (.70), borderline (.85) and dependent (.90) (Pfohl, Coryell, Zimmerman, & Stangl, 1986). In another study the SIDP was administered to 131 patients most of whom were psychiatric inpatients (Stangl et al., 1985). A second rater interviewed and rated sixty-three of these subjects. The personality disorders that were diagnosed with sufficient frequency to allow the calculation of specific k values were: schizotypal (.62), histrionic (.75), borderline (.85), avoidant (.45), and dependent (.90). When patients were interviewed simultaneously by two raters ($n=43$), 79% had perfect agreement or only minor discrepancies in their diagnoses. The overall agreement for the presence or absence of a personality disorder was 86%, yielding a kappa value of .71 (significant at the $p<.001$ level). When subjects ($n=20$) were interviewed using a test-retest format in which a second rater interviewed the subject on a separate occasion, 60% had perfect agreement or only minor discrepancies in their diagnosis. The overall agreement for presence of a PD was 85% yielding a kappa value of .66. Finally, in a six-month test-retest study of a slightly modified version of the SIDP (van den Brink et al., 1986 as cited in Reich, 1989) the following reliability coefficients were reported: schizotypal (.14), histrionic (.46), borderline (.70), dependent (.44), and passive-aggressive (.40). An insufficient number of diagnoses prevented the calculation of reliability coefficients for the remaining personality disorders.

The Diagnostic Interview for Personality Disorders (DIPD) is made up of 252 questions that encompass all eleven axis II disorders described in the DSM-III (Zanarini, 1983). The interview is grouped by personality disorder and subgrouped by criteria, with each criterion having two or three probes that appear to have good face validity (Reich, 1989). This interview was designed to be given by trained clinicians and is estimated to

take 60 to 90 minutes to administer. Joint interrater reliabilities of 43 subjects gave Kappas greater or equal to .86 for all disorders except paranoid and schizoid (Zanarini et al., 1987). Test-retest kappas at less than 1 week were: antisocial .84, avoidant .67, borderline .85, compulsive .56, dependent .77, histrionic .68, narcissistic .78, paranoid .54, passive/aggressive .56, and schizotypal .61.

The Personality Disorder Examination (PDE) examines the DSM criteria in reference to work, self, interpersonal relationships, affect, reality testing, and impulse control (Loranger, Susman, Oldham, & Russakoff, 1987). Each section begins with a open-ended, broad question, after which the interviewer is free to ask additional questions (Widiger & Frances, 1987). The interview takes approximately one to two hours to complete. Interrater reliability data based on joint interviews with 60 inpatients (Widiger & Frances, 1987) yielded kappas of .70 (antisocial), .77 (histrionic), .80 (schizotypal), .88 (compulsive), and .96 (borderline). The PDE has obtained the highest levels of interrater reliability amongst the structured interviews (Widiger & Frances, 1987).

In conclusion, there is no consensus as to how to assess personality disorders. Of these interviews, only the SIDP, SCID-II, PDE have been used in published studies by researchers outside of the center in which they were developed and all three have similar reliabilities (Zimmerman, 1994). Studies which have compared the results gathered from different interviews have generally found the diagnostic concordance between them to be poor (Hyler, Skodol, Kellman, Oldham, Rosnick, 1990; O'Boyle & Self, 1990; Oldham et al., 1992; Skodol, Oldham, Rosnick, Kellman, & Hyler, 1991). Nevertheless only a decade has past since the first structured interview, designed to assess personality disorders, was made available (Stangl et al., 1985) and as such many questions remain. Further research is needed in order to gain a clearer understanding of these disorders as well as determining the most valid method by which to assess them.

Self-report instruments.

Self-report instruments accept whatever the patient reports. This increased reliance on the patient's judgments may be a reaction to the recognition of low reliability in clinical judgments (Widiger & Frances, 1987). Indeed, several investigators have suggested that it is likely that clinicians underrate the presence of personality disorders (Hyler et al., 1989; Nazikian et al., 1990; Widiger & Frances, 1987). It is also possible that patients with personality disorders have more insight into their psychopathology than they have been given credit for. They may also be better able to admit to problematic personality attributes on a self-report instrument than to a clinician. Self-report instruments have the advantage of ease of administration and are more cost effective than interviews. Studies have generally shown them to be overly sensitive when compared to structured interviews for the diagnosis of personality disorders (Hurt, Hyler, Frances, Clarkin, & Brent, 1984; Hyler et al., 1990; Hyler, Skodol, Oldham, Kellman, & Doidge, 1992; Nazikian et al., 1990; Skodol, Hyler et al., 1993). Whether patients tend to exaggerate pathology or clinicians understate it a systematic distortion is introduced which biases the results. To address this problem it has been suggested that researchers make use of information derived from both interviews and self-report instruments (Zimmerman, 1994).

The Personality Diagnostic Questionnaire (PDQ) was initially developed in 1982 (Hyler, Reider, Spitzer, & Williams, 1982) and revised (Hyler & Rieder, 1987) to yield diagnoses consistent with DSM-III-R criteria. The PDQ-R is a 152-item, self-administered, true-false inventory which takes approximately 30 minutes to complete and is easily scored. It also contains three additional scales to measure response biases. Test-retest reliabilities for the PDQ after one month were adequate for the paranoid (.64), schizotypal (.66), antisocial (.74), borderline (.63), avoidant (.70), and compulsive (.75) scales, but not for the narcissistic (.11), histrionic (.30), dependent (.04), and passive-

aggressive (-.25) scales (Widiger & Frances, 1987). In a study of inpatients (Hyer et al., 1990) the validity of the PDQ-R was assessed by comparing results obtained with it to results obtained with two structured interviews. The PDQ-R was generally found to overdiagnose personality disorders and levels of agreement between the PDQ-R, the PDE and the SCID-II were modest at best. This study was replicated (Hyer et al., 1992) in an outpatient sample and once again the PDQ-R showed high sensitivity and moderate specificity for most personality disorder diagnoses.

The MCMI (Millon, 1983a) is a 175-item, true-false, self-report inventory that consists of 20 clinical scales and one validity scale. The MCMI items were selected in part on the basis of their representation of clinical constructs and their ability to differentiate between a criterion clinical group and all other patients. Of the twenty clinical scales, 11 have been given the same titles as the 11 personality disorders of the DSM-III while the remaining 9 scales measure "clinical symptom syndromes ... of the reactive kind that are of substantially briefer duration than the personality disorders" (Millon, 1983a, p.6). The personality scales have obtained higher levels of test-retest reliability than the clinical syndrome scales (McMahon, Flynn & Davidson, 1985). Scale elevations greater than empirically derived cutoff scores are interpreted as indicating the presence of the Axis II syndromes identified by the scale titles. However, considerable debate continues regarding the validity of the MCMI-I as a measure of DSM-III.

The construction of the MCMI was based on Millon's theory of personality and psychopathology (1969, 1981) and not on the DSM-III. It cannot be inferred that because the MCMI uses DSM-III axis II scale titles the scales were constructed to measure the axis II diagnoses, or that they have been shown to measure the axis II disorders (Widiger, Williams, Spitzer, & Frances, 1985). Morey, Waugh and Blashfield (1985) found that the factor structure of the MCMI was not congruent with the three cluster groupings of the personality disorders offered by the authors of the DSM-III. Furthermore, concordance between the MCMI-I and structured interviews for evaluating DSM-III personality

disorders has been found to be poor in several studies (Jackson, Gazis, Rudd, & Edwards, 1991; Nazikian et al., 1990). Finally, according to Wiggins (1982) the psychometric consequences will almost certainly be unfavorable when scoring 20 scales averaging 37 items per scale from a common pool of 171 items.

Computerized interviews.

In an environment that combines constraints on professional time and emphasis on structured assessment, self-report instruments may offer a practical alternative to more time-consuming assessment methods without substantial loss of information relevant to the DSM-III-R diagnosis of personality disorders (Hurt et al., 1984). This would lead to significant savings in terms of administration costs. With computerized assessments, not only are administration costs reduced by freeing up the clinicians time but scoring, coding, and report writing are also greatly simplified. Reliability may also be enhanced since another potential advantage of using computer administered interviews is a reduction in administration variance (Blouin et al., 1988). Differences associated with interview style contribute to administration variance. This source of variance which is known to influence the reliability of the information collected during interviews is significantly reduced when assessments are administered by computer. The computerized assessment on the otherhand is completely objective and standardized (Carr, Ghosh, & Ancill, 1983). Support for computer assessment comes from a study which found a computerized version of the Diagnostic Interview Schedule (C-DIS) to have reasonable test-retest reliability as well as being accepted by the patients (Blouin et al., 1988).

Other advantages of computerized interviews as discussed by Carr et al. (1983) include: 1) Since items are presented one-by-one the task is less daunting than being presented with a sheet containing hundreds of items. 2) Subjects can ponder over items without concern about keeping an interviewer waiting. 3) The objectivity and standardization which is inherent in computerized administration is also evident in the data

analysis and interpretation when these tasks are performed by the computer. 4) Items are not defaced or omitted by accident. 5) Irrelevant sections are skipped by the computer. 6) Responses are readily available for analysis. 7) Computerized interviews save time for the clinician and the patient.

Several studies have found that patients are generally quite accepting of computerized interviews (Angle, Ellinwood, Hay, Johnsen & Hay, 1977; Blouin et al., 1988; Skinner & Allen, 1983) with some even preferring it to more traditional methods (Angle et al., 1977; Lucas, 1977). Individuals in one study reported that the computerized interview was shorter, more relaxing, lighter, more interesting, and faster than face-to-face or self-report formats (Skinner & Allen, 1983). Patients also report a preference for computerized interviews when dealing with questions of a personal nature (Slack & Van Cura, 1968). It may be that patients find it easier to admit to problematic personality attributes or behavior when the questions are asked by a computer rather than a clinician. Some have suggested that they may give more accurate information to a computer than they would in a face-to-face method (Evans & Miller, 1969). In one study hospitalized psychiatric patients were found to be significantly more likely to report suicide attempts to a computer than to a physician (Carr et al., 1983). In another study, clients reported significantly greater amounts of alcohol consumption to a computer than to a clinician (Lucas, Mullin, Luna, & McInroy, 1977). Skinner & Allen (1983) however, found no differences in the accuracy of information reported when they compared computer, self-report questionnaire, and interview methods of assessment. The important issue, given the many advantages of computer administration, is that reliability is not compromised.

The Computerized Personality Disorder Interview (Blouin, 1991) is an alternative to the more time consuming interview methods of personality disorder diagnosis. After careful study of the diagnostic criteria for each of the personality disorders, items were developed by formulating questions which address the individual diagnostic criteria for each of these disorders. The initial items were screened for face validity by experienced

diagnosticians in psychiatry and psychology. In a recent study the CPDI was found to have good test-retest reliability for the individual scale items which ranged from .74 (obsessive compulsive) to .90 (schizotypal and borderline). The kappa statistic, which is used with dichotomous variables, assesses the chance-corrected concordance between the two administrations of the C-PDI. Values of k below .40 indicate poor agreement, values from .40 to .75 indicate fair to good agreement, and values above .75 indicate excellent agreement beyond chance (Fleiss, 1981). Kappa coefficients for diagnosis were: schizoid (.78), schizotypal (.60), borderline (.66), histrionic (.45), narcissistic (.40), dependent (.49), paranoid (.27), avoidant (.10), obsessive compulsive (.30) and passive-aggressive (.36). The low base rates for certain diagnoses (e.g. avoidant) may have resulted in poor diagnostic reliability. These values are similar to those reported in studies using other methods of personality disorder assessment (Hurt et al., 1984; Reich, 1989). The C-PDI has been field-tested at the Ottawa Civic Hospital Eating Disorder Clinic (EDC) and Stress Management Clinic (SMC). Preliminary findings from "pilot work" indicate that the C-PDI is able to discriminate between these different samples of outpatients. Schizotypal, Histrionic and Borderline personality disorders occurred in significantly more of the EDC sample than the SMC sample. This personality profile of eating disorder patients is similar to that which has been reported by others (Wonderlich et al., 1990; Yager et al., 1989; Yates et al., 1989).

To summarize, it is very apparent that many issues remain to be resolved in terms of the assessment of personality disorders. Some of these issues include: diagnostic stability, trait-state artifacts, whether or not an informant can offer a more valid appraisal of a patient's usual functioning, the retest artifact, interview vs. questionnaires, and what to do when personality changes (Zimmerman, 1994). The researcher investigating personality disorder psychopathology is faced with the rather daunting task of choosing which instrument to use. Not only is there a large number of personality disorder instruments available to choose from but there is also a great deal of variability among these instruments

in terms of the extent of coverage of the DSM disorders, face validity, method of administration, recommended level of experience for the administrator, whether the measure is organized topically or diagnostically, the time frame covered, scoring, and guidelines for rating the criteria (Zimmerman, 1994). With the release of the DSM-IV (APA, 1994) the wording of many of the criterion for the various disorders changed again. Researchers designing instruments to assess the DSM personality disorders are now faced with the task of revising their instruments so that they more accurately reflect the DSM-IV criteria. Nevertheless, the personality disorders and the criteria which define them do seem to be stabilizing as is evident in the similarities between the DSM-III-R and the DSM-IV.

A Cognitive Perspective on Personality Disorders

Each individual has an unique personality profile, which consists of varying degrees of probability of responding in a particular way to a particular degree to a particular situation (Beck, 1990). These differing responses which are characteristic of individuals reflect important differences in their underlying beliefs. According to the cognitive model these beliefs are embedded in cognitive structures which have been labeled schemas. Segal (1988, p.147) defines schemas as “organized elements of past reactions and experience that form a relatively cohesive and persistent body of knowledge capable of guiding subsequent perception and appraisals”. Schemas, which according to the cognitive model are the fundamental units of personality, select and process information in such a way as to trigger an adaptive or maladaptive response (Beck, 1990).

Differing responses which are characteristic of individuals and reflect differences in their basic beliefs are found in normal, well-adjusted people. For example, an employee being called into their bosses office for a meeting might think, “I wonder what I’ve done wrong” and become anxious. Another person might think, “Maybe I’m finally going to get the promotion, I so obviously deserve”. These individuals basic beliefs, respectively,

might be, “I am vulnerable; other people cannot be trusted” and “I am a very special person and other people should recognize this.” While such variations account for individual differences in personality they are far more pronounced in the personality disorders. The beliefs of the individuals in the above example characterize the paranoid and the narcissistic. Individuals with personality disorders, relative to other people, have dysfunctional attitudes and behaviors that are overgeneralized, inflexible, imperative, and resistant to change (Beck, 1990).

Within each personality disorder, certain beliefs and strategies predominate and form a characteristic profile (Beck, 1990). For example, in the dependent personality disorder the basic belief is “I am helpless” and the strategy or overt behavior is attachment. This belief or schema of helplessness sets up a biased set of rules by which the world is interpreted. Any situation that has a bearing on the content of the maladaptive schema will activate those schemas in preference to more adaptive ones (Beck, 1990). According to Padesky (1988) the dysfunctional beliefs of the individual disrupts interpersonal behavior, rather than the dysfunctional interpersonal behavior being central to the disorder. The individual with dependent personality disorder will be alert to any information that validates their maladaptive schema and ignore any that does not. The basic beliefs and strategies associated with the other personality disorders, as specified by Beck include: avoidant (I may get hurt; avoidance), passive-aggressive (I could be stepped on: resistance), paranoid (people are potential adversaries; wariness), narcissistic (I am special; self-aggrandizement), histrionic (I need to impress; dramatics), obsessive-compulsive (errors are bad, I must not err; perfectionism), antisocial (people are there to be taken; attack), and schizoid (I need plenty of space; isolation). According to Beck borderline and schizotypal personality disorders are not included because they do not seem to be associated with a unique or typical set of beliefs and strategies. Borderline personality disorder may present a wide variety of typical beliefs and patterns of behavior that are characteristic of the range of personality disorders. Whereas, schizotypal disorder is

characterized more by peculiarities in thinking, rather than beliefs and strategies.

Some researchers (Young & Lindemann, 1992; Young & Swift, 1988) have argued that in order to adequately account for the characteristics of individuals with personality disorders it is necessary to approach the subject from a developmental perspective. They add the term Early Maladaptive Schemas (EMS) to Beck's cognitive model of psychopathology (Beck, 1976; Beck et al., 1979). These are defined as "very stable and enduring patterns of thinking and perception that develop during childhood and are elaborated throughout adult life" (Young & Swift, 1988, p.13). According to this proposal, activation of an EMS elicits intense negative emotions, and therefore individuals develop methods by which they avoid stimulating the EMS. The processes used for avoiding schemas may include cognitive avoidance, affective avoidance, and behavioral avoidance (Young & Lindemann, 1992). While this may be successful insofar as the individual avoids experiencing the aversive emotions it also results in a failure to challenge the validity of the EMS. This results in the self-perpetuating cycles of dysfunctional beliefs and behavior patterns evident in the personality disorders.

Individuals with personality disorders present complex, deeply ingrained problems which tend to be persistent and inflexible (Pretzer & Fleming, 1989). They typically come for therapy with issues other than personality difficulties, often with complaints of depression or anxiety (Freeman & Pretzer, 1990). This is because many people with personality disorders do not regard themselves as having problems until they in fact lead to other symptoms. Negative beliefs that the patient held prior to developing depression or anxiety become much more plausible and pervasive, dominating their feelings and behavior. Beck (1990) suggests that during depression or anxiety the individual temporarily loses the ability to reality-test their dysfunctional beliefs. Nevertheless, these beliefs are easier to alter because they are less stable; it is the long-standing beliefs associated with the personality disorders that are the most difficult to change because the schemas are more prominent in the cognitive organization (Beck, 1990).

Cognitive behavioral approaches to treating personality disorders consider both situation specific cognitions (ie. self-instructions or automatic thoughts) and cognitions which persist independent of specific situations (ie. irrational beliefs or schemas). Through the basic techniques of cognitive therapy such as recognition, evaluation, and testing of their interpretations or beliefs people can be taught to modify the underlying schemas. Nevertheless, schemas are difficult to alter as they are held in place by behavioral, cognitive and affective elements. . Since schemas are deeply entrenched patterns, which are central to the individual's sense of self, changing them poses a threat to the core cognitive organization of individuals (Young & Lindemann, 1992). Essentially in therapy personality disordered patients are being asked to give up who they are and how they have defined themselves for a long time.

Comorbidity of Personality Disorders and Bulimia

Recently there has been a renewed interest in the comorbidity of eating disorders and personality disorders. However the findings of these studies have often been contradictory and conclusions regarding the prevalence of personality disorders in eating disorder samples is unclear. The earlier research on the relationship of eating disorders and personality disorders has been criticized for being limited in scope and methodologically weak (Swift & Wonderlich, 1988). New semi-structured interviews and self-report instruments have made it possible to systematically study the association of a full range of DSM-III-R axis II psychopathology in eating disordered groups. Unfortunately the choice of instruments has an undeniable influence on the percentage of eating disordered patients diagnosed as having personality disorders. Using self-report instruments the rate of one or more personality disorders, summed over three studies (Levin & Hyler, 1986; Yager et al., 1989; Yates et al., 1989) is 72%; using a structured interview, summed across six studies (Ames-Frankel et al., 1992; Gartner et al., 1989; Hergoz, Keller, Lavori, Kenny, & Sacks, 1992; Schmidt & Telch, 1990; Wonderlich et al., 1990; Zanarini et al., 1990)

is 40%.

Using the Personality Diagnostic Questionnaire (PDQ) Levin and Hyler (1986) assessed DSM-III axis II disorders in 24 normal-weight bulimic patients. They found that 63% met criteria for an axis II disorder with 38% fulfilling criteria for histrionic personality disorder and 25% for borderline personality disorder. Similarly, when the Structured Clinical Interview for DSM-III-R Personality Disorders (SCID-II) was administered to 30 bulimic women (Powers, Coover, Brightwell, & Stevens, 1988) 77% met criteria for an axis II disorder: 53% histrionic; 23% borderline personality disorder; 20% obsessive-compulsive, paranoid, antisocial personality disorder and 10% avoidant, passive-aggressive, narcissistic, and atypical personality disorder.

In fact many studies, using a number of different structured interviews, have found borderline personality disorder and histrionic personality disorder to be quite prevalent among bulimics (Levin & Hyler, 1986; Piran et al., 1988; Powers et al., 1988). Prevalence rates of borderline personality disorder ranging from 21% to 48% have been reported across the majority of studies (Ames-Frankel et al., 1992; Cooper et al., 1988; Gartner et al., 1989; Johnson et al., 1989; Kennedy et al., 1990; Levin & Hyler, 1986; Piran et al., 1988; Rossiter et al., 1993; Sansone et al., 1989; Schmidt & Telch, 1990; Steiger et al., 1991; Steiger et al., 1994; Wonderlich & Swift, 1990; Yager et al., 1989; Yates et al., 1988; Zanarini et al., 1990). It has been suggested by several researchers that the high prevalence rates found in some studies can be explained by the use of instruments of low or untested specificity and/or the overlapping criteria for bulimia nervosa and borderline personality disorder (Pope & Hudson, 1989). Whenever DSM-III (1980) criteria for borderline personality disorder are employed an overdiagnosis in bulimic samples may occur since two of the DSM-III criteria for borderline personality disorder (compulsive acts such as overeating, spending, or shoplifting and affective instability) match two of the DSM-III criteria for bulimia. Nevertheless when binge eating was excluded from the impulsivity criterion one study found that 35% of their sample of

bulimics still met criteria for borderline personality disorder (Schmidt & Telch, 1990). Furthermore, this particular study eliminated any overlap in criteria sets since it used DSM-III-R criteria for bulimia nervosa which no longer requires that an individual experience affective instability.

In one of the few studies to use a control group, Yates et al. (1989) administered the PDQ to 30 volunteers who met DSM-III criteria for bulimia and 30 community controls matched on the variables of age and sex. Of the 30 bulimic patients, 53% met criteria for at least one personality disorder compared with only 6.7% of the control group. Furthermore while 33% met criteria for histrionic personality disorder many met criteria for compulsive, dependent, schizotypal and only 13% met criteria for borderline personality disorder.

Using a control group consisting of individuals with a history of major depression, the axis II comorbidity of bulimia was investigated in another study using the Diagnostic Interview for Personality Disorders (DIPD; Zanarini et al., 1990). These researchers also compared active and remitted bulimic subjects in order to gain insight into the relationship between bulimic symptomatology and personality disorders. Although no significant between-group differences were found, between 35 to 50% of the subject's in each group met DSM-III criteria for one or more axis II disorders. Since active and remitted bulimic subjects were about equally likely to meet DSM-III criteria for an axis II disorder the authors conclude that axis II pathology exhibited by bulimic outpatients is not attributable to the presence of bulimic symptoms per se. Nevertheless, longitudinal studies are needed to fully understand the relationship between axis II pathology and the long-term outcome of bulimia. The failure to find any group differences may be due to the presence of another comorbid axis I disorder such as major depression.

The relationship between eating disorders and personality disorders has also been examined by comparing those meeting full DSM criteria for bulimia with those at a sub-diagnostic level of eating disorders on personality disorder psychopathology. Schmidt and Telch (1990) examined the comorbidity of bulimia and personality disorders in college

women. Their subjects included women meeting DSM-III-R criteria for bulimia nervosa, women reporting binge eating but who fail to meet full criteria for bulimia nervosa and those who did not binge eat. Of the bulimics, 61% met criterion for a personality disorder using DSM-III-R criteria compared to only 13% of binge eaters and 4% of controls. In a similar study (Yager et al., 1989) a large sample (n=628) of eating disordered women were screened for DSM-III personality disorders. Of those with normal-weight bulimia (n=300), 75% had personality disorder diagnoses compared with only 50% of those with subdiagnostic eating disorders. The most common personality disorder diagnoses as measured by the Personality Diagnostic Questionnaire (Hyer et al., 1982) were schizotypal, histrionic, and borderline in addition to avoidant and dependent.

Other investigators have explored personality disorders in eating disorder subtypes (Piran et al., 1988; Wonderlich et al., 1990). Piran and his associates (1988) compared personality disorders in restricting and bulimic anorexics who were either waiting for or receiving inpatient treatment. They found that 66% of the bulimics fell within the borderline, histrionic, narcissistic and antisocial cluster (dramatic/emotional) whereas 77% of restrictors fell within the avoidant, compulsive, dependent and passive-aggressive cluster (anxious/fearful) - a difference which was highly significant. Using the Structured Clinical Interview for DSM-III-R personality disorders (SCID-II) the prevalence of personality disorders was assessed in four eating disorder subtypes: restricting anorexics; bulimic anorexics; normal weight bulimics; and normal weight bulimics with a history of anorexia (Wonderlich et al., 1990). Also examined was the relationship between depression and personality disorder diagnoses. Findings indicated that obsessive-compulsive personality disorder was common in restricting anorexics, but not bulimic anorexics while normal-weight bulimia was associated with histrionic personality disorder. The authors suggest that the large percentage of obsessive-compulsive personality disorder diagnoses in the restricting anorexic group is consistent with personality trait studies depicting anorexics as rigidly controlled, affectively restricted, industrious, and lacking

spontaneity. Similarly, the high rate of histrionic personality disorder in normal-weight bulimics is consistent with previous empirical descriptions of the bulimic as being impulsive, interpersonally sensitive, and affectively unstable (Pyle, Mitchell, & Eckert, 1981b). It has been suggested that "perhaps for some bulimics eating symptoms may be a means of regulating interpersonal dynamics and affects associated with features of histrionic personality disorder" (Wonderlich et al., 1990). Not surprisingly studies have found high rates of dependent and avoidant personality disorders in agoraphobia with panic patients (Mavissakalian & Hamann, 1986; 1987).

Other researchers have found no statistically significant differences between subtypes of eating disorders in either the frequency with which axis II diagnoses were assigned or in the mean number of axis II criteria met. Gartner et al. (1989) examined personality disorders in 35 eating disordered patients who were further subtyped as having restricting anorexia nervosa, anorexia nervosa and bulimia, and those with bulimia nervosa. These subjects were administered the Personality Disorder Examination, Hamilton Rating Scale for Depression, Clinical Anxiety Scale and the Beck Depression Inventory. In this particular study, 57% of the patients met criteria for at least one axis II diagnosis, 40% for two or more diagnoses, and 17% for five or more diagnoses. It is important to point out that this study included only hospitalized patients as subjects and therefore represents the more severely impaired end of the eating disorder spectrum.

It is possible that the occurrence of a personality disorder with bulimia has an influence on the severity of the disorder. One study (Yates et al., 1989) compared normal weight bulimics with and without a personality disorder on cognitive, psychological, psychiatric, and physiological measures. The personality disordered group was found to have a higher Eating Disorder Inventory score, a history of major depression and suicide attempts, and a higher lifetime maximum and minimum body mass indices.

In conclusion, although some diagnoses are more common than others, patients with bulimic symptoms represent a mixed spectrum of personality diagnoses.

Approximately two-thirds of the eating disordered population meet criteria for at least one personality disorder and two-thirds of those individuals receive more than one personality diagnosis (Johnson & Wonderlich, 1990). Yager et al. (1989) reported an average of 2.7 separate personality disorder diagnoses in their sample of bulimics. The current study followed the recommendations of Pretzer and Fleming (1989) who suggested that future studies consider the effects of the co-occurrence of more than one personality disorder rather than simply considering the presence or absence of a personality disorder diagnosis. Given the low reliabilities of the individual disorders this seems to be a reasonable proposal .

The Relationship Between Bulimia and Depression

A vast literature has accumulated which has examined the prevalence of depression in bulimia nervosa and numerous theories have been advocated regarding this relationship (e.g. see Beebe, 1994). The high prevalence of depression in bulimia led earlier researchers to speculate that bulimia is a form of depression with the same biological basis as affective disorders, rather than a separate diagnostic entity (Herzog, 1982; Lee, Rush, & Mitchell, 1985; Pope & Hudson, 1985a, 1985b; Pope, Hudson, Jonas, & Yurgelun-Todd, 1983). It is now generally accepted that bulimia nervosa and major depression are distinct entities (Hinz & Williamson, 1987; Levy, Dixon & Stern, 1989; Strober & Katz, 1987). Since it is well established that depressive symptoms accompany many chronic psychiatric and physical illnesses, such as alcoholism (Nathan & Hay, 1984), obsessive-compulsive disorder (Mavissakalian, 1986; Sturgis, 1984), and chronic pain (Keefe, 1982) it is not suprising that a chronic condition such as bulimia might also be associated with depression (Hinz & Williamson, 1987).

Substantial concurrent diagnoses of depression have been noted in bulimics by numerous investigators using a variety of diagnostic methods. Viesselman and Roig (1985) found concurrent depression in 79% of their 61 bulimic subjects. They furthermore

described suicidal thoughts in more than half of these subjects with 20% having made previous suicide attempts. Herzog (1984) found that 24% of his 55 bulimic patients met the Research Diagnostic Criteria (RDC) for concurrent major depressive disorder while Walsh, Roose, Glassman, Gladis, and Sakik (1985) found a 30% incidence in their 50 patients with bulimia. Others (Levy et al., 1989) have suggested that an apparent high frequency of depressive symptoms in bulimia might to a large extent reflect the fact that "depressed mood and self-deprecating thoughts" were required for the DSM-III diagnosis of bulimia prior to 1987.

Some studies have looked at the occurrence of depression over the bulimic's entire lifetime. Using DSM-III criteria it was reported that 59% of the normal-weight bulimic patients and 80% of the anorexic bulimic patients (66% of the total number) had at one time experienced major depression (Hudson, Pope, Jonas, Laffer, et al., 1983). Another study assessed DSM-III lifetime diagnoses in 52 patients with a lifetime history of anorexia nervosa or bulimia (Laessle, Kihl, Fichter, Wittchen, & Pirke, 1987). They found that 44.2% had a lifetime diagnosis of DSM-III major affective disorder with abstaining anorexics having a lower rate of depression than those with bulimic symptoms. Also using DSM-III criteria, Piran, Kennedy, Garfinkel et al. (1985) reported that 36% of their 33 bulimic patients had experienced an episode of major depression at some time during their lives. Walsh et al. (1985) found that the lifetime prevalence of major depression was 71% in their 50 bulimic patients. Finally, Hudson, Pope, Yurgelun-Todd, Jonas, & Frankenburg (1987) found that active and remitted bulimic subjects closely resembled each other with high lifetime rates of major affective disorder, anxiety disorders, and substance use disorders. They found a 67% lifetime rate of major affective disorder in the combined group of bulimic subjects. Since it is common for chronic psychiatric patients to be depressed at some time in their lives (Hinz & Williamson, 1987), these estimates are not particularly surprising.

Several studies have reported a high prevalence of affective disorder in the families of bulimic patients (Hudson, Pope, Jonas, & Yurgelun-Todd, 1983; Lee et al., 1985; Pyle et al., 1981a). Hudson et al. found a positive family history of affective disorders in 16% of first-degree relatives of patients with normal weight bulimia. This was similar to that found in the families of patients with bipolar disorder (9%) but was significantly greater than that found in the families of patients with schizophrenia (2%), or borderline personality disorder (1%). Unfortunately much of the information on the family histories was obtained from the patients. Methodological limitations of these studies include: small sample size, the use of different diagnostic criteria which makes comparisons between studies difficult, the particular family history method used, and in many cases the lack of an appropriate control group (Kassett et al., 1989).

Studies which have used a control group have failed to clarify the nature of the relationship between bulimia nervosa and depression. In some studies, no significant differences have been found in the prevalence of affective disorder in the family members of bulimic probands and those of control subjects (Musisi and Garfinkel, 1985; Stern et al., 1984; Weiss and Ebert, 1983). Nevertheless, two more recent studies (Logue, Crowe, & Bean, 1989; Kassett et al., 1989) both reported higher rates of major affective disorder in the relatives of bulimic subjects than in the relatives of nonpsychiatrically ill controls.

Wilson and Lindholm (1987) criticized previous reports of the prevalence of depression in bulimic patients and their families for failing to relate family history to probands' own levels of depression. They examined the relationship between a positive family and personal history of affective disorder and found what they had suspected: that the more severely depressed patients were the most likely to have a positive family history. This finding is not particularly surprising since it is well-known that the risk of affective disorder in relatives of individuals with depression is significantly higher than in the general population. It is important to note that a high rate of affective disorders in the families of bulimics does not address the issue of whether this is the result of a genetic

predisposition or rather disturbed family dynamics.

According to the affective variant hypothesis, bulimia is the expression of an underlying affective disorder (Pope, Hudson, Jonas, & Yurgelun-Todd, 1983). Implicit in this formulation is that the underlying depression should be the focus of treatment and that any therapy which is effective in treating depression should be effective in treating bulimia (Beebe, 1994). Antidepressant treatment has been found to be effective in treating the symptoms of bulimia (ie. number of binge and purge episodes) as well as the accompanying depression in a number of studies using a variety of antidepressants (Agras, Dorian, Kirkley, Arnow, & Bachman, 1987; Barlow, Blouin, Blouin, & Perez, 1988; Hughes, Wells, Cunningham & Ilstrup, 1986; Kennedy, Piran, & Garfinkel, 1986; Pope et al., 1983; Walsh et al., 1984). Nevertheless, some of these studies have also reported adverse side effects (Kennedy et al., 1986; Walsh et al., 1984) and others (Barlow et al., 1988; Blouin, Blouin, Perez, & Barlow, 1989) have suggested that the antibulimic and antidepressant effects may be mediated through different mechanisms. Finally and most significantly, studies of the long-term treatment outcome with antidepressants have indicated that the maintenance of treatment effects is poor (Pope, Hudson, Jonas et al., 1985; Pyle, Mitchell, Eckert et al., 1990; Walsh, Hadigan, Devlin, Gladis, & Roose, 1991).

Considerable controversy surrounds the issue of whether depression precedes the development of bulimia nervosa or whether it is a secondary manifestation of the disturbed eating patterns. Laessle et al. (1987) report that, in the majority of cases, major affective disorder follows the onset of eating disorder by at least one year. Other studies have reported that the onset of depression preceded the onset of the eating disorder in a large percentage of their sample (Hudson et al., 1987; Piran et al., 1985). However, even in these studies, the 'majority' of subjects developed major affective disorder concurrent with or following the onset of the eating disorder. Furthermore information which has been gathered indicating that the depression pre-dated the development of bulimia has been

retrospective.

Many researchers have suggested that depression is a labile feature associated with bulimic symptoms (Fairburn, Cooper, Kirk, & O'Connor, 1985; Wilson, 1986). Evidence for this viewpoint comes from studies which have examined the relationship between mood states and target symptoms in bulimia. Johnson-Sabine, Wood, & Wakeling (1984) assessed daily mood and specific eating behaviors in 50 patients meeting criteria for bulimia nervosa over a eight week period. They found that negative mood states were more marked when the specific behavioral symptoms of binge-eating, vomiting, or purging occurred and they increased as abnormal eating behaviors accumulated. Sabine, Yonace, Farrington, Barratt, & Wakeling (1983) also noted a significant increase in mood scores (self-rated) on days when subjects binged and purged. They subsequently suggested that the accompanying dysphoric mood states of bulimia nervosa are likely to be a secondary manifestation related to the presence of abnormal eating symptoms and do not constitute a primary depressive illness. Other evidence for this position comes from studies which have found that bulimics who showed a reduction in bulimic symptoms after treatment had significantly lower post-treatment levels of depression than bulimics showing little change in bulimic symptoms (Fairburn et al., 1985; Garner et al., 1990; Wilson, Rossiter, Kleinfield, & Lindholm, 1986). Some have even suggested that the symptom patterns in bulimic subjects with depression are different from those with major depression. Cooper & Fairburn (1986) compared these two groups and found bulimics to evidence fewer depressive symptoms (ie. suicidal thoughts, sadness, and sleep disturbance) and more frequent symptoms of obsessional neurosis and anxiety. These 'obsessional ideas and ruminations' invariably concerned food, eating, weight, or shape.

It is quite possible that a variety of relationship patterns exist between affective disorder and eating disorders (Swift, Andrews, & Barklage, 1986). The cognitive model of depression, as developed by Aaron Beck (1967, 1976; Beck et al., 1979) posit that

dysfunctional cognitive patterns play a key role in the development and maintenance of depressive symptoms. These cognitive distortions may lead to what Beck refers to as the “cognitive triad”: a negative view of the self, the world, and the future. Dysfunctional cognitions have also been implicated in the development and maintenance of eating-disordered behavior in those meeting diagnostic criteria for bulimia nervosa as well as those with subclinical eating-disordered behavior (Fairburn, 1985; Garner & Bemis, 1982; Johnson & Connors, 1987; Polivy & Herman, 1985; Powers et al., 1987). Johnson & Connors (1987) identified some of the more common cognitive distortions found in bulimics: dichotomous thinking, faulty attributions, personalization, magnification, filtering, overgeneralization, and magical thinking. Investigations of cognitive dysfunction’s in eating disorders has primarily focused on those relating to food, weight, and body image concerns. These studies have clearly distinguished between bulimic and control subjects (Steiger, Goldstein, Mongrain, & Van der Feen, 1990; Strauss & Ryan, 1988; Thompson, Berg, & Shatford, 1987).

Some have suggested that the association between dysfunctional cognitions and bulimia may simply reflect their shared variance with depression (Poulakis & Wertheim, 1993). The associations between bulimic symptoms and dysfunctional cognitions have been investigated in a number of studies by comparing bulimics and controls on a variety of measures. The most commonly used measures have been: the Dysfunctional Attitude Scale (DAS; Weissman, 1979) which assesses distorted attitudes related to depression according to Beck’s (1967) depression theory; the Attributional Style Questionnaire (ASQ; Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982) which assesses individuals attributions for successful and unsuccessful outcomes in hypothetical situations; and the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980) which measures the frequency of and degree of belief in 30 negative self-statements. Bulimics have consistently been found to score higher than controls on the DAS (Goebel, Spalthoff, Schulze, & Florin, 1989; Schlesier-Carter, Hamilton, O’Neil, Lydiard, &

Malcolm, 1989; Steiger et al., 1990) the ASQ (Goebel et al., 1989; Schlesier-Carter et al., 1989; Steiger et al., 1990) and on the (ATQ) (Schlesier-Carter et al., 1990). Nevertheless, in some of these studies (Goebel et al., 1989; Schlesier-Carter et al., 1989; Steiger, Fraenkel, & Leichner, 1989) when the variance due to depression was removed, the cognitive measures failed to relate significantly to bulimia. These results suggest that the maladaptive thinking reflects the level of depression. In other studies however, even when depression was controlled for statistically those with bulimia or bulimic tendencies scored higher on measures of cognitive disturbance (Steiger et al., 1990; Poulakis & Wetheim, 1993). These findings suggest that there is an association between dysfunctional cognitions and bulimia, which is at least partially independent of depression.

It may be that the cognitive distortions, evident in bulimia nervosa, which refer specifically to food, weight and body shape are a sufficient explanation for the association between bulimia and depression in some individuals. After all, the evaluation of body weight and shape often forms the only basis for the self-concept of women with bulimia nervosa (Striegel-Moore, Silberstein, & Rodin, 1986). This negative evaluation of body weight and shape may be generalized to a negative view of the person as a whole. In one study a significant association of “drive for thinness” with depression was found (Swift, Kalin, Wamboldt, Koslow & Ritholz, 1985). Furthermore, Laessle, Kittl, Fichter & Pirke (1988) found that four indices of cognitive distortions (negative body attitudes, body dissatisfaction, drive for thinness, perfectionism) explained about 45% of the variance in the depression score in their bulimic sample. Based on these findings they suggest that the role of cognitive distortions characteristic of patients with eating disorders is crucial for the development and maintenance of depressive symptoms in these patients.

The cognitive model can accommodate the possibility that depression may pre-date bulimia nervosa in some individuals, while in others depression may result as a consequence of the chaotic eating behaviors. As noted by Strober and Katz (1987) it is not altogether unexpected that eating disorders may arise in a subgroup of depressed

adolescents. The body dissatisfaction and maturity fears which are common for this age group, might be intensified along with the depression. Bulimia nervosa (or anorexia nervosa) may develop in these individuals and be reinforced by the enhanced sense of personal effectiveness they achieve through dietary restriction and weight loss which may act to temporarily defend them against depressive concerns (Strober & Katz, 1987). As theorized by Mizes (1985) bulimics have generalized beliefs which base self-esteem almost exclusively on approval from others and from performance accomplishments. Therefore, they seek to increase their self-esteem via approval from self and others for attaining a thin body. However since the interaction between dietary restraint and depression has been found to be a significant predictor of binge eating (Greenberg & Harvey, 1986) this will only serve to perpetuate the bulimic cycle.

It is important to consider the role of weight loss and of biological abnormalities due to starvation in the development and maintenance of depressive symptoms (Strober & Katz, 1987). In an earlier, and much referred to study (Keys, Brozek, Heuschel, Mickelson & Taylor, 1950) it was found that food-deprived subjects may develop a variety of depressive symptoms when they lose weight. Thus depressive symptoms may, in some cases, reflect a condition of malnutrition. Indeed metabolic and endocrine signs of starvation have been found not only in severely underweight anorexic patients, but also in normal weight patients suffering from bulimia (Pirke, Pahl, Schweiger, & Warnhoff, 1985). In this study both patient groups showed a similar degree of adaptation to starvation as expressed by various biological indicators which were not necessarily accompanied by low weight. A more recent study analyzed the relationship between depressive symptoms and starvation in anorexia nervosa and bulimia (Laessle, Schweiger & Pirke, 1988). They also reported that not only weight loss, but also weight-independent biological abnormalities due to malnutrition, may be related to depression in eating disorder patients. Furthermore, they found that starvation may be associated only with specific aspects of depressive symptomatology such as mood disturbance or

psychovegetative complaints rather than a global depressive syndrome (ie. cognitive or motivational signs of depression). The authors suggest that models linking depression and eating disorders should always consider the possible influence of starvation on the specific components of depressive symptomatology. Studies designed to monitor bulimic patients' nutritional status and mood over time would help resolve this question (Levy et al., 1989).

In conclusion, it is evident that there are complex reasons why people with eating disorders also develop depression in various forms. While the explanations range from biological to psychological the depression seems, in most but not all cases, to resolve with successful treatment focusing on the bulimia. Cooper & Fairburn (1986) note that "in the majority of cases of bulimia nervosa depressive and anxiety symptoms resolve in response to measures which enhance control over eating, although in a minority, antidepressant drugs are needed to treat a co-existing depressive disorder."

The Role of Physiology in Binge Eating

A large body of literature has accumulated that suggests that physiological factors play a role in the patterns of aberrant eating that are characteristic of bulimia nervosa. This has led to the development of numerous pharmacological interventions aimed at the target eating symptoms of binge eating and purging. While some success has been noted with these treatment approaches, long-term studies suggest that the maintenance of treatment effects is poor. Furthermore, side effects are common, and dependency is a concern. It has yet to be discovered whether neurochemical changes in bulimia nervosa precede, coincide with, or follow behavioral changes. Therefore it is difficult to assess what role they play in the etiology and maintenance of bulimia. The following is a review of two neurotransmitters which have received a great deal of attention since bulimia was first recognized as a distinct disorder in the DSM-III (APA, 1980).

Serotonin.

A discussion of bulimia nervosa that captures the complexity of the disorder necessitates the inclusion of the role of physiological factors. Of the neurotransmitters involved in the regulation of food intake, serotonin has received the most attention in terms of the pathophysiology of bulimia nervosa. In addition to the control of food intake, serotonin, or 5-hydroxytryptamine (5-HT) has been implicated in the regulation of circadian and seasonal rhythms, sexual behavior, pain, aggression, and mood disorders (Wallin & Rissanen, 1994).

Accumulating evidence suggests that binge eating may be partly the result of a decrease in the availability of serotonin. Central serotonin pathways, particularly involving the paraventricular nucleus of the hypothalamus, play a major role in mediating satiety (Blundell, 1992; Leibowitz, Weiss, Shor-Posner, 1988). Therefore if serotonergic responsiveness is decreased in individuals suffering from bulimia nervosa this might, at least partially, explain the binge eating behavior in addition to the dysphoric mood that so often coexists with bulimia. However, as noted by others (Jimerson, Lesem, Kaye, & Brewerton, 1992) cause-and effect relationships between abnormal eating behavior and altered central neurochemistry is likely to be complex and as such has yet to be fully understood.

The synthesis of 5-HT depends on the dietary supply of the precursor amino acid tryptophan (TRP). The relationship between dietary and brain serotonin also depends on circulating levels of insulin, free fatty acids, and the ratio of tryptophan to other plasma neutral amino acids with which it competes for uptake into the brain (Fernstrom & Wurtman, 1972; Garfinkel & Coscian, 1982). High carbohydrate, low protein diets have been found to elevate plasma tryptophan, in experiments with volunteers, while low carbohydrate, high protein diets may lower it (Wurtman, 1983). In a recent study, bulimic subjects following tryptophan depletion, were found to have a significant increase in

anxiety, indecisiveness, overreactivity, and fear of being fat with a trend toward increased depression and fatigue (Weltzin, Fernstrom, McConaha, & Kaye, 1994). Some researchers have suggested that binge eating may represent an attempt to “self-medicate” in an effort to increase the serotonin levels via nutritional means (Wurtman, 1983; Wurtman & Wurtman, 1984).

Studies of the major serotonin metabolite 5-hydroxyindoleacetic acid (5-HIAA) in cerebrospinal fluid provided evidence for decreased CNS serotonin activity in those with bulimia. In an earlier study (Kaye, Ebert, Gwirtsman, & Weiss, 1984) researchers reported that in their sample of anorexic patients who were weight recovered, 5-HIAA levels were lower in those who were bulimic than in those who were not. Others have also noted that more severely symptomatic bulimics (ie. those with a history of binge eating twice a day) had lower CSF 5-HIAA levels than less symptomatic patients (Jimerson et al., 1992; Jimerson et al., 1988).

Research with animals has indicated that carbohydrate ingestion, by stimulating insulin secretion and amino acid utilization in non-CNS tissue, raises the ratio of tryptophan to other LNAAs and could thereby produce an increased release of 5-HT (Fernstrom & Faller, 1978). Researchers have therefore measured the plasma T/LNAA ratio in normal and bulimic subjects to determine if differences existed between them, following various nutritional manipulations. Some studies have found abnormally low postprandial T/LNAA ratios in their patients (Schweiger et al., 1987). It has also been reported that bulimic patients experiencing less satiety after a large binge meal tended to have relatively smaller increases in the T/LNAA ratio than other patients (Kaye et al., 1988). In contrast, others have found no differences between the T/LNAA ratios in bulimic subjects and normal controls after fasting, (Blouin et al., 1993; Lydiard et al., 1988), following a glucose challenge (Blouin et al., 1993) or following an oral carbohydrate load (Turner et al., 1991).

In obese, diabetic subjects, abnormal glucose metabolism has been associated with low baseline values for plasma T/LNAA ratios (Ashley et al., 1985). Since insulin resistance could contribute to low T/LNAA ratios (Wurtman and Wurtman, 1984) several studies have examined insulin and glucose responses to various manipulations in bulimic patients. These studies have also produced contradictory data. In a number of studies no significant differences between the bulimic and normal control subjects have been found in serum glucose and/or insulin concentrations following fasting or an oral carbohydrate or i.v. glucose challenge (Blouin et al., 1993; Hohlstein et al., 1986; Mitchell and Bantle, 1983; Turner et al., 1991). Some researchers have reported significantly elevated fasting serum glucose and insulin concentrations in bulimics (Pijl et al., 1995) while others (Schweiger et al., 1987) have revealed elevations in response to a test meal in bulimic patients. Of particular interest in light of these findings, is that the research group reporting low postprandial T/LNAA ratios in bulimia (Schweiger et al., 1987) also observed abnormal glucose tolerance test (GTT) results, suggesting that insulin resistance may have been a problem in their sample of bulimic patients. As noted by Blouin et al. (1993), the inconsistencies in the studies which have examined carbohydrate metabolism in bulimic and normal control subjects appears to depend on the nature of the challenge presented (i.e., oral versus intravenous, and mixed food versus pure carbohydrate) as well as the extent to which the patients have endured recent intermittent starvation or past chronic starvation.

Following the administration of a serotonin agonist, the magnitude of the increase in plasma prolactin (a pituitary hormone) level provides a measure of functional activity in hypothalamic serotonin pathways (Murphy, Mueller, Garrick, & Aulakh, 1986). Prolactin responses to the serotonin receptor agonist m-chlorophenylpiperazine (m-CPP) have been found to be blunted in bulimia anorexics (Brewerton et al., 1987) as well as normal weight bulimics (Brewerton, Brandt, Lesem, Murphy, & Jimerson, 1990).

Further evidence for the role of serotonin in bulimia and binge eating comes from the results of studies which have used serotonergic drugs like fluoxetine and fenfluramine and found them to be effective in controlling bulimic episodes and binge eating. In a recent study, fluoxetine, a serotonin re-uptake inhibitor was found to be significantly superior to placebo in reducing binge eating, vomiting, and carbohydrate craving (Hoffman & Halmi, 1993). This placebo controlled, double-blind study, involved a large sample (387 bulimic women meeting DSM-III-R criteria) and represented a collaboration between several treatment centers. Of particular importance is the fact that very few patients discontinued the study because of side effects.

Fenfluramine is another medication that promotes serotonin activity and has been primarily used as an anorexiant among the obese (Blouin, Blouin et al., 1988). In an earlier study the effectiveness of fenfluramine vs. placebo in suppressing eating was investigated in fifteen normal weight bulimics (Robinson, Checkly, & Russell, 1985). Significantly less food was eaten following fenfluramine, and the quantity eaten was inversely correlated with serum drug levels. The effectiveness of fenfluramine in reducing binge eating and vomiting frequency was investigated in another study by comparing it to desipramine, a tricyclic antidepressant (Blouin, Blouin et al., 1988). A greater proportion of patients responded to fenfluramine than to desipramine, although both drugs had a beneficial effect on bingeing and vomiting frequency. While these studies offer strong support for the effectiveness of fenfluramine in alleviating bulimic symptomatology its usefulness may be limited by the common side effects which include headaches, an initial weight loss, and the possibility of dependence (Hoffman & Halmi, 1993).

While the evidence is clearly suggestive of a relationship between serotonergic activity and bulimia nervosa; the exact nature of the relationship is not yet clear. The link between abnormalities in peripheral factors (i.e. blood levels of glucose, insulin, or tryptophan/LNAA) and central serotonin activity is not yet fully understood. Defects, other than those originating in the periphery, such as disturbed tryptophan transport across the

blood-brain barrier, 5-HT synthesis defects, or 5-HT receptor defects might explain much of the data (Pijl et al., 1995).

Endorphins.

Brain endogenous opiates are one of the many classes of neurotransmitters involved in the control of eating. Evidence suggests that several central opiates play a critical role in the regulation of meal size and frequency in experimental animals (Fullerton, Getto, Swift & Carlson, 1985; Morley, 1981,1983; Morley & Levine, 1982; Olson, Olson & Kastin, 1985; Reid, 1985).

One particular endogenous opiate, beta-endorphin, has been found to be elevated in bulimics who vomit (Fullerton, Swift, Getto, Carlson, & Gutzmann, 1988). It was hypothesized that this elevation in plasma levels of beta-endorphin may be linked to the stress of vomiting, since a group of bulimics who engaged only in binge eating had plasma beta-endorphin levels similar to controls. Indeed, beta-endorphin has been found associated with a wide range of stressful situations, both physical such as exercise or labor, and psychological such as anticipation of an unpleasant event.

Numerous studies have found that plasma beta-endorphin levels are significantly elevated over resting levels following exercise (Carr et al., 1981; Goldfarb, Hatfield, Sforzo, & Flynn, 1987; Hatfield, Bradley, Goldfarb, Sforzo, & Flynn, 1987; Olson et al., 1985; Oltras, Mora, & Vives, 1987) and this effect is augmented by training (Carr et al., 1981). It has been suggested that this increase in beta-endorphin in the blood of runners is responsible for a feeling of euphoria commonly referred to as a "runner's high". It has even been suggested that binge eating may provide a high or euphoric feeling (Leon et al., 1985). In a case report, a 34 year old male patient was found to attribute bulimic episodes to efforts at inducing euphoria (Abraham & Joseph, 1987). The patient reported that vomiting was associated with drops in depression and anxiety. The authors hypothesized that in some bulimics, the disorder arises by virtue of an addiction to one's

own internally released opioid peptides. However this is at odds with the fact that the opioid peptides are too large to pass through the blood-brain barrier. The possibility that the body has developed a method of "smuggling" endorphins across the blood-brain barrier during periods of stress has been suggested (Davis, 1984) since researchers have discovered a way to smuggle drugs across the blood-brain barrier and into the brain (Science News, 1982).

Increased levels of beta-endorphin have also been found to be associated with stresses that are truly psychological such as the fear of impending pain or performance testing (Millan, 1981; Mutto, Ferroni, Vescovi, & Bottazzi, 1989; Oltras et al., 1987). In a recent study (Mutto et al.) subjects underwent a computerbased performance evaluation. The last test that was conducted was designed to cause moderate, acute psychological stress. It was found that compared to baseline levels, both serum adrenocorticotrophic hormone (ACTH) and beta-endorphins were increased after psychological testing in all subjects. The authors concluded that serum ACTH and beta-endorphins are reliable indicators of acute psychological stress.

A wide variety of so-called stressors have been used in experiments on animals and have been found to increase plasma levels of beta-endorphin. These stressors have included surgery (Fell & Shutt, 1989), shock (Hulse & Coleman, 1984), immobilization (Forman & Estilow, 1988) and swimming (Lim, Smith, Clements, & Funder, 1984). Nevertheless, obviously some difficulty arises when we try to fully define stress. The induction of stress in animals is undoubtedly different from the stress experienced by humans. More studies need to be conducted on humans to determine whether the release of beta-endorphins is an organic response to stress. Since it has been suggested that the onset of bulimic behavior tends to be precipitated by a traumatic event (Morley, Levine & Rowland, 1983) the relationship between stress and beta-endorphin may be of particular relevance in our understanding of bulimic behavior.

Stress has also been found to increase eating in experimental animals (Antelman & Szechtman, 1975; Lowy, Maickel, Yim, 1980; Morley & Levine, 1980). Furthermore, experimental conditions (such as the administration of naloxone, an opiate antagonist) which block the release of beta-endorphin have been shown to decrease this stress-induced hyperphagia (Levine, Morley, Wilcox, Brown, Handwerger, 1982; Lowy, Maickel, Yim, 1980; Morley & Levine, 1980). Although a number of studies have suggested that stress-induced feeding is present in humans, convincing experiments have been difficult to design and the literature is ambiguous often yielding results of marginal significance (Morley, Levine, Rowland, 1983). One study found that feeding responses to stress in humans are variable, with 46% increasing eating when stressed and 48% decreasing food intake (Willenbring, Levine, & Morley, 1986).

It is also possible that binge eating results in elevated plasma beta-endorphin. Fullerton et al. (1988) have suggested this as an alternative explanation of their findings of elevated beta-endorphin levels in bulimics who vomit. They found that the vomiting bulimics had more frequent binge episodes (in fact they had twice as many binge episodes as the non-vomiting group) and suggested that they may have ate more during their binges. In rats, periods of increased eating have been found to be accompanied by significant elevations in plasma beta-endorphin (Davis, Lowy, Yim, Lamb, & Malven, 1983). Similarly, rats made obese by prolonged eating of highly palatable foods rich in sugar also had elevated pituitary beta-endorphin (Gunion & Peters, 1981). Further evidence comes from studies which have found that the pituitaries of genetically obese mice and rats contained increased quantities of beta-endorphin (Deutch & Martin, 1983; Garthwaite, Mortinson, Tseng, Hagen, & Menahan, 1980; Gibson, Liotta, & Krieger, 1981; Margules, Moisset, Lewis, Shibuya, & Pert, 1978). Finally, beta-endorphin when injected into the brain stimulates eating (Leibowitz & Hor, 1980; 1982; McKay, Kennedy, Edens, Williams, & Woods, 1981).

There are conflicting reports on the effects of opiate antagonists on obese humans and eating behaviors. Food intake was decreased by an intravenous infusion of 15 mg. of naloxone in saline in obese subjects but not in lean subjects. However a 2 mg. infusion of naloxone in obese subjects showed no effect (Atkinson, 1982). Thompson, Welle, Lilavivat, Penicaud, and Campbell (1982) have shown that the induced ingestion of a liquid diet in normal volunteers can be reduced by 26% with the administration naloxone. A nonsignificant reduction in food intake was found in 12 normal weight subjects who were administered a 0.8 mg naloxone infusion, while a 1.6 mg infusion resulted in a significant reduction in food intake (Trenchard & Silverstone, 1983). Cohen, Cohen, and Pickar (1985) demonstrated that an infusion of 2 mg per kg of naloxone significantly reduced total food intake in seven normal volunteers. Finally, using the long-acting opiate antagonist nalmifene, Billington et al. (1985) found that food intake could be reduced for up to 26 hours after drug administration, with a preferential reduction in fat intake.

The use of chronic antagonism of endogenous opioid receptors has been investigated in individuals with obesity. Atkinson et al. (1985) studied the effects of naltrexone therapy for weight loss in 60 obese subjects. Subjects received placebo, 50 mg. of naltrexone, or 100 mg. of naltrexone for a period of eight weeks. Weight changes for the combined populations of men and women revealed no significant weight loss during the eight weeks of therapy. However, when weight changes were analyzed separately for the men and women it was found that the women lost a significant amount of weight. A dose-response relationship however was not found. A placebo-controlled, double-blind trial of naltrexone in obese males was reported by Mitchell et al. (1987). They chose high dose therapy (300mg/day) in an attempt to maximize the likelihood of effective opioid blockade. No significant differences were found in the amount of weight lost between the placebo and the active drug group. Furthermore, the study was terminated prematurely because of the development of liver toxicity in several subjects. Similarly, Maggio et al. (1985) studied the effects of an inpatient trial of naltrexone in eight obese men and

concluded after a 28 day trial, that the naltrexone administration was relatively ineffective in inducing weight loss in obese males. Similarly, Malcolm et al. (1985) found no effect on weight loss using 200 mg/day of naltrexone or placebo in an eight week trial involving 27 females and 14 males.

Therefore although these studies do suggest that opiates may play a role in human eating and obesity, there are conflicting reports of the effects of opiate antagonists. Although naloxone has been found to block several types of opiate receptors it may have pharmacological actions unrelated to opiate receptor blockage. It is not yet fully understood whether the anorexic effect of opiate antagonists is entirely due to opiate receptor blockade, which endogenous opiates are involved and how they act (Fullerton et al., 1985). Furthermore, it is unclear if there is a difference in response to opiate antagonists in obese and lean subjects and which opiate receptors are blocked (Fullerton et al., 1985). It should be noted that while animal studies have shown that the kappa opioid receptor plays a particularly important role in the stimulation of appetite (Morley et al., 1982), naltrexone and naloxone have been reported to be poor kappa receptor antagonists (Mitchell & Morley, 1987). The results suggest that chronic antagonism of endogenous opioid receptors may not be useful as a weight control technique. However, it is possible that more specific kappa antagonists may be useful as appetite suppressants in overweight individuals.

Several studies have been designed to evaluate the efficacy of opiate antagonists in the treatment of bulimia nervosa. The effects of naloxone on binge eating behavior was investigated in five female volunteers of normal weight who were actively binge-eating and self-inducing vomiting at a minimum frequency of once a day for several months prior to admission (Mitchell et al., 1986). Subjects were instructed that they would be allowed one binge-eating episode each day and each selected a predetermined time for initiating each binge-eating episode. All drugs were administered intravenously and double-blind in a randomly determined sequence during four of the five days in hospital. On two days,

subjects received placebo; on one day, naloxone; and on one day, cholecystokinin (because of its possible role as a satiety factor). The investigators found that the naloxone drug administration episode was the episode of lowest food intake for four of the five subjects. In another study, Jonas & Gold (1986) conducted of an open-label trial of naltrexone in five bulimic women. Naltrexone was found to be successful in that it caused significant reductions in the number of days the subjects binged and purged, as well as the duration of their binge episodes over the six week period.

It has also been suggested that endogenous opiate activity promotes eating by enhancing the reward value of food (Fullerton et al., 1985; Morley, 1987). The positive reinforcing or rewarding effects of food stimuli sustain eating once a meal has been initiated. It follows then that the normal rewarding effect of food may be disturbed in patients with eating disorders. Research on the control of initiation, on the maintenance and positive reinforcing effect of food, and on the termination of eating have immediate relevance to eating disordered patients (Halmi, Ackerman, Gibbs, & Smith, 1987). The fact that the hypothalamic centers that mediate feeding and satiety also mediate reward and aversion makes this hypothesis all the more plausible.

Mandenoff, Fumeron, Apfelbaum, and Margules (1982) proposed that the endogenous opiate system is not necessary for the control of eating in a predictable environment as with a monotonous diet, but that it becomes active with stress, fasting, and consumption of highly palatable foods. This would help to explain why endorphins have been found to be elevated not only in bulimics, but also in those suffering from anorexia nervosa. One study found that opioid activity was increased in the emaciated state and returned to normal with weight recovery (Kaye et al., 1984). Furthermore, intravenous naloxone infusion in 12 subjects with anorexia nervosa over a period of five weeks resulted in significant weight gain (Moore, Mills, & Forster, 1981). Yet the opiate antagonist naltrexone was also found to be successful in reducing bulimic symptoms (Jonas & Gold, 1986). Sanger & McCarthy (1980) reported that when rats are

administered opiates while on a restrictive diet they demonstrate a decrease, rather than an increase, in appetite. It has been suggested that perhaps the reaction to endorphins is biphasic (Yates, 1991). According to this hypothesis, when anorexic women initially restrict their food intake the endorphins increase and they experience a ravenous appetite, but once they become emaciated the increase in endorphins causes a decrease in appetite. Also, it is of particular interest that it has been found that naloxone reduces food intake without altering the perception of satiety or fullness (Thompson et al., 1982).

While research to date suggests that endogenous opioid peptides may play a role in the pathophysiology of eating disorders, the evidence is incomplete and difficult to interpret. Further studies are needed to determine if opiate blockers may be of value in treating some individuals with eating disorders as well as determining if plasma levels of beta-endorphin can predict this response.

In conclusion, while the neurochemistry of eating in general and bulimia nervosa in particular has been studied extensively, it is complex and not yet fully understood. Given the inconsistencies in the findings and the potential for side effects it seems that, at least for the present, less invasive forms of treatment would be more desirable.

Treatment Outcome in Bulimia

A considerable body of research has been generated on the treatment of bulimia nervosa over the last decade. This research has been focused primarily on psychological and pharmacological approaches to the treatment of this disorder. The available studies suggest that significant progress is being made in terms of developing effective treatments for bulimia nervosa (Mitchell, 1991). The psychological treatment most supported by research is a cognitive behavioral therapy (CBT) which has been designed specifically for this disorder (Fairburn, 1988). A number of recent studies have found cognitive behavioral therapy to be superior to behavioral therapy alone (Fairburn et al., 1991; Thackwray, Smith, Bodfish, & Meyers, 1993), to a nondirective support group (Kirkley, Schneider,

Agras, et al., 1985), and to short-term focal psychotherapy (Fairburn, Kirk, O'Connor & Cooper, 1986). The effects of exposure and response prevention have been variable (Agras, Schneider, Arnow, & Bachman, 1989; Leitenberg, Rosen, Gross, Nudelman, & Vara, 1988; Wilson et al., 1986).

In a number of studies, drug treatment has been proven effective in reducing the number of binge and purge episodes as well as reducing depression. In a double-blind study (Pope, Hudson, Jonas & Yurgelun-Todd, 1983) bulimics receiving the tricyclic antidepressant imipramine had significantly greater reduction in binge frequency and depression, as measured by the Hamilton Rating Scale for Depression, than those receiving a placebo. At a one to eight month follow-up 90% continued to report a moderate or marked reduction in binge eating and 35% ceased binge eating completely. In this study reduction in binge eating was correlated with changes in Hamilton depression ratings. In another study using imipramine (Agras et al., 1987), binge and purge behavior was reduced significantly more with the drug than with a placebo. Furthermore the imipramine treated subjects experienced a significantly greater reduction in Beck Depression Inventory ratings than did the patients taking placebo. This study found no relationship between level of depression and outcome.

In a double-blind study, Walsh et al. (1985) found that bulimic patients treated with phenelzine, a monoamine oxidase inhibitor, had significantly fewer binge episodes per week and were more likely to have totally ceased bingeing by the end of treatment than the control group. Those receiving the active drug also had significantly lower scores on the Eating Attitudes Test, and levels of depression than those who received the placebo. Similar findings were reported in another well-controlled study using the monoamine oxidase inhibitor, isocarboxazid. In this study (Kennedy et al., 1986) bulimic patients receiving the active drug had significantly greater reductions in binge eating, purging, severity of depression (as measured by the Hamilton and Beck scales), and Eating Attitudes Test scores than those receiving the placebo. Unfortunately in both of these

studies significant adverse side effects were reported and almost a third of patients receiving phenelzine were unable to complete the trial.

In a double-blind study using desipramine, a tricyclic antidepressant (Hughes et al., 1986) bulimic patients decreased their number of binges per week by 91% a benefit which persisted at a one month follow-up. On the otherhand, placebo-treated bulimic patients had 19% more binges per week than at the beginning of the study. When placebo nonresponders were crossed over to treatment with desipramine they decreased their binge eating by 84%. Furthermore, a significantly greater reduction in severity of depression, as measured by the Zung scale, was noted in patients taking the active drug compared with those taking the placebo. In another study using desipramine in a crossover design, a significant reduction (43.9%) in bingeing was reported in the group taking the active drug compared to the placebo (Barlow et al., 1988). This study further demonstrated that desipramine's antibulimic effects were not associated with an alleviation of depressive symptoms in bulimia. The authors point out that although this is a somewhat less impressive finding than that of Hughes et al. (1986) it is likely that the more moderate dose of 150mg/day is responsible, since those in the Hughes study received a dose of 200mg/day.

Blouin, Blouin, Perez, and Barlow (1987) sought to identify variables useful for predicting a positive response to desipramine, amongst bulimic subjects. Using a randomized double-blind crossover design subjects received either drug or placebo for 6 weeks and were then crossed over after a 3 week washout period. Desipramine proved to be significantly more effective than placebo in reducing the frequency of weekly bingeing and vomiting. Seven subjects were identified as responders, in terms of reduction in binge frequency. These subjects differed from the borderline responders and the non-responders by having lower Eating Disorder Inventory scores (EDI) and a higher frequency of purging episodes. Desipramine however, had no effect on depressive symptomatology (as measured by the SCL-90 and the POMS). Of particular interest is that fact that the bulimia responders

were no more likely to be depression "responders" than were the bulimic non-responders. These findings support the hypothesis that antibulimic and antidepressant effects of desipramine are mediated through different mechanisms.

Although tricyclic antidepressants and MAOIs have been found to be helpful with bulimic patients, their use is limited by their side effects and, in the case of MAOIs, mandatory dietary restrictions (Hoffman & Halmi, 1993). In the quest for an antidepressant which has fewer side effects but equal efficacy in bulimia nervosa the most encouraging results have been found with fluoxetine, a serotonin re-uptake inhibitor (Hoffman & Halmi, 1993). In a large (387 bulimics meeting DSM-III-R criteria) double-blind trial of fluoxetine, patients were randomized to receive one of two dose levels of fluoxetine (20 mg or 60 mg) or placebo. Fluoxetine at the higher dose was significantly superior to placebo in reducing binge eating and vomiting as well as depression and carbohydrate craving. The lower dose of fluoxetine significantly reduced vomiting episodes when compared to placebo, but not bingeing. Of particular importance is the fact that very few patients discontinued the study because of side effects. While further research is needed to determine the mechanisms of action of antidepressants on bulimic symptomatology, it has been suggested that enhancement of the serotonergic system might explain the efficacy of fluoxetine (Hoffman & Halmi, 1993).

Fenfluramine is another psychopharmacological agent, that promotes serotonin activity and has been found to be effective in treating bulimia. In one study fenfluramine was compared to desipramine in a double-blind placebo controlled, crossover design (Blouin, Blouin et al., 1988). Both drugs had a beneficial effect on bingeing and vomiting frequency in addition to reducing depression and the urge to binge, although a greater proportion of patients responded to fenfluramine than to desipramine. The effect of fenfluramine on depressive symptoms was unexpected. Fenfluramine has been primarily used as an anorexiant among the obese (Blouin, Blouin et al., 1988). The usefulness of fenfluramine may be limited by some of its common side effects which include headaches,

an initial weight loss, and the possibility of dependence (Hoffman & Halmi, 1993).

Other studies have raised questions about the efficacy of treatment with antidepressants in a bulimic population. In one study it was found that eating attitudes and behaviors as well as mental state (anxiety and depression) improved for all subjects (placebo and drug) during an eight-week follow-up (Sabine et al., 1983). There was no indication that medication by mianserin altered this rate of improvement. The authors noted that the general overall improvement in the patients seemed to be associated with regular contact with a psychiatrist interested in their condition and progress. Evidently, entry into the trial represented for many of them a first attempt to seek help for their condition. Similarly, Mitchell & Groat (1984) found no improvement for a group receiving amitriptyline, although both medication and placebo groups showed substantial improvement over the 10 week duration of the study. The authors credit the use of self-monitoring and reinforcement for the improvement noted in both groups.

Although much of the data indicate that antidepressants can be useful in treating bulimia there is no evidence as to which antidepressant will work with which patient (Hoffman & Halmi, 1993). Furthermore, the question of how long to continue antidepressant therapy has yet to be established. In a follow-up study (Pope, Hudson, Jonas & Yurgelun-Todd, 1985) 11 of 20 original patients were followed during a period of more than 2 years. While eight patients were in complete remission from their bulimic symptoms, only three were able to successfully discontinue their medication. The remaining five patients experienced a recurrence of bulimia when they stopped taking imipramine. Generally the findings of the few longer-term studies of the effects of antidepressant drugs suggests that the maintenance of treatment effects is poor (Pyle et al., 1990; Pope, Hudson et al., 1985; Walsh et al., 1991) whereas research has shown that improvements endure for at least the first year following CBT (Agras et al., 1994; Fairburn, Kirk et al., 1986; Fairburn, Jones et al., 1993; Wilson et al., 1986).

Few studies have compared drug treatment to psychological treatment. In the first of these studies CBT was compared to treatment with imipramine hydrochloride (Mitchell et al., 1990). Subjects were randomly assigned to one of four treatment cells: 1) imipramine hydrochloride treatment, 2) placebo treatment, 3) imipramine treatment combined with intensive group psychotherapy, and 4) placebo treatment combined with intensive group psychotherapy. All active treatment cells resulted in a significant improvement in binge and purge frequency as well as mood relative to placebo treatment. It was found that the addition of antidepressant treatment to intensive group psychotherapy did not significantly improve outcome over intensive group psychotherapy combined with placebo in terms of target eating behavior, but did in terms of depression and anxiety. Of interest was the finding that antidepressant treatment alone and group therapy plus placebo were equally effective on measures of mood, anxiety, and global improvement. It is important to note however that those taking the active drug were more likely to drop out of treatment. This suggests a high rate of intolerance of side effects.

Despite these positive findings, they are short-term findings and the more important question is the relative efficacy of these treatments over time. To this end, the outcome 1-year posttreatment was examined in a study comparing desipramine alone, cognitive-behavioral therapy, and their combination in the treatment of bulimia nervosa (Agras et al., 1994). At 1-year follow-up both the combined treatment and CBT alone were superior to desipramine in reducing binge eating. The greatest gains in terms of reducing the psychopathology associated with bulimia nervosa, including emotionally driven eating and dietary restraint, were found with the combined treatment

While the treatment of bulimia have included both group and individual approaches, there is not yet a clear winner in this respect (Mitchell, 1991). Although numerous studies have investigated the impact of group treatment in bulimia there has been little consistency in the findings. A group approach to the treatment of bulimia has been strongly advocated because it provides the ingredients that are considered crucial to successful intervention:

social support, the presence of knowledgeable peers, the breaking of secrecy, the sharing of shame, reality testing with the peers by testing unrealistic beliefs and expectations, and learning, in an interpersonal context, to express affect (Oesterheld, McKenna, & Gould, 1987). From a practical point of view, group intervention is also more cost effective than individual therapy.

Individual therapy has been found to be superior to group in a few studies and this has been primarily due to a higher drop-out rate in the group formats (Freeman, Sinclair, Turnbull, & Annandale, 1985; Freeman, Barry, Dunkeld-Turnbull, & Henderson, 1988; Garner et al., 1987). Some have reported that the dropout rate for studies employing a group format is more than twice as high as for those using individual therapy (Freeman et al., 1985; Garner et al., 1987). Freeman et al. (1988) reported that patients have also expressed more dissatisfaction with group treatment. Nevertheless, it has been recommended to begin treatment of all bulimics with an initial time-limited group (Brotman, Alonso, & Herzog, 1985; Connor, Johnson, & Stuckey, 1984). In the first cost-effectiveness study to be reported it was found that a brief (five sessions) psychoeducational group program was as effective as a longer course of CBT for the healthiest 25-45% of the sample (Olmsted et al., 1991).

Zimpfer (1990) reviewed 31 outcome studies that specifically addressed the efficacy of group treatment in bulimia. The studies reviewed included various types of group interventions including: cognitive/behavioural, psychodynamic, psychoeducational, behavioural, pharmacological, and unspecified. The duration of the treatment programs also varied from one weekend to 16 weeks, with one treatment protocol running for 3 years. In every study, regardless of the specific treatment involved, binge/purge behaviour was reduced or eliminated at a significant level among the group participants. In those studies that also included body image and depression as outcome measures, improvement on these dimensions was also noted. Nevertheless, the heterogeneity of the participants across studies, numerous appraisal instruments, varied entrance criteria, and different

settings for treatment make stringent comparisons among the 31 studies impossible (Zimpfer, 1990). In many cases, the small sample sizes reduce the generalizability of the findings and in several cases the inappropriate use of statistical methods of treatment comparison reduce the credibility of the findings (Zimpfer, 1990).

While the findings about the effectiveness of group treatment are encouraging, much remains to be done to determine which are the crucial treatment components for which clients. A recent study compared the effectiveness of cognitive behavior therapy (CBT), behavior therapy (BT), and interpersonal therapy (IPT) (Fairburn et al., 1991). Two key questions were addressed by this study. The first was whether the effects of CBT result from specific techniques that characterize this particular therapeutic modality or whether they can be attributed to more general factors common to many psychological treatments. The second question was whether a simplified and exclusively behavioral version of CBT would be as effective as the full treatment. Findings indicated that cognitive behavior therapy was more effective than interpersonal psychotherapy in modifying the disturbed attitudes to weight and shape, extreme attempts to diet, and self-induced vomiting. Cognitive behavior therapy was more effective than behavior therapy in modifying the disturbed attitudes to shape and weight and extreme dieting, but was equivalent in other respects. These findings led these authors to conclude that CBT operates through mechanisms specific to this treatment and is superior to both BT and IPT. However a follow-up study, which was conducted to investigate the longer-term effects of the three treatment modalities, found that patients in the CBT and IPT treatments made equivalent, substantial and lasting changes across all areas of symptoms (Fairburn, Jones, et al., 1993). These authors conclude, based on these findings, that bulimia nervosa may be treated successfully without focusing directly on the patient's eating habits and attitudes to shape and weight. Other researchers have also found no advantage to adding cognitive elements to the behavioural components of treatment (Freeman et al., 1988).

In summary, while significant progress is being made in terms of developing effective treatments for bulimia nervosa (Mitchell, 1991) evidence suggests that bulimia nervosa tends to run a chronic course and patients typically do not seek treatment until they have experienced years of symptoms (Herzog, Keller, Lavori, & Sacks, 1991). Furthermore, relapse is common in bulimia. Keller, Herzog, Lavori, Bradburn, & Mahoney (1992) reported that over 60% of patients fully remitted from bulimic symptoms following treatment may relapse into regular bulimic behaviors within roughly 18 months. Another recent study reported a relapse rate of 31% in a 2-year follow-up period (Olmsted, Kaplan, & Rockert, 1994). Bulimia is generally recognized as a disorder which has behavioral, affective, cognitive and physiological components. What is yet to be discovered is which are the crucial treatment components for which patients (Zimpfer, 1990). Further research should investigate the mechanisms by which interpersonal psychotherapy produces changes in disordered eating habits and attitudes.

Personality Disorders and Treatment Outcome in Axis I disorders

According to several review articles, an adverse impact of personality pathology on treatment outcome is evident in a wide range of axis I disorders (Reich & Green, 1991; Reich & Vasile, 1993). These include mood, anxiety, and substance abuse disorders. A number of methodological issues makes it difficult to draw any general conclusions from these studies, these include: the range of axis I disorders and personality disorders studied; the use of different diagnostic instruments for the assessment of personality disorders; the nomenclature used (i.e. DSM-III vs. DSM-III-R); the fact that many of these studies have used small sample sizes; the variety of outcome measures employed, and the various approaches used to deal with the issue of overlap of personality disorders or personality disorder clusters.

From a cognitive perspective, the presence of an axis I disorder, especially mood and anxiety disorders, in personality disordered individuals results in the individual

temporarily losing the ability to reality-test their dysfunctional beliefs (Beck, 1990). According to this perspective, the negative beliefs that individuals held prior to developing depression or anxiety become much more plausible and pervasive, dominating their feelings and behavior. Therefore when these patients present for treatment it is often with complaints of depression or anxiety and they are often unaware of their personality problems (Freeman & Pretzer, 1990). Indeed the rate of personality disorders in clinical populations is about 30-50%, much higher than the estimated 15% in the general population (Gunderson, 1988).

A number of studies have investigated the impact of personality disorder psychopathology on the outcome of treatment for major depression. In the largest of these, the relationship between personality disorders and treatment outcome was investigated in 239 outpatients with major depressive disorder (Shea et al., 1990). Patients were randomly assigned to one of four different 16-week treatment programs. Subjects with personality disorders showed significantly less improvement in social functioning and were significantly more likely to have residual symptoms of depression compared to those without personality disorders. There were no significant differences in mean depression scores or work functioning at treatment termination. Of particular interest was the finding that subjects with personality disorders tended to improve more with cognitive-behavioral therapy, while subjects without personality disorders did better in other treatments (interpersonal therapy, clinical management plus imipramine or placebo). Several earlier studies which investigated treatment response to imipramine in outpatients with recurrent unipolar depression also reported poorer outcome for those with a comorbid personality disorder, particularly one from the anxious cluster (Frank, Kupfer, Jacob, & Jarrett, 1987; Pilkonas & Frank, 1988).

Many of the studies investigating recovery from major depression have noted that impaired social adjustment differentiates those with comorbid personality disorders from those without (Casey & Butler, 1995; Casey, Meagher, & Butler, 1996; Reich, 1990a;

Shea et al., 1990). In one of these studies the course of social recovery following treatment with electroconvulsive therapy (ECT) was investigated in 40 inpatients with major depression (Casey, Meagher, Butler, 1996). Subjects were assessed while receiving inpatient ECT, at the time of discharge, every 6 weeks for 6 months, and at 1 year after discharge. Results demonstrate that personality is a predictor of social function at the time of discharge from hospital. Social recovery was found to be slower in those patients with personality disorders than in those without personality disorders. Nevertheless, personality status did not appear to impact the rate of symptomatic recovery or of readmission.

Some investigators have evaluated whether there is a specific personality disorder or personality disorder cluster associated with poor outcome following short-term treatment of major depression (Sato, Sakado, & Sato, 1993). According to their findings, the presence of any personality disorder significantly worsened the 4-month outcome. The results of a discriminant function analysis, conducted to identify a specific personality disorder or personality disorder cluster that influenced the outcome, found that the number of personality disorders from only cluster A (paranoid, schizoid, schizotypal, passive-aggressive) and the number of criteria met for only schizoid personality disorder were significantly correlated with the 4-month outcome of depression.

These findings are in contrast to other studies which have reported that personality disorder did not influence the response to treatment for depression when response was defined by the depression score at discharge (Mellman et al., 1992; Shea et al., 1990; Zimmerman et al., 1986). Nevertheless, studies that have investigated the long-term outcome of depressed inpatients have reported a poorer outcome for those patients with a comorbid personality disorder (Pfohl et al., 1984; Zimmerman et al., 1986) even when no short-term differences were evident (Zimmerman et al., 1986).

Similar findings have been reported in terms of treatment outcome for anxiety disorders. Results of a recent study which examined patterns of comorbidity of anxiety

disorders and personality disorders revealed that panic disorder is associated with borderline, avoidant, and dependent personality disorders; social phobia is associated with avoidant personality disorder; and obsessive-compulsive disorder is associated with obsessive-compulsive and avoidant personality disorder (Skodol et al., 1995). In a study of the cognitive-behavioral treatment of social phobia (Turner, 1987) it was found that those without a personality disorder diagnoses improved considerably following a 15-week group treatment, while those with personality disorder diagnoses failed to show improvement. In another study (Turner, Beidel, Borden, Stanley, & Jacob, 1991) the presence of Axis I and Axis II disorders was examined in 71 social phobic patients. Avoidant personality disorder and obsessive-compulsive personality disorder were the most common Axis II diagnoses, and 88% of the sample exhibited features of these 2 personality styles. Findings indicated that social phobics with additional Axis II disorders were more depressed but not more anxious than those with no Axis II diagnosis. Other researchers (Johnson & Lydiard, 1995) have also noted that a comorbid personality disorder increases the rate of depressive symptomatology and general psychopathology in social phobics, but does not necessarily increase anxiety symptoms.

Numerous studies have also found a negative impact of personality disorders on treatment outcome in panic disorder patients (Mavissakalian & Hamann, 1987; Mellman et al., 1992; Noyes et al., 1990; Pollock, Otto, Rosenbaum, & Sachs, 1992). Pollack et al. (1992) found that panic patients with personality disorders were significantly less likely to achieve a 2-month remission of illness with only 29% remitted compared to 59% of patients without personality disorders. Others however (Mellman et al., 1992; Reich, 1988, 1990b) have failed to find an association between the presence of personality disorders and spontaneous panic attacks. However Reich (1990b) did report that those outpatients who dropped out of the study had a higher proportion of personality disorders and Mellman et al. (1992) found that panic patients with personality disorders showed less improvement in depression ratings with treatment when compared to the non-personality

disordered patients

The effect of comorbid personality disorders on the treatment of obsessive-compulsive disorder has been evaluated by several recent studies (Baer et al., 1991; Mavissakalian, Hamann, & Jones, 1990; Steketee, 1990). In one study (Mavissakalian et al., 1990) it was found that pretreatment personality disorder scores did not predict outcome with clomipramine. Nevertheless, reassessment of personality pathology following treatment revealed a reduction of personality diagnoses with nonresponders showing significantly higher personality disorder trait status compared to responders. In another trial of clomipramine (Baer et al., 1991) results indicated that schizotypal, borderline, and avoidant personality disorder, in addition to the total number of personality disorders present correlated to poorer treatment outcome. These findings are in contrast to those of Steketee (1990), who found that while personality disorder diagnoses did not predict outcome of behavioral treatment, high dependent personality trait scores were associated with improvement following treatment. High passive-aggressive trait scores, on the otherhand, were associated with poorer long-term outcome. This study was also unique in that of the 26 patients only 1 patient met criteria for compulsive personality, whereas approximately one-third of the subjects met criteria for avoidant, histrionic, schizotypal, and dependent personality disorders. Those patients with higher personality disorder trait scores provoked more negative familial reactions and were less socially adjusted.

Studies which have investigated the impact of personality disorders on treatment outcome in substance abuse patients have generally reported a poorer prognosis for those with personality disorders. In alcoholic outpatients enrolled in a treatment program (Nurnberg, Rifkin, & Doddi, 1993) poorer treatment outcome was associated with the presence of personality disorders. Among the 50 patients, 32 had comorbid personality disorders, with multiple diagnoses in 20 (62%). The most prevalent diagnoses were paranoid (44%), antisocial (20%), avoidant (20%), passive-aggressive (18%), and

borderline (16%). Nace and Davis (1993) investigated the treatment outcome in 100 patients (57 patients had at least 1 personality disorder) admitted to a substance abuse unit. Subjects were followed up for substance use and adjustment 12 months after discharge. Patients with personality disorders reported less improvement in alcohol use and less life satisfaction than patients without personality disorders, although the two groups did not differ in terms of drug usage. In another study (Cacciola, Rutherford, Alterman, McKay, & Snider, 1996) the relationship between personality disorders and treatment outcome at seven months was investigated in a large sample ($n=197$) of opiate-dependent men admitted to methadone maintenance. Subjects with comorbid personality disorders entered treatment with more severe self-reported drug, alcohol, psychiatric, and legal problems, and despite progress, remained more problematic in those areas relative to subjects without personality disorders. All subjects reported pervasive improvement and the follow-up urinalysis results for opiates and cocaine showed no significant differences between subjects with and without personality disorders. It is important to note that fewer personality disordered subjects stayed in treatment continuously for the 7-month period. Several cluster B personality disorders (borderline, antisocial, and histrionic) predicted poorest overall outcomes. Kosten, Kosten and Rounsaville (1989), in a 2.5 year follow-up of opiate addicts, found a trend for personality disorder patients to have more substance use and poorer psychiatric functioning at follow-up than patients without personality disorders. These findings are in contrast to that of Clopton, Weddige, Contreras, Fliszar, and Arredondo (1993) who found that patients with personality disorder were as likely as other patients to complete the 4-month aftercare program and to maintain abstinence while in the aftercare program. It may be, as has been suggested by others (Nace & Davis, 1993) that substance abuse patients with comorbid personality disorders are slower to respond to intensive treatment focused on substance abuse than those without.

The impact of a comorbid personality disorder on treatment outcome in eating disorders has been examined in several recent studies. In one of these studies bulimics

with and without borderline personality disorder were compared (Johnson, Tobin, & Dennis, 1990). At the initial assessment there were relatively few differences between borderline and nonborderline bulimics when severity of symptomatic eating behavior and attitudes were examined. However at follow-up, most patients in the nonborderline group remitted their symptoms while the borderline group continued to demonstrate clinically significant levels of disturbed eating patterns. Steiger, Thibaudeau, Leung, Houle, and Ghadirian (1994) examined eating and psychiatric symptoms in bulimic patients with comorbid personality disorders three and six months after therapy. They classified their sample of 61 outpatients into three groups: borderline, other personality disorder, and no personality disorder. Findings indicated that axis II diagnoses showed little relationship to initial severity or degree of improvement in the patients' eating symptoms. Nevertheless, borderline personality disorder was associated with more general psychiatric symptoms. Borderline patients displayed more depression, borderline features, general symptoms and reliance upon maladaptive defenses than did other patient groups. The authors suggest then that while borderlines show good response of eating symptoms during treatment, they maintain concurrent psychiatric symptoms. These findings replicate those of other studies showing reliable borderline/nonborderline differences on diverse comorbid symptoms (Johnson et al., 1989; Johnson, Tobin, & Dennis, 1990; Steiger, Thibaudeau, Ghadirian, & Houle, 1992; Wonderlich et al., 1990; Zinarini et al., 1990). Others have suggested that it is a high cluster B score (consisting of antisocial, borderline, histrionic, and narcissistic features) that is predictive of poorer treatment outcome rather than borderline characteristics alone (Rossiter, Agras, Telch et al., 1993). These researchers found that even at one year follow-up there was still a trend toward high cluster B scores predicting poorer treatment outcome. In another recent study (Fahy, Eisler, & Russell, 1993) bulimia nervosa patients with personality disorders were found to be more depressed, have a lower BMI, and a poorer response to treatment than those without personality disorders. However, when mood and BMI were controlled for the differences did not reach

significance. This suggests that it is not the personality disorder per se that predicts a poor response to treatment, but rather personality disorder comorbid with depression and low weight.

An important findings in a number of studies, spanning axis I disorders, is that personality disordered subjects are less likely to complete treatment (Cacciola, Rutherford, Alterman, McKay, & Snider, 1996; Chambless, Renneberg, Goldstein, & Gracely, 1992; Reich, 1990b). Chambless et al. (1992) found that paranoid personality disorder was associated with early termination in their agoraphobic outpatients. In substance abusers Cacciola et al. (1996) reported, following a seven month follow-up, that fewer subjects with personality disorders remained in treatment. Reich (1990b) similarly reported that those individuals with panic disorder comorbid with a personality disorder were less likely to complete treatment. These findings are consistent with reports that the motivation to change in personality disordered patients is questionable (Pretzer & Fleming, 1989). Furthermore since personality disorders by definition imply difficulties in interpersonal relationships it is not particularly suprising that these individuals would be less likely to comply with treatment especially that offered in a group format.

In most of the studies reviewed above, personality disorders had a negative impact on treatment in terms of the target symptoms, general psychopathology, or social functioning. In contrast, a few studies have reported that specific personality disorders were associated with more positive outcomes (Chambless et al., 1992; Steketee, 1990). Steketee (1990) found that high dependent personality trait scores were associated with improvement following treatment in their group of obsessive-compulsives. While both dependent and histrionic personality disorders were found to be associated with more positive outcomes in a treatment outcome study of agoraphobia (Chambless et al., 1992). Longitudinal studies are needed to discover whether these improvements are maintained much beyond the termination of treatment.

The question of stability of personality disorder diagnoses during an axis I illness has been investigated in a number of studies by administering personality disorder instruments both preceding and following treatment. In some of these studies the frequency of personality disorder diagnoses did not change significantly from pre to post treatment (Ames-Frankel et al., 1992; Gartner et al., 1989; O'Boyle & Self, 1990; Loranger et al., 1991) which is consistent with the presumably stable nature of personality disorders. Others however have reported that patients experienced a reduction in personality disorder diagnoses following treatment of their axis I condition (Mavissakalian, Hamann, & Jones, 1990; Pilkonis et al., 1991; Ricciardi et al., 1992; Stuart et al., 1992). In a few instances this reduction was correlated with a reduction in axis I symptomatology (Ricciardi et al., 1992; Stuart et al., 1992) which has led researchers to speculate that state artifacts (Garner et al., 1990) or an over-reporting bias due to the acute psychiatric state (Zimmerman, 1994) impact the initial personality disorder assessment. Nevertheless, one study (Gartner et al., 1989) reported that their subgroup of restricting anorexics received more personality disorders diagnoses at reexamination following a successful course of treatment. They attribute these findings, which were consistent with clinical impressions, to a decreased denial of personality difficulties following treatment. It is difficult to draw conclusions from these discrepant findings given the variation in methods used to assess personality disorders, the type of treatment given, and the axis I pathology of the subjects in these studies.

The mechanism of effect of the personality disorders and personality traits on the treatment outcome of the comorbid axis I disorder has yet to be understood. It may be that the comorbid axis I and axis II disorders reflect a more severe variant of an underlying core axis I disorder, or that the personality disorder is a secondary effect of chronic axis I illness contributing to the development of social isolation, dysfunctional attitudes, and maladaptive coping strategies (Reich & Vasile, 1993). Perhaps the personality disorder is a vulnerability factor predisposing the individual to the development of an axis I disorder,

possibly as a result of the patient precipitating more stressful life events by behaviors which result in diminished social support (Reich & Vasile, 1993). Indeed diminished social functioning in personality disordered individuals is a theme which runs through many of the treatment outcome studies, in a wide range of axis I disorders. While more research is needed to elucidate the nature of the relationship between personality disorders and treatment outcome it may simply be that the personality disorder renders the patient less likely to comply with the various forms of treatment offered for the axis I condition (Reich & Vasile, 1993).

Indeed it has been suggested that personality disordered patients are especially difficult to treat due to: the long term nature of their problems; their avoidance of therapy; difficulty encountered in obtaining clear reports of thoughts and emotions; low tolerance for strong emotion; poor compliance with homework assignments; and their questionable motivation for change (Pretzer & Fleming, 1989). The literature on the impact of personality disorders on treatment compliance is in its embryonic stages (Conte et al., 1991). Needless to say, more studies are needed to systematically examine the relationship between personality disorders and treatment outcome of the comorbid axis I disorder.

In the present study subjects were classified according to the the number of personality disorder diagnoses they received after they completed the Computerized Personality Disorder Inventory (Blouin, 1991). Those subjects who failed to meet criteria for any personality disorder comprised one group. A second group was made up of those who met criteria for one or two personality disorders. The last group was comprised of those who met criteria for three or more personality disorder diagnoses. The decision to divide the comparison groups in this manner was based on the proposal suggested by Oldham et al. (1992) and discussed earlier, for a two-level diagnostic system on axis II. According to this scheme, those subjects with more than two personality disorders would be given a single diagnosis of “extensive personality disorder” along with a dimensional description of the prevailing attributes of the disorder. The categorical system is retained for

cases that exhibit one or two distinct personality patterns (focal personality disorder). The rationale for this division comes from studies which have investigated the axis II comorbidity in a wide range of clinical populations. These studies have consistently found that a large percentage of their patients are pan-symptomatic across personality disorder diagnoses, thus receiving numerous diagnoses. In fact Trull (1993) reported the results of a study which specifically focused on the comorbidity among personality disorder diagnoses and found that only obsessive-compulsive personality disorder was diagnosed by itself greater than 25% of the time.

The critical question, as Oldham et al. (1992) has noted, is whether or not each of these diagnosed disorders contributes independently to some important clinical variable such as treatment outcome. Since patients frequently have co-existing personality disorders, it is difficult to examine the impact of any particular personality disorder on treatment outcome. Some have dealt with this issue by focusing on a particular disorder or PD cluster while ignoring the overlap (Pilkonis & Frank, 1988; Shea et al., 1990); others have eliminated those subjects with co-existing disorders (Pfohl et al., 1984) and in doing so reduced their sample size considerably.

Some evidence has accumulated that suggests that the extent of personality disorder pathology has an impact on treatment outcome. For example, several recent studies have reported that the total number of diagnosed personality disorders was correlated with poorer treatment outcome for obsessive-compulsive disorder studies (Baer et al., 1991) and major depression (Sato et al., 1993). Others (Cacciola et al., 1996; Chambless et al., 1992; Reich, 1990b) have reported that those patients who failed to complete their treatment protocol had a higher proportion of personality disorders than those who did. Therefore the present study was designed to investigate whether “extensive personality disorder” worsens the short-term outcome for bulimia nervosa. This study is a first attempt at empirically testing the hierarchy proposed by Oldham et al. (1992).

In conclusion, as is evident from the literature reviewed, a great deal of research has been generated on psychological, sociocultural, and biological factors relating to bulimia nervosa. Nevertheless, this disorder is not yet fully understood. Of the various treatment modalities that have been utilized CBT has received the most support. Despite the success that has been reported with this form of treatment, there remains a sizable proportion of patients who fail to improve. Numerous studies have suggested that personality disorders have a negative impact on treatment outcome in a variety of other axis I disorders. The present study sought to determine whether or not this negative impact extended to treatment outcome for bulimia nervosa.

Hypotheses

1. It was expected that the group consisting of individuals with extensive personality pathology would be much more likely to remain symptomatic following treatment than those free from this degree of character pathology. The explanation for this prediction was that the treatment that addresses the symptoms of bulimia would be blocked by the pervasive core schemas of those patients with a broad range of personality disturbances. Axis II pathology has repeatedly been found to complicate the short-term course of other axis I disorders (Baer et al., 1991; Black et al., 1988; Frank et al., 1987; Mavissakalian & Hamann, 1987; Mellman et al., 1992; Noyes et al., 1990; Nurnberg, Rifkin, & Doddi, 1993; Pfohl et al., 1984; Pilkonas & Frank, 1988; Pollock et al., 1992; Reich, 1988; Sato et al., 1993; Shea et al., 1990; Turner, 1987). Furthermore, in a number of recent treatment outcome studies in the eating disordered population those individuals with borderline personality disorder (Johnson et al., 1990) or a high cluster B score (Rossiter, Agras, Telch, & Schneider, 1993) were found to have poorer outcome in terms of bulimic symptomatology. In treatment outcome studies it is important to control for the magnitude of patients' character pathology, rather than just the severity of eating symptoms (Johnson et al., 1990). Perhaps there are two possible mechanisms for the development of bulimia;

one involving a syndrome with strong axis I/axis II comorbidity and a separate syndrome of pure bulimia without the concomitant psychopathology (Yates et al., 1989).

2. It was expected that the three groups classified according to personality disorder status (no PD, 1-2 PD, >3 PD) would not differ in terms of bulimic symptomatology prior to treatment. Previous research has found no differences in terms of severity of symptomatic eating behavior on initial presentation when bulimics with and without a co-existing personality disorder have been compared (Johnson et al., 1989; Johnson et al., 1990; Wonderlich & Swift, 1990; Yates et al., 1989). Nevertheless, the present study included a group with extensive personality disorder psychopathology (>3 PD) which may differ from those with one or two personality disorders.

3. It was expected that those individuals with extensive personality disorder pathology would also report higher levels of depression. It has been recommended that studies evaluating personality disorders in bulimics employ designs that account for the possible confounding effects of major depression (Yates et al., 1989). That bulimia nervosa has been frequently linked to depression is well documented (Herzog, 1984; Piran et al., 1985). Furthermore, several studies have found that bulimics with a personality disorder exhibited significantly greater depression than bulimics without a personality disorder diagnosis (Yates et al., 1989; Schmidt & Telch, 1990; Gartner et al., 1989; Johnson et al. 1990). Other researchers (Fahy, Eisler, & Russell, 1993; Johnson & Lydiard, 1995; Mellman et al., 1992; Steiger et al., 1994; Turner et al., 1991) have noted that a comorbid personality disorder increases the rate of depressive symptomatology and general psychopathology in patients with various axis I diagnoses.

Method

Subjects

Subjects were recruited from patients presenting to the Eating Disorder Clinic of the Ottawa Civic Hospital. A total of 114 female subjects meeting DSM-III-R criteria for bulimia nervosa completed the study. The diagnosis of bulimia nervosa was based on the subjects responses to the bulimia nervosa section of the National Institute of Mental Health Diagnostic Interview Schedule-Revised [NIMH-DIS-R] (Robins, Helzer, Croughan & Ratcliffe, 1981). This is a structured diagnostic interview which provides Axis I DSM-III-R diagnoses. The reliability and validity of the NIMH-DIS-R has been well-established (Robins, Helzer, Ratcliffe, & Seyfried, 1982) and there is an extensive literature on the prevalence of psychiatric disorders based on its epidemiological use. The present study employed a computerized version of this interview which has been established to have equivalent reliability (Blouin, Perez, Blouin, 1988). The highly structured nature of the NIMH-DIS-R renders it particularly suitable for computerized administration.

Exclusion criteria include: (1) current diagnosis of anorexia nervosa (2) having a significant medical illness (3) having electrolyte imbalances (4) I.Q. less than 90 on the Shipley Institute of Living Scale. All subjects signed an informed consent (see Appendix A). This study received approval from the Research Ethics Committees of the Ottawa Civic Hospital and Carleton University.

Identification of control and treatment subjects

The 114 subjects were divided into two groups, those who received treatment and those who would serve as a wait list control group. This was made possible by an already existing six month waiting list of individuals seeking treatment at the Eating Disorder Clinic. Data was collected on an ongoing basis over a 1 1/2 year period as individuals were referred to the Eating Disorder Clinic. During this time subjects were randomly assigned to

either the treatment or the control group as they became available. Control subjects were assessed immediately upon being identified and then 12 weeks later. These control subjects subsequently went on to receive treatment. Treatment subjects were assessed immediately before treatment and within one week of the end of treatment.

Based on the results of the Computerized Personality Disorder Interview (Blouin, 1991) all treatment and control subjects were classified into one of three groups: those with no personality disorder diagnoses; those with one or two personality disorder diagnoses; and those with three or more diagnoses. This resulted in six experimental groups: those bulimics with zero, one or two, three or more personality disorders, who received treatment; and those with zero, one or two, three or more personality disorders, who did not receive treatment.

Computerized Personality Disorder Interview (CPDI). The CPDI is a self-administered questionnaire that yields diagnoses consistent with DSM-III-R criteria for axis II disorders. It only evaluates 10 of the 11 diagnoses included in the DSM-III-R since it does not include an assessment of antisocial personality disorder. This is not problematic, since the NIMH-DIS-R does include an evaluation of this personality disorder. This CPDI was used to identify any co-occurring personality disorders subjects might be experiencing. It takes on average, 30 minutes to complete. Each item of the CPDI is presented on the screen of a lap-top computer with answer probes underneath. After the subject enters a response the computer automatically advances to the next appropriate item. This presentation is more similar to an interview since subjects are probed further if they answer a question in a particular way. The advantages of the CPDI include ease of administration and scoring as well as a reduction in administration variance. Furthermore, subjects may be more willing to admit to problematic behavior and be less concerned with presenting themselves in a socially desirable way because of the absence of an interviewer.

In preliminary research (Ginsberg, 1993) at the Eating Disorder Clinic of the Ottawa Civic Hospital, certain diagnoses were found to yield high test-retest reliability

while the reliability for others was lower, according to the criterion of Fleiss (1981). Kappa coefficients for diagnosis were good for schizoid (.78) , schizotypal (.60), and borderline (.66); moderate for histrionic (.45) , narcissistic (.40), and dependent (.49) ; and poor for avoidant (.10), obsessive-compulsive (.30), passive-aggressive (.36), and paranoid (.27). However, the reliability of the individual scale items as measured by test-retest was good irrespective of diagnostic category. These individual scale items were designed to evaluate the presence or absence of each of the criteria, as outlined by the DSM, which together comprise a particular diagnosis. Reliability for the individual scale items ranged from .74 (obsessive-compulsive) to .90 (schizotypal, borderline, avoidant).

The discriminant validity of the C-PDI has also been recently assessed (Ginsberg, 1993). Significant differences in personality disorder diagnoses were observed for subjects with personal or family psychiatric history, and/or substance use/abuse history, compared to subjects without similar histories.

Instruments

All subjects completed several measures including the Beck Depression Inventory, the Eating Disorder Inventory (with the exception of the control group at time one), and the Bulimic Symptom Checklist within two weeks prior to the commencement of treatment, and immediately following the last treatment session. The Eating Disorder Inventory was not administered to the control subjects at time one in order to reduce the time demands made on them. Three additional measures, which were administered at pretreatment only, included the Symptom Checklist-90 Revised, the Family Environment Scale, and the Diagnostic Survey of Eating Disorders. Instruments administered pre and post

Eating Disorder Inventory (EDI). The EDI is a self-report, multiscale measure designed for the assessment of psychological and behavioral traits common to the eating disordered population rather than only the symptomatic behaviors (Garner et al., 1983). This measure was chosen because it is one of the more commonly used treatment outcome

measures for bulimia (Zimpfer, 1990). The EDI consists of eight subscales measuring: drive for thinness; bulimia; body dissatisfaction; ineffectiveness; perfectionism; interpersonal distrust; interoceptive awareness; and maturity fears. In one study bulimics with a co-existing personality disorder were found to have a higher total EDI scores than those without (Yates et al., 1989). The EDI was developed from a large pool of items generated by clinicians who were both familiar with the research and who had experience treating patients with eating disorders. These subscales differentiate with very little overlap between patients with anorexia nervosa (restrictor and bulimic types) and females from a college comparison group. Three cross-validation trials were completed and retained items had to meet two statistical criteria: they had to demonstrate validity by significantly differentiating between the groups; and they had to be more highly correlated with the subscale to which they belonged than to any other subscale. A final requirement was that the subscales have coefficients of internal consistency above .80 for the eating disordered samples. The validity of the EDI was also determined by the amount of agreement demonstrated between the patients self-report profile and the clinical judgments of clinicians familiar with the patient's psychological presentation. All correlation's were found to be significant at the $p < 0.001$ level. Convergent and discriminant validity was demonstrated by administering psychological tests that conceptually overlap with subscales of the EDI. Results indicate the EDI is a reliable (internally consistent) and valid test (Garner & Olmsted, 1984). Test-retest reliability has been demonstrated for the EDI with a sample of university undergraduates and with a group who were considered to be at risk on the basis of their EDI scores (Wear & Pratz, 1987). The interval between test administrations was three weeks and the test-retest reliability coefficient was .96.

Beck Depression Inventory (BDI). The BDI was selected for this study since it is viewed as one of the better self-report measures of general depression (Gould, 1982) and because it has been widely used in treatment outcome studies of bulimia nervosa (Agras et al., 1987; Bossert et al., 1992; Fairburn et al., 1991; Olmsted et al., 1991; Wilson et al.,

1986). The BDI consists of 21 items covering affective, cognitive, motivational, and physiological areas of depressive symptomatology (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI has a range of scores from 0 to 63 and classifies individuals into one of 4 categories: normal (0-9), mildly depressed (10-15), moderately depressed (16-23), and severely depressed (24-63). It has been viewed as one of the better self-report measures of general depression and has become a widely used measure in clinical research (Gould, 1982). The 1961 version will be used since its validity is well-established (Oliver & Simmons, 1984). Test-retest reliability's as measured by Pearson product-moment correlation coefficients have been found to be .78 across a 3-week interval in a university population (Oliver & Burkham, 1979). The validity of the BDI in a university population using psychiatric rating of depth of depression as the criterion as measured by a Pearson product-moment correlation coefficient was .77 (Bumberry, Oliver, & McClure, 1978). The reliability, validity, and factor structure of the standard 21-item Beck Depression Inventory was investigated with 185 college students (Gould, 1982). The internal consistency reliability was .82, and it correlated significantly with scores on the Zung Self-Rating Depression Scale, the UCLA Loneliness Scale, and the Rosenberg Self-esteem Scale. Several studies have found bulimics with a co-existing personality disorder to be significantly more depressed than bulimics without personality disorders (Yates et al., 1989; Gartner et al., 1989; Johnson et al., 1990).

Bulimic Symptoms Checklist (BSCL). The BSCL is a self-report instrument which assesses the severity of various symptoms which have been found to be an integral part of the bulimic syndrome (Blouin et al., 1988). The BSCL measures average weekly frequency of binge eating, vomiting and other forms of purging (including laxatives and diuretics). It also measures, on a 5-point rating scale, the individuals perception of the severity (from not at all severe to extremely severe) of bulimic behaviors including binge eating, vomiting, other purging. The individuals perception of the severity of other symptoms is also evaluated on a 5-point scale. These include their pre-occupation with

food, their lack of control over eating, and a rating of the global severity of bulimic symptoms. The BSCL has been demonstrated to be a sensitive measure of changes in bulimic symptoms in pharmacological research (Blouin, Blouin, Perez et al., 1988; Blouin et al., 1989).

Instruments administered at pretreatment only

Three additional measures were administered only at pretreatment. These included the Symptom Checklist-90 Revised, the Family Environment Scale, and the Diagnostic Survey of Eating Disorders. The purpose was to more fully evaluate the similarities between the treatment and control groups, as well as investigating whether a relationship existed between severe scores on these measures and personality disorders.

Symptom Checklist-90 Revised (SCL-90-R). The SCL-90-R is a 90 item self-report inventory which assesses 9 symptom dimensions including somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism (Derogatis, 1977). High levels of internal consistency and test-retest reliability have been reported (Derogatis, Rickels & Rock, 1976). In addition, the convergent and concurrent validity of this inventory has been well-established (Derogatis & Cleary, 1977).

Family Environment Scale (FES). The FES (Moos & Moos, 1986) consists of ten subscales that measure the social-environmental characteristics of families. Three dimensions are measured by the ten subscales: relationships, personal growth, and system maintenance. The relationship dimensions are measured by the cohesion, expressiveness, and conflict subscales. These subscales measure the extent to which family members are helpful and supportive of one another; the degree to which family members are encouraged to openly express their feelings; and the amount of conflict evident in the family environment. The personal growth dimensions are measured by the independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and

moral-religious emphasis subscales. These subscales measure the extent to which family members are assertive, competent, and able to make their own decisions; the degree of emphasis of achievement; the degree of interest in political, social, intellectual and cultural activities; the extent of participation in social and recreational activities; and the degree of emphasis on ethical and religious issues and values. The system maintenance dimensions are measured by the organization and control subscales. These subscales assess the relative importance of organization, structure, rules and procedures in family activities and responsibilities. The present study used the real form which measures people's perceptions of their conjugal or nuclear family environments. There is also an ideal form and an expectations form of the FES. It was expected that those patients with the most personality disordered symptomatology would perceive their families as more dysfunctional than those without. Numerous studies have found evidence that suggests that, in general, the families of bulimics are more dysfunctional than the families of controls (Johnson & Flach, 1985; Ordman & Kirschenbaum, 1986; Humphrey, 1989). Since personality disorders are by definition "enduring patterns" and many of them may first become apparent in childhood it is quite plausible that the family environment influences the risk of developing a personality disorder. Indeed, the risk for some of the personality disorders (i.e. antisocial personality disorder) have been reported to be higher among first-degree biological relatives of those with the disorder than among the general population (DSM-IV: APA, 1994).

The Diagnostic Survey of Eating Disorders (DSED). The DSED (Johnson, 1985) is a standardized interview format for obtaining information that has both clinical and research utility. The questionnaire is divided into 12 sections which provide information on demographic factors, weight history, body image, dieting behavior, binge eating behavior, purging behavior, exercise, related behaviors, sexual functioning, menstruation, medical and psychiatric history, life adjustment and family history. This questionnaire was included in order to gather additional information on which subjects in the treatment and control groups could be compared in an effort ensure that they were equivalent.

Procedure

The study was conducted between March 1993 and November of 1994 inclusive. During this time period subjects were involved in one of eight cognitive-behavioral groups which were conducted by one of four group leaders. All group leaders had either an M.A. or Ph.D. in psychology and were trained in CBT, eating disorders, and group psychotherapy. Group leaders were always female, and ranged in age from approximately 28 to 40 years. This 10-week cognitive-behavioral therapy for bulimia is modeled after that described by Fairburn (1985). The group met for 1.5 hours per week and consisted of eight to twelve participants. Since subjects were randomly selected, only half of each group were treatment subjects. The other half consisted of individuals who had previously served as control subjects. The goals of group included: to learn about the physiological, psychological, and cultural factors which are important in eating disorders, to normalize eating, to recognize thinking errors made in regard to bodies and weight, and to develop more adaptive ways of coping with stressors. The focus of the first weeks was on normalizing eating and all group participants were asked to keep food diaries during this time. These food diaries were turned in weekly and include all food eaten as meals, snacks, or binges in addition to any purging behavior (vomiting, laxative or diuretic abuse, exercise). Food diaries were perused by group leaders and returned to the participants the following week, with written comments. The feedback related primarily to whether intake was adequate, and whether participants were eating frequently enough. During the first four weeks the importance of understanding and accepting the role of physiological factors in perpetuating the eating disorder was stressed. The belief that normalizing eating is vital before working on cognitive and psychological factors is widely accepted. Therefore in the initial phase of treatment the emphasis was on normalizing eating using primarily behavioral techniques. The topics of the first five weeks included: medical risks of eating disorders, myths about weight control, setpoint theory of weight control, problem solving, and identifying dysfunctional thoughts. The final five weeks focused on cognitive and

psychological aspects of eating disorders. Patients were instructed to keep 'Thought Catching Records' pertaining to bulimic urges or episodes, which were reviewed in each session. Topics covered during the final five weeks included: changing maladaptive thinking, relaxation, perfectionism, self-esteem, assertiveness, the family and other relationships.

Just prior to (no more than two weeks before) and within one week following the 10-week cognitive-behavioral therapy group each subject in the treatment group completed a battery of self-report measures. These included the Eating Disorder Inventory (Garner et al., 1983), the Beck Depression Scale (Beck, 1961), and a subjective report of current bulimic severity (# binges/ purges per week). These self-report measures were chosen on the basis of their efficacy in assessing the psychological and behavioral traits common to the eating disordered population. The control group was used to determine if changes from pre to post treatment were treatment related. Additionally, the CPDI was administered to all subjects following treatment to assess whether personality disorders changed as a result of treatment.

Statistical Analyses

The data was analyzed using a mixed design 2 X 2 X 3 MANOVA which was conducted using SPSS for the Macintosh. This study constitutes a split-plot factorial design. The independent variables were the within-subjects factor of time (before and after treatment) and the between-subject factors of treatment group (treatment vs. control) and personality disorder group (no P.D., 1-2 P.D., and >2 P.D.). A MANOVA was conducted using binge and vomiting frequency (as measured by the Bulimic Symptom Checklist) as the dependent variables. A separate ANOVA was conducted on the Beck Depression Inventory scores.

The eight subscales of the Eating Disorder Inventory were also utilized as dependent variables and analyzed with a separate MANOVA. Significant multivariate results were followed by the appropriate pairwise comparisons using the Newman-Keuls

procedure to control the Type 1 error rate (Howell, 1987). Differences in drop-out rates between groups were assessed to ensure that this variable did not discriminate between the three groups.

Identification of remitted and unremitted groups.

Further analyses were conducted to determine if there were differences between those who were remitted and those who remained symptomatic. Based on the results of the Bulimic Symptom Checklist (BSCL), which provided information on the number of binge and purge episodes experienced during the last week of treatment, subjects were divided into two groups. Those who had completely remitted ($n=21$) their bulimic symptoms (0 binge and 0 purge episodes) comprised one group. The other group was composed of those individuals who remained symptomatic ($n=22$). These two groups were compared using separate MANOVAs on Eating Disorder Inventory scores, Beck Depression Inventory scores, segments of the Bulimic Symptom checklist, and the Computerized Personality Disorder Inventory. An ANOVA was used to compare Beck Depression Inventory Scores.

Results

Descriptive Characteristics of Sample

The basic descriptive characteristics of the 57 experimental and 57 wait-list control subjects appear in Table 1. This information was obtained from the Diagnostic Survey of Eating Disorders (Johnson, 1985). No significant differences were found between the experimental subjects and the control subjects on any measure. Averaged across conditions, the group ($n=114$) had a mean age of 27 years, an average weight of 145 lb., and an average height of 5 feet 3 inches. They described their primary role as wage earners (45.9%), students (34.7%) and housewives (8.2%). In terms of marital status, 61 percent had never married, 20 percent were currently in their first marriage and 17 percent were divorced. Their living arrangements included: conjugal (36.4%), with parents (25.3%), shared (14.1%) and alone (24.2%). They reported having had a problem with binge eating for, on average, 10.1 years, beginning at age 16.6. Restrictive eating began on average at age 14.7. At baseline, they reported binge eating an average of 5.3 times per week, self-induced vomiting an average of 3.7 times per week, and an average of 1.5 other purge episodes (including laxative and diuretic use) per week. Subjects were most likely to binge eat alone (93.7%), at home (95.8%), between the hours of six and ten PM (70%). They reported that binges lasted from one to two hours (48.4%) or less than one hour (38.9%) and the foods they were most likely to binge on were sweets (55.1%) or carbohydrates such as bread, cereal or pasta (45.9%). These characteristics are comparable to those reported in previously published treatment outcome studies of bulimia (Blouin et al., 1994; Freeman et al., 1985, 1988; Huon & Brown, 1985; Olmsted et al., 1991; Wilson et al., 1986).

Figure 1 shows the prevalence of Axis-II (personality disorder) disturbances among the sample ($n = 111$) of outpatients (note that multiple diagnoses are possible, so that column totals exceed 100%). Three subjects failed to complete the C-PDI due

Table 1.

Descriptive Features of Sample Studied.

	treatment (n = 57)		control (n = 57)	
	M	SD	M	SD
Age	26.0	6.68	28.5	7.6
Body Mass Index	27.20	8.84	26.01	8.11
Chronicity of eating disorder (years)	8.89	8.35	11.17	8.33
Hollingshead status	2.45	.80	2.47	.76
Marital status (% single)	62.7%		59.2%	
Weight (lbs.)	145.10	42.17	145.56	39.03
Height (ins.)	62.00	5.55	63.11	3.92
Binge/week	5.29	4.68	5.32	4.80
Vomit/week	3.49	5.97	3.63	5.07
Purge/week	1.44	2.58	1.56	4.92
Beck Depression Scores	21.93	9.96	20.72	10.53

Figure 1. Percent of subjects meeting criteria for DSM-III-R personality disorders (n=111).

to personal time restrictions. Thirty-three percent ($n = 37$) did not meet criteria for any personality disorder, while sixteen percent ($n = 18$) met criteria for one personality disorder diagnosis, and fifty percent ($n = 56$) met criteria for two or more personality disorders. This is consistent with the findings of others (Gartner et al., 1989; Johnson & Wonderlich, 1990) which indicate that in the eating disordered population approximately two-thirds meet criteria for at least one concurrent personality disorder, and two-thirds of those individuals receive more than one personality disorder diagnosis.

For the purposes of classification in the present study, group 1 was comprised of 37 subjects who did not meet criteria for any personality disorder; group 2, or those with one or two personality disorders consisted of 32 subjects; and group 3, or those with extensive personality disorder (three or more diagnoses) consisted of 42 subjects. The decision to classify subjects in this manner was based on the suggestion of Oldham et al. (1992), as discussed earlier, for a two-level diagnostic system on axis II.

Prevalence of lifetime Axis-I disorders in the same sample are shown in Table 2. These diagnoses were made based on subjects responses to the C-DIS-R, a computerized version of the diagnostic interview schedule, which provides Axis I DSM-III-R diagnoses. The C-DIS-R was used primarily to ensure that subjects met DSM-III-R criteria for bulimia nervosa. Again, not all subjects completed the C-DIS, due to personal time constraints. The more prevailing diagnoses both past and current, measured at time one, included: major depressive episode (fifty-one percent); social phobia (forty-seven percent); somatoform pain disorder (forty-five percent); nicotine dependence (forty-five percent); depressive disorder of the melancholic type (thirty-nine percent); simple phobia (thirty-six percent); major depression - recurrent episode (twenty-seven percent); post traumatic stress disorder - event A (twenty-five percent); alcohol abuse/dependence (twenty-one percent); manic episode (sixteen percent);

Table 2.

Prevalence of lifetime Axis I diagnoses in the outpatient sample (n=101).

	Lifetime
Major Depressive Episode	50.5%
Social Phobia	46.5%
Somatoform Pain Disorder	44.6%
Nicotine Dependence	44.6%
Depressive Disorder of the Melancholic Type	38.6%
Simple Phobia	35.6%
Major Depression - Recurrent Episode	26.7%
Post Traumatic Stress Disorder - Event A	24.8%
Alcohol	24.8%
Drug Abuse/Dependence	20.9%
Manic Episode	15.8%
Agoraphobia	14.9%
Post Traumatic Stress Disorder - Event B	13.9%
Panic Disorder	12.9%
Dysthymic Disorder	11.9%
Bipolar Disorder (NOS)	9.9%
Generalized Anxiety Disorder	9.9%
Somatization Disorder	8.9%
Bipolar Disorder	8.9%
Depressive Disorder (NOS)	6.9%
Post Traumatic Stress Disorder - Event C	5.0%
Hypomanic Episode	5.0%
Panic Disorder with Agoraphobia	4.0%
Schizophreniform Disorder	3.0%
Atypical Bipolar Disorder	2.0%
Schizoaffective Disorder	2.0%
Obsessive Compulsive Disorder	1.0%
Antisocial Personality Disorder	1.0%
Pathological Gambling	1.0%

agoraphobia (fifteen percent); post traumatic stress - event B (fourteen percent); panic disorder (thirteen percent); dysthymic disorder (twelve percent). Thus according to the C- DIS-R subjects exhibited a wide range of psychiatric symptomatology, particularly affective and anxiety disorders, in addition to bulimia nervosa. This is consistent with other studies which have found high lifetime rates samples (Hudson et al., 1987; Laessle et al., 1987).

On the Beck Depression Inventory a mean score of 21.3 was obtained across treatment and control groups at pre-test. This score indicates that the bulimics in this sample were, on average, moderately depressed. The Beck Depression Inventory has been frequently used in bulimia nervosa studies to measure symptoms and features associated with depression.

Comparison of Treatment and Control Groups at Baseline

To ensure that the treatment and the wait-list control groups were equivalent at baseline, separate multivariate analysis of variance were conducted on the BSCL, demographic variables from the DSED (religion, marital status, primary role, occupation, education, Hollingshead Social Class (Hollingshead & Redlich, 1958), years with binge eating problem, and purging behaviour), MOOS, SCL-90, CPDI, and the severity scores of the CPDI. The BDI was assessed using an ANOVA. Results indicated that the treatment and the control groups could not be distinguished on the basis of the BSCL ($F(9,89)=0.35, ns$), descriptive variables from the DSED ($F(7,81)=.74, ns$), the BDI ($F(1,109)=3.8, ns$), the MOOS ($F(8,73)=0.53, ns$), the SCL-90 ($F(16,73)=0.65, ns$), the CPDI ($F(10,99)=0.53, ns$), or average severity scores from the CPDI ($F(1,109)=1.37, ns$).

Attrition

Of the 57 who entered one of the 10 cognitive-behavioral treatment groups, 44 completed treatment. The policy of the eating disorder clinic is that patients who miss more than two sessions, for any reason, are asked to drop out and join a subsequent group.

When the 13 drop-outs were compared to the those who completed treatment they did not differ on age ($F(1,55)=0.06, ns$), duration of illness ($F(1,42)=2.06, ns$), weight history ($F(1,54)=0.13, ns$), binge ($F(1,53)=0.001, ns$) or purge ($F(1,53)=0.01, ns$) frequencies, number or severity of personality disorders ($F(9,42)=0.89, ns$), or Beck Depression scores ($F(1,52)=1.44, ns$). Drop-outs did not differ on measures of general psychological adjustment such as the SCL-90 ($F(16,34)=1.83, ns$) or the Ineffectiveness, Interpersonal Distrust, Perfectionism, Interoceptive Awareness, Maturity Fears of the EDI ($F(5,47)=1.57, ns$). Finally, drop-outs did not differ in terms of family environments, as measured by the MOOS ($F(8,45)=0.86, ns$), from those who completed treatment.

Treatment Outcome: Binge and Purge Frequencies

A 2 X 2 X 3 MANOVA was performed on binge and purge frequency. Time was the within subject variable and group (treatment vs. control) and personality disorder classification (0, 1 - 2, ≥ 3 personality disorders) were the between subject variables. A significant main effect for time ($F(2,75)=11.586, p<.001$) was found, while the main effect for group ($F(2,75)=1.455, ns$) and personality disorder classifications ($F(4,150)=1.936, ns$) were not significant. Collapsing across groups (treatment and control) and personality disorder diagnoses revealed that the mean binge frequency at time one was 5.415 ($SD = 4.800$) and at time two, 3.134 ($SD = 6.170$). The mean purge frequency was 3.768 ($SD = 5.516$) at time one, and 2.756 ($SD = 6.397$) at time two. Thus at time one binge and purge frequency was significantly higher than at time two for all subjects.

The time by treatment interaction was found to be significant ($F(2,75)=3.890, p<.05$). Figures 2 and 3 illustrate these results. Univariate ANOVAs on the time effect indicated that binge frequency ($F(1,76)=14.269, p<.001$) changed significantly over

Figure 2. Binge eating frequency measured at pre and post treatment in the treatment and control groups.

Control group: pre vs. post - ns
Treatment group: pre vs. post $p < .05$
Pretreatment: control vs. treatment - ns
Posttreatment: control vs. treatment - $p < .01$

Figure 3. Vomiting frequency measured at pre and post treatment in the treatment and control groups

Control group: pre vs. post - ns
Treatment group: pre vs. post $p < .05$
Pretreatment: control vs. treatment - ns
Posttreatment: control vs. treatment - ns

time, while purge frequencies did not ($F(1,76)=1.550, ns$). The mean binge frequency was 5.306 ($SD = 4.527$) at time one, and 1.333 ($SD = 1.694$) at time two, in the treatment group. At time one the mean binge frequency in the control group was 5.262 ($SD=4.530$) and at time two was 4.676 ($SD = 6.901$). In terms of purge frequency, the mean for the treatment group declined from 3.712 ($SD = 5.252$) at pre-treatment to .844 ($SD = 1.304$) at post treatment. The mean purge frequency, in the control group increased slightly from 3.581 ($SD = 4.675$) at time one to 4.447 ($SD = 7.806$) at time two. Table 3 contains the means and standard deviations in the treatment and control groups. Thus subjects in treatment demonstrated a significant decline in binge eating frequency while the control group did not.

The time by personality disorder classifications ($F(4,150)=1.200, ns$) and the treatment by personality disorder classification ($F(4,150)=1.363, ns$) were nonsignificant. The three-way interaction, group (treatment vs. control) by personality disorder classification (no, 1 - 2, ≥ 3 personality disorder) by time, was also non-significant ($F(4, 150)=.503, ns$).

Treatment Outcome: Beck Depression Inventory Scores

A 2 X 2 X 3 ANOVA was performed on the Beck Depression Inventory scores. Time was the within subject variable and group (treatment vs. control) and personality disorder classification (0, 1 - 2, ≥ 3 personality disorders) were the between subject variables. Table 4 contains the means for the Beck Depression Inventory scores.

A significant main effect for time ($F(1,71)=30.1, p<.001$) was found. Collapsing across groups (treatment and control) and personality disorder groups revealed that the mean Beck score was 21.234 ($SD = 9.539$) at time one and 16.299 ($SD = 11.12$) at time two. A significant main effect for C-PDI groups was also found ($F(2,71)=16.64, p<.001$). Collapsing across groups (treatment vs. control) and time revealed that the group with the greatest extent of personality disorder psychopathology

Table 3.

Mean binge and purge frequencies in the treatment and control groups at time one and time two.

	<u>n</u>	<u>TIME ONE</u>				<u>TIME TWO</u>			
		<u>BINGE</u> <u>M</u>	<u>SD</u>	<u>PURGE</u> <u>M</u>	<u>SD</u>	<u>BINGE</u> <u>M</u>	<u>SD</u>	<u>PURGE</u> <u>M</u>	<u>SD</u>
CONTROL	43	5.262	4.530	3.581	4.675	4.676	6.901	4.447	7.806
TREATMENT	39	5.306	4.527	3.712	5.252	1.333	1.694	.844	1.304
entire sample	82	5.415		3.768		3.134		2.756	

Table 4.

Beck Depression Inventory Scores in the treatment and control groups
classified according to personality disorder group.

		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Treatment	No PD (n=12)	14.083	7.154	7.583	8.426
	1 - 2 PD (n=10)	25.400	8.249	13.70	12.320
	≥ 3 PD (n=10)	26.400	6.915	19.200	13.571
	Treatment Mean	21.961	7.439	13.494	11.439
Control	No PD (n=14)	13.357	8.261	11.714	6.018
	1 - 2 PD (n=11)	19.182	7.640	18.545	9.791
	≥ 3 PD (n=20)	27.500	7.557	23.350	9.615
	Control Mean	20.013	7.819	17.870	8.457
Overall Means Time 1 & Time 2		21.234	9.539	16.299	11.120

Note: PD=personality disorder.

had the highest Beck Depression Inventory score with a mean of 24.115 ($SD = 9.415$). The group with no personality disorder diagnoses received the lowest score on the Beck with a mean of 11.684 ($SD = 7.465$). The group who had one or two personality disorder diagnoses received a mean score of 19.207 ($SD = 9.5$). The main effect for group (treatment vs. control) was not significant ($F(1,71)=.43, ns$). These results appear in figure 4.

The group (treatment vs. control) by time interaction was also found to be significant ($F(1,71)=10.69, p<.01$). For the treatment group the mean depression scores at time one was 21.961 ($SD = 7.439$) and had decreased to 13.494 ($SD = 11.439$) at time two. The control group had a mean score of 20.013 ($SD = 7.819$) at time one which decreased slightly to 17.879 ($SD = 8.475$) at time two.

The personality disorder classification (no, 1 - 2, ≥ 3 personality diagnoses) by time interaction was not significant ($F(2,71)=.43, ns$) and neither was the group (treatment vs. control) by personality disorder classification ($F(2,71)=.27, ns$) interaction. Finally, the 3-way group by personality disorder classification by time interaction was not significant ($F(2,71)=1.48, ns$).

Treatment Outcome: Eating Disorder Inventory Scores

Treatment also had a significant effect on Eating Disorder Inventory (EDI) scores. A MANOVA performed on the EDI, measured at time two, revealed a significant effect of group ($F(8,59)=3.66, p<.01$). Univariate ANOVAs on the group effect indicated that the treatment and control groups were significantly different on drive for thinness ($F(1,66)=10.143, p<.01$), bulimia ($F(1,66)=18.364, p<.001$), interoceptive awareness ($F(1,66)=6.343, p<.05$) and maturity fears ($F(1,66)=8.671, p<.01$). The differences did not reach significance on body dissatisfaction ($F(1,66)=.029, ns$), ineffectiveness ($F(1,66)=3.720, ns$) perfectionism ($F(1,66)=.196, ns$) or interpersonal distrust ($F(1,66)=2.685, ns$). As expected the group

Figure 4. Beck depression scores in the three personality disorder groups at time 1 and time 2.

that received treatment had lower scores on the EDI subscales at time two, compared to the control group.

Personality Disorder Classifications: Changes pre to post

An ANOVA revealed a significant group by time interaction ($F(1,68)=6.35, p<.01$) on the number of personality disorder diagnoses as classified by the C-PDI. Paired t-tests revealed that the control group had significantly fewer personality disorder diagnoses at time two ($t(43)= 4.58, p<.001$), while the number of diagnoses in the treatment group did not significantly change ($t(25) = .66, ns$). These results appear in figure 5. When average severity scores (computed by averaging the severity scores across the ten personality disorders) were subject to a further analysis, the group by time interaction failed to reach significance ($F(1,61)=1.11, ns$). This suggests that although the number of personality disorders declined in the control group, the severity averaged across personality disorder diagnoses, did not.

Personality Disorder Classifications: Impact on Eating Disorder Inventory scores

Since the Eating Disorder Inventory was (generally) not administered at time one in the control group, these analyses were performed only on the treatment group. Five of the EDI subscales (ineffectiveness, interpersonal distrust, perfectionism, interoceptive awareness, and maturity fears) measure theoretically relevant psychological features linked to eating disorders (Garner et al., 1983). A repeated measures MANOVA performed on these five subscales revealed a significant effect of group, classified according to extent of personality disorder pathology ($F(10,38) = 2.22, p<.05$), time ($F(5,19) = 5.26, p<.01$) and a significant group by time interaction ($F(10,38) = 2.38, p<.05$). Simple main-effects (testing the simple effects of time within each group) indicated that the group without personality disorders did not change significantly from time one to time two ($F(5,19) = 2.19, ns$) and neither did the

Figure 5. Changes in C-PDI diagnoses from pre to post treatment

group with greater than two personality disorders ($F(5,19) = 2.56, ns$) while the group with one or two personality disorders did ($F(5,19) = 5.05, p < .01$). Further tests of the differences between means in the three groups revealed that at time one the groups were significantly different ($F(10, 38) = 2.39, p < .05$) as well as at time two ($F(10, 38) = 2.12, p < .05$). Post hoc comparisons using the Student-Newman-Keul's test (herein referred to as SNK) indicated that on the subscales perfectionism and maturity fears, no two groups were found to be significantly different. On the ineffectiveness subscale post hoc tests indicated that group 3 differed significantly from groups 1 and 2. In terms of interpersonal distrust group 3 differed significantly from group 1. Finally, on interoceptive awareness, group 3 differed significantly from group 1 and group 2. Findings generally indicated that with increased personality disorder psychopathology scores on the last five subscales also increased, indicating greater distress. These results, along with means and standard deviations, appear in Table 5.

Separate MANOVA's performed on the percent improvement scores of the first three subscales of the EDI ($F(6,26) = 0.44, ns$), and last five subscales of the EDI ($F(10,14) = 0.66, ns$) were found to be nonsignificant.

Comorbid Symptoms

MANOVAs applied to concurrent psychopathology, as measured at time one, collapsing across groups (treatment and wait-list control), yielded quite interesting findings. The purpose was to determine if there were differences between the three groups, classified according to number of personality disorder diagnoses, on the measures which were collected only at pre test. Furthermore collapsing across groups resulted in a larger sample size and therefore greater power. Although the Eating Disorder Inventory was generally not administered to the control group at time one, a few control subjects did complete this measure. A MANOVA performed on the first three subscales of the EDI failed to reach significance ($F(6,102) = 1.09, ns$). These subscales measure attitudes and behaviors which are specific to eating and body shape

Table 5.

Mean Eating Disorder Inventory Scores Pre and Post Treatment

	NO P.D.		1-2 P.D.		> 2 P.D.		
	M	SD	M	SD	M	SD	E
INEFFECTIVENESS							
PRE	5.7a	4.4	8.8a	6.1	16.0b	6.4	14.33**
POST	3.9a	4.5	7.0a	3.7	11.8b	7.0	6.39**
PERFECTIONISM							
PRE	6.4	4.2	10.8	5.7	10.1	3.8	1.80
POST	6.8	4.0	5.8	3.8	9.0	6.1	1.84
INTERPERSONAL DISTRUST							
PRE	3.4a	3.1	8.6	4.9	8.6b	5.0	8.78**
POST	2.4a	2.1	6.0	4.3	7.3b	5.1	4.47*
INTEROCEPTIVE AWARENESS							
PRE	8.4a	5.0	15.0	5.8	13.4b	7.9	3.63*
POST	4.3a	4.0	4.8a	3.8	10.1b	4.8	5.34*
MATURITY FEARS							
PRE	2.3	1.9	5.2	4.0	4.6	2.5	2.14
POST	1.5	1.5	3.0	2.6	1.9	1.5	.89

NOTE. Means with different subscripts are significantly different from each other ($p < .05$) using Student-Newman-Keuls criterion.
 *** $p < .001$. ** $p < .01$ * $p < .05$

concerns (Garner et al., 1983) and have been used in studies as a measure of dysfunctional bulimic thoughts (Blouin et al., 1994). The last five subscales measure theoretically relevant psychological traits. A MANOVA performed on the last five subscales was significant ($F(10,98) = 3.18, p < .001$).

Univariate ANOVAs indicated that the personality disorder groups were significantly different on ineffectiveness ($F(2,53) = 14.12, p < .001$), interpersonal distrust ($F(2,53) = 9.76, p < .001$) and, interoceptive awareness ($F(2,53) = 4.02, p < .05$). The differences between groups was not significant on maturity fears ($F(2,53) = 2.95, ns$) or perfectionism ($F(2,53) = 1.24, ns$). Post hoc SNK indicated that on ineffectiveness and interpersonal distrust groups one (no personality disorders) and group three (greater than 3 personality disorders) were significantly different from each other as were groups two (1-2 personality disorders) and group three at the 0.05 level. On interoceptive awareness groups one and three and groups one and two were found to be significantly different from each other. . Generally as personality disorder pathology increased so did the scores on these subscales.

Finally, although the three groups did not differ significantly on perfectionism or maturity fears there was a trend toward higher scores with increased personality disorder psychopathology. These group effects are presented in figure 6.

A MANOVA applied to the SCL-90 subscales also yielded a significant group effect ($F(18,178) = 2.84, p < .001$). These results are shown in figure 7. Univariate ANOVAs indicated that the personality disorder groups were significantly different on obsessive compulsive ($F(2,97) = 15.53, p < .001$), interpersonal sensitivity ($F(2,97) = 16.91, p < .001$), paranoid ideation ($F(2,97) = 13.18, p < .001$), psychoticism ($F(2,97) = 12.97, p < .001$), somatization ($F(2,97) = 4.37, p < .05$), depression ($F(2,97) = 16.19, p < .001$), anxiety ($F(2,97) = 7.9, p < .001$), anger ($F(2,97) = 9.8, p < .001$), and phobic anxiety ($F(2,97) = 4.93, p < .01$). The scores on the SCL-90 always increased with an increase in the number of personality disorders (according to

Figure 6. Eating disorder inventory scores in three personality groups.

Note: error bars represent standard deviations.

Figure 7. SCL-90 scores in the three personality disorder groups

the three groupings). Post hoc SNK comparisons indicated that the three groups differed significantly from each other on the following subscales: obsessive compulsive, interpersonal sensitivity, paranoid ideation and psychoticism. Groups 1 differed significantly from groups 2 and 3 on somatization, depression and anxiety; group 3 differed significantly from 1 and 2 on anger; and on phobic anxiety only group 1 and group 3 were significantly different.

Remission Rates

In order to further examine the relationship between personality disorder and treatment outcome, two groups of subjects; those who evidenced no bulimic symptomatology (the remitted group) and those who evidenced some degree of bingeing or purging (the unremitted) were compared for the total number of personality disorder diagnoses assigned based on responses to the C-PDI at time one and time two. An ANOVA of outcome (remitted vs. unremitted) by time (pre and post treatment) revealed a significant main effect of outcome ($F(1,22)=7.03$, $p<.05$). No main effect for time was found ($F(1,22)=0.01$, ns), and the interaction was also not significant ($F(1,22)=0.86$, ns). Means (with standard deviations in parentheses) for the remitted and unremitted groups were 2.544 (3.027) and 1.085 (1.686), respectively.

These data were further examined to determine what might account for this discrepancy. The number of subjects in the remitted and unremitted groups falling into each of the three personality disorder diagnoses groups (0, 1-2, ≥ 3) were compared at time 1 (pretreatment) and time two (post-treatment). An examination of the remitted groups' distribution of subjects across the three diagnostic categories revealed a similar distribution of subjects at time one and time two (see table 6). In contrast, the unremitted group revealed a very different distribution of subjects across the three personality disorder groups depending upon whether the personality disorder classification was based on time one or time two responses to the C-PDI. In the unremitted group 23 subjects completed the C-PDI at time 1 but only 14 completed it at

Table 6.

Number of subjects in the remitted and unremitted groups, classified according to the three personality disorder groups, at time one and time two.

REMITTED

	0 P.D.	1 - 2 P.D.	> 2 P.D.	N
Time 1	7	5	6	18
Time 2	5	2	5	12

UNREMITTED

	0 P.D.	1 - 2 P.D.	> 2 P.D.	N
Time 1	9	8	6	23
Time 2	11	2	1	14

time two. Of those 14, 78% ($n = 11$) were in the group who reported no personality disorder at time two. It would appear that of the subjects who reported one or more personality disorders at time one ($n=14$) only three subjects completed the C-PDI at time two. It seems then that selective attrition accounts for differences in the three personality disorder groups and their classification as remitted and unremitted. In the unremitted group, of those individuals who received one or more diagnoses with the first administration of the C-PDI, 78.6% failed to complete the second administration of the C-PDI. In contrast, in the remitted group 63.64% of the subjects who completed the C-PDI at time one, also completed it at time two. A subsequent MANOVA performed on the severity scores of the CPDI found no differences between the remitted and the symptomatic groups ($F(10,9)=0.29, ns$).

Further differences between the remitted and the unremitted group were examined. To investigate chronicity, an ANOVA was performed on the number of years that patients had experienced problems with binge eating. A significant main effect of outcome (remitted vs. unremitted) was found ($F(1,30) = 11.03, p<.01$). An examination of the means revealed that the remitted group had experienced an average of 5.53 ($SD = 5.48$) years with a binge eating problem, while the unremitted group experienced 14.6 ($SD = 9.65$) years. A subsequent ANOVA performed on age revealed that the remitted group was significantly younger than the unremitted group ($F(1,38) = 6.701, p < .05$). The mean age in the remitted group was 23.57 ($SD = 5.53$) and in the unremitted group, 28.18 ($SD = 6.70$). Thus those who were free of the core eating behaviors of binge eating and vomiting were on average 4 to 5 years younger than those who continued to experience this symptomatology.

A MANOVA was performed on perceived severity of binge eating and vomiting. Perceived severity, a sub-scale of the Bulimic Symptom Checklist, was assessed on a likert scale and ranged from 1 (not at all severe) to 5 (extremely severe). Since subjects were divided into remitted and symptomatic groups only on the basis of

Figure 8. Perceived severity of binge eating in the remitted and unremitted groups

Pretreatment: remitted vs. unremitted - ns
Posttreatment: remitted vs. unremitted - $p < .01$
Remitted: pre vs. post - $p < .001$
Unremitted: pre vs. post - ns.

Figure 9. Perceived severity of vomiting in the remitted and unremitted groups

Pretreatment: remitted vs. unremitted - ns
Posttreatment: remitted vs. unremitted - $p < .01$
Remitted: pre vs. post - $p < .001$
Unremitted: pre vs. post - ns.

the number of binge and vomiting episodes in the previous week, it was thought that assessing perceived severity might provide a more general, subjective, evaluation of overall bulimic symptomatology. A significant outcome (remitted vs. symptomatic) by time interaction ($F(2,36)=10.83, p<.001$) was found. Perceived severity of binge eating in the remitted and unremitted groups is shown in figure 8. Figure 9 illustrates the perceived severity of vomiting in the remitted and unremitted groups. Testing the simple effects of time within each group revealed a significant change over time for the remitted group ($F(2,36)=39.20, p<.001$) but not for the symptomatic group ($F(2,36)=3.02, ns$). Further analyses indicated that there were no differences between the remitted and symptomatic groups in terms of perceived severity of binge eating and vomiting at time one ($F(2,36)=0.54, ns$), while there were highly significant differences at time two ($F(2,36)=31.48, p<.001$).

The first three subscales of the EDI which assess attitudes and behaviours related to eating and body shape (Drive for Thinness, Bulimia, and Body Dissatisfaction) were converted to percent improvement scores. The following formula was used: pre-treatment score - post-treatment score/ pre-treatment score X 100. A MANOVA was performed and a significant main effect of outcome (remitted vs. symptomatic) was found ($F(3,24)=3.40, p<.05$). These results appear in figure 10.

A MANOVA performed on the BDI revealed a significant main effect of outcome ($F(1,32)=6.18, p<.05$) and a significant main effect of time ($F(1,32)=30.68, p<.001$) but the interaction was not significant ($F(1,32)=1.29, ns$). Simple effects indicated that although the remitted and the symptomatic group were not significantly different at time one ($F(1,32)=3.89, ns$) they were at time two ($F(1,32)=6.05, p<.05$). Examining the simple effects of time within each group of subjects revealed that both the remitted group ($F(1,32)=25.25, p<.001$) and the symptomatic group ($F(1,32)=8.67, p<.01$) exhibited a decrease in Beck Depression scores from time one to time two. These findings are presented in figure 11.

Figure 10. Percent improvement in the remitted and unremitted groups on EDI subscales.

Figure 11. BDI scores in the remitted and unremitted groups pre and post treatment

Discussion

Overall Treatment Outcome.

Before discussing the impact of personality disorders on treatment outcome it is essential to determine whether or not the treatment itself was instrumental in reducing bulimic symptomatology. For this purpose a wait-list control group was included in the present study. The first part of this discussion will therefore examine findings relating to differences between the treatment and control groups.

Subjects in the present study were on average 27 years of age, were 5'3" tall and weighed approximately 145 lb. They were primarily wage earners or students. Most had never been married. These subjects had experienced problems with binge eating for, on average, 10 years. For most of them restrictive eating began between 14 and 15 years of age. One or two weeks prior to the commencement of treatment, they reported that binge eating occurred on average 5.3 times per week, self-induced vomiting on average 3.7 times per week, and an average of 1.5 other purge episodes (including laxative and diuretic use). They were most likely to binge eat when they were alone, at home, and in the evening. Most reported that their binges lasted from one to two hours. While these characteristics are very similar to those reported in other treatment outcome studies of bulimia, the binge and purge frequency tended to be lower than that reported in other samples (i.e. Agras et al., 1987; Huon & Brown, 1985; Johnson et al., 1990; Kirkley et al., 1985; Olmsted et al., 1991; Wilson et al., 1986). Nevertheless, all subjects met DSM-III-R (APA; 1987) criteria for bulimia nervosa which stipulates 'a minimum average of two binge eating episodes a week for at least three months'. Based on pretreatment reports on the C-PDI, thirty-three percent (n=37) of the sample did not meet criteria for any personality disorder, while sixteen percent (n=18) met criteria for one personality disorder diagnosis, and fifty percent (n=56) met criteria for two or more personality disorders. These findings are consistent with the findings of others (Gartner et al., 1989; Johnson & Wonderlich,

1990).

The treatment of bulimia nervosa has included both psychological and pharmacological approaches. Although some success has been reported with various pharmacological approaches in terms of reducing the frequency of target eating symptoms as well as depression, longer-term studies suggest that the maintenance of these treatment effects is poor. In terms of psychological treatment modalities that which has received the most research support is a cognitive behavioral therapy (CBT) which has been specifically designed for this disorder (Fairburn, 1988). Numerous studies have found that the improvements following cognitive behavioral therapy endure for at least the first year. A preliminary goal of the present study was to examine the effectiveness of CBT for bulimia conducted on a group outpatient basis. The results of this study indicate that for those who completed treatment, 77% of the original sample, it was quite effective.

The attrition rate of 22.8% is comparable to the mean attrition rate of 24% reported in similar cognitive-behavioral group programs as summarized in a review of outcome research (Garner, 1987). The policy applied in the present study stipulated that patients who miss more than two sessions for any reason are asked to drop out and join a subsequent group. Considering this strict policy, attrition rates were considered very low. Of those who dropped out of group, time constraints was given as the primary reason for doing so. No differences were found between group completers and dropouts on any of the pre-measures. Although completion of treatment was similar regardless of number of personality disorders there was selective attrition noted in the completion of the C-PDI post treatment. Those who had unremitted bulimic symptomatology and multiple personality disorders were highly unlikely to complete the C-PDI at time two. This response bias made it appear as though those in the remitted group actually had significantly more personality disorder diagnoses than those in the unremitted group.

In the group of subjects who completed treatment, 49% were abstinent from the core eating symptoms of bingeing and vomiting at the termination of treatment. This

compares very favorably with other treatment outcome studies. Mitchell (1991) noted, following a review of controlled psychotherapy trials for bulimia nervosa, that the majority of patients in most studies are still symptomatic at the end of treatment. In those studies reviewed that specifically employed CBT the percent abstinent from target eating behaviors ranged from 8% to 56% with a mean of 30%. In the present study a 75% reduction in binge eating was noted as well as a 78% reduction in vomiting. Most studies of outpatient group treatment for bulimia report around a 70% reduction in symptoms (Oesterheld et al., 1987).

The methodology employed in this study represents an improvement over many of the existing treatment outcome studies. A major criticism of treatment outcome studies in bulimia is the lack of controls to reliably separate group effect from placebo effect (Garner, 1987; Oesterheld et al., 1987). This lack of control subjects makes it difficult to attribute changes in symptomatology to treatment with any degree of confidence. In the present study subjects were randomly assigned from the wait-list to either treatment or control groups. A second problem with many previous studies cited in reviews of treatment outcome studies, is the small sample size employed in these studies (Garner, 1987; Mitchell, 1991; Oesterheld et al., 1987; Zimpfer, 1990). The present study, by comparison, had a relatively large sample size ($n=114$) thus increasing the generalizability of the findings. Lack of, or failure to specify diagnostic criteria is a third methodological weakness of many treatment outcome studies (Garner, 1987; Oesterheld et al., 1987; Zimpfer, 1990). The resulting heterogeneity of participants makes it virtually impossible to make stringent comparisons among studies. All subjects in the present study met diagnostic criteria for bulimia nervosa according to the DSM-III-R. This diagnosis was further corroborated by a pretreatment record of food intake and purging, collected by both interview and self-report (the BSCL) methods.

One weakness of the present study resulted from the failure to administer the Eating Disorder Inventory to the control group at time one. The decision not to administer the EDI

was made in order to reduce the time demands made on the control subjects. It is important to note however that no differences were found between the control groups EDI at time two and that of the treatment group at time one. In other words, the EDI that was administered to the treatment group prior to therapy was not significantly different from that of the control groups which was administered after a similar period of time during which there were no treatment interventions. Scores on the post treatment EDI in the treatment group however were significantly lower than these other EDI administrations. This lends support to the fact that spontaneous remission was not responsible for the noted improvement of the treatment groups EDI results.

Hypotheses 1.

The first hypothesis was that the group consisting of individuals with extensive personality disorder (defined in the present study as those individuals with three or more personality disorders) would be much more likely to remain symptomatic following treatment. The foundation for this hypothesis was based on an extensive literature that suggests that axis II pathology predicts poorer treatment outcome for a variety of axis I psychiatric disorders (Reich & Vasile, 1993; Reich & Green, 1991).

Thus the primary objective of the present study was to evaluate the prognostic value of personality disturbances in bulimia. In the bulimic population, studies have consistently found a higher prevalence of personality disorders in those women meeting full DSM-III-R criteria for bulimia nervosa than those with a subdiagnostic eating disorder (Schmidt & Telch, 1990; Yager et al., 1989) or a control group matched on age and sex (Schmidt & Telch, 1990). The significance or impact of this has yet to be determined. Some studies have reported that it is the presence of borderline personality that predicts a poorer treatment response in bulimics (Johnson et al., 1990). Others, more recently, have suggested that it is not the type of personality disorder that is critical but rather a high cluster B score that is indicative of poorer response (Rossiter et al., 1993).

The present study looked at the magnitude of the patients' character pathology, rather than the type of personality disorder. A shortcoming of many treatment outcome studies is the failure to consider the effects of the co-occurrence of more than one personality disorder. It has been noted that in the eating disordered population, approximately two thirds of those meeting criteria for one personality disorder receive more than one personality disorder diagnoses (Johnson & Wonderlich, 1990). Yager et al. (1989) reported an average of 2.7 separate personality disorder diagnoses in their sample of bulimics. In the Steiger et al. (1994) study bulimics with borderline personality disorder were compared to bulimics with other personality disorders and those without any personality disorders. Of particular significance is the fact that those assigned to the borderline group met criteria for 3.5 other axis II diagnoses compared to only 1.93 in the 'other' personality disorder group. Sixty percent of borderlines in another study (Clarkin et al., 1983) met criteria for other personality disorders as well, even when the consensus of three raters on the presence or absence of each of the DSM-III-R criteria was required for diagnosis. This then blurs the distinction between those in the borderline personality group and those in the 'other' personality disorder group. In the present study, subjects meeting criteria for borderline personality also met criteria for at least two other personality disorders with the mean number of diagnoses being 4.6. Not a single subject met criteria for only borderline personality disorder. It has been suggested (Oldham et al., 1992) that those patients with more than two personality disorders be given a single diagnosis of 'extensive personality disorder' with a description of the predominant characteristics of the disorder. The present study followed the recommendation of Pretzer and Fleming (1989) and considered the effects of the co-occurrence of more than one personality disorder on treatment outcome, rather than simply considering the presence or absence of a personality disorder diagnosis.

According to the results of this study, axis II psychopathology failed to demonstrate any relationship to treatment outcome in bulimia, as measured by binge and

purge frequencies (measured by the BSCL) and the first three subscales of the EDI (Drive for Thinness, Bulimia, and Body Dissatisfaction). These subscales focus on psychopathology strongly associated with the target symptoms of binge eating, dietary restraint, and purging. MANOVAs performed on eating-symptom measures, from pre to post treatment, did not reveal any consistent differences among the three axis-II based groups.

Recent findings by Steiger et al. (1994) that improvement in bulimic symptomatology immediately following treatment is independent of concurrent psychiatric disturbances, support the findings of this study. Additional support comes from a study which compared active and remitted bulimics (Zanarini et al., 1990). They found no differences between these two groups in terms of personality disorder psychopathology despite the fact that a large percent of individuals in each group met criteria for one or more axis II disorders. Together these findings suggest that treatment for bulimia, in terms of improvement in the core eating disturbances, does not appear to be influenced by the number of comorbid personality disturbances. This is a very interesting finding and contrary to what has been suggested in several recent studies which have investigated the impact of personality disorders on treatment outcome in bulimia (Johnson et al., 1990; Rossiter et al., 1993). Nevertheless, the present findings have important implications for clinicians treating individuals with bulimia. Although long-term outcome studies are needed, the present findings suggest that individuals with bulimia nervosa and comorbid personality disorder diagnoses are not less likely to respond to treatment.

Although the severity of the symptomatic eating behavior (e.g. frequency, duration) was not related to the degree of personality psychopathology in the present study, those with extensive personality disorders were clearly more distressed on other measures. Consistent differences were found between the three axis-II based groups in terms of more general psychopathologies measured by the last five subscales of the Eating Disorder Inventory (ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness,

maturity fears). The group with the most personality disorder diagnoses were also those with the highest (and therefore most severe) scores on the EDI. Those with no personality disorder diagnoses received the lowest scores on the EDI and those with one or two personality disorder diagnoses received scores falling between the other two groups. This relationship was evident both before and following treatment. This suggests that CPDI diagnoses are associated with psychological characteristics among eating disordered patients, as measured by the EDI.

In the present study treatment outcome was also examined by comparing the group that was abstinent from the core symptoms of binge eating and purging following treatment to the group who continued to engage in bulimic behaviors. Surprisingly the abstinent group was found to have a greater number of personality disorder diagnoses than the group who continued to display some bulimic symptomatology. On closer examination it was revealed that selective attrition was responsible for this rather discrepant finding. In the unremitted group, only 21.4% of those who received one or more personality disorder diagnoses at time one, completed the C-PDI at time two. In the remitted group, on the other hand, the majority (63.6%) of those who received one or more personality disorder diagnoses at time one completed the C-PDI at time two. These results suggest that perhaps for those individuals who possess multiple personality disorders and continue to display bulimic symptomatology following treatment, there is a reluctance to further admit to problematic behavior. Another possibility is that the increased pathology may interfere with their ability to organize time to complete the C-PDI a second time, especially when they do not feel that they are better. In contrast, those with no personality disorder diagnoses did report even though they were not remitted.

It was also noted that the remitted group was significantly younger than the unremitted group (mean age 23.6 and 28.2, respectively) it is possible that their bulimic symptomatology is less entrenched or more amenable to change. Further support for this comes from the finding that the remitted group reported having experienced significantly

fewer years with a binge eating problem than the unremitted group (5.53 vs. 14.6). Other studies have also found that those who benefited the most from treatment were younger (Connors et al., 1984) and had a shorter duration of their illness (Hsu & Holder, 1986).

The number of personality disorder diagnoses in the treatment group did not differ significantly between the first administration of the C-PDI and the second, while the number of diagnoses per subject decreased in the control group with the second administration of the C-PDI. This is a frequently observed phenomena. Robins (1985) has provided several plausible explanations for this reduced symptom reporting at the second administration of an interview or test. Recall of what the subject reported at the first session can result in different symptoms being reported at the second session. If the subject thinks that the purpose of the second administration is to augment the first, they may not give further mention of symptoms reported earlier. Another possibility is that the first interview or test was in fact therapeutic. It has also been suggested that patients may present themselves for assessment when their symptoms are worst while the second administration is random with respect to the symptom severity.

To summarize, the findings of the present study suggest that the extent of personality disturbance measured at pretreatment does not impact on treatment outcome for bulimia (at least in the short term) in terms of the core symptoms of binge eating and vomiting. Nevertheless, it was generally found that those with the greatest extent of personality disorder pathology also received the most severe scores on measures of psychiatric disturbance.

Hypothesis 2.

The second hypothesis was that the three groups classified according to personality disorder status would not differ in terms of bulimic symptomatology prior to treatment. Numerous studies have reportedly found no differences in terms of severity of symptomatic eating behavior on initial presentation when bulimics with and without a co-

existing personality disorder have been compared (Johnson et al., 1989; Johnson et al., 1990; Wonderlich & Swift, 1990; Yates et al., 1989).

The results of this study provide additional support for the literature in finding that there were no differences in terms of bulimic symptoms (as measured by weekly binge eating and vomiting frequencies) between bulimics with and without personality disorder diagnoses at time one. There were also no differences in terms of the first three subscales of the Eating Disorder Inventory which measure symptomatic behaviors and beliefs which are common in the eating disordered population.

Axis II comorbidity did however predict consistent differences on psychopathological indices measured prior to the commencement of treatment. An increase in the number of personality disorder diagnoses was linked to elevated psychiatric symptoms. Generally, those with the most personality disorder diagnoses were also the ones with the most severe scores on the SCL-90-R and the Beck Depression Inventory (BDI). Those with no personality disorder diagnoses received the lowest scores on the SCL-90-R and the BDI. Finally those with one or two personality disorder diagnoses received scores falling between the other two groups. Similar findings were reported by another study which compared bulimics with and without personality disorders (Yates et al., 1989). These two groups were compared on cognitive, psychological, psychiatric, and physiological measures. The personality disordered group was found to have higher Eating Disorder Inventory scores, histories of major depression and suicide attempts, and higher lifetime maximum and minimum body mass indices.

Hypotheses 3.

The final hypothesis addressed was that those individuals with extensive personality disorder pathology would also report higher levels of depression. Studies to date have indicated that bulimic individuals with personality disorders (Fahy et al., 1993;

Yates et al., 1989) or borderline personality disorder (Steiger et al., 1994) are more depressed than those without comorbid psychopathology.

This hypothesis was supported and findings indicated that those individuals with the greatest extent of personality disorder pathology also received the highest scores on the Beck Depression Inventory. Those individuals with no personality disorder diagnoses received the lowest scores, and those with one or two distinct personality disorders received scores falling between the other two groups. This relationship was evident both prior to and following treatment.

Axis II comorbidity also predicted consistent differences on other psychopathological indices measured prior to the commencement of treatment. An increase in the number of personality disorder diagnoses was linked to elevated symptom dimensions as measured by the subscales of the SCL-90-R (depression is included as one of the subscales of the SCL-90-R). Generally, those with the most personality disorder diagnoses were also the ones with the most severe scores on the SCL-90-R. Those with no personality disorder diagnoses received the lowest scores on the SCL-90-R and those with one or two personality disorder diagnoses received scores between those of the other two groups.

In conclusion, hypothesis one was not supported by the results of the present study while support was found for hypotheses two and three. In summary, it appears the bulimics with comorbid personality disorders are not less likely to respond to treatment than those who are free from this degree of personality disturbance. These individuals with extensive personality disorder comorbidity did, however, consistently demonstrate higher scores on other measures of psychopathology including Beck Depression Inventory scores, and SCL-90-R scores.

An Examination of Personality Disorder Diagnoses in the Present Sample.

In addition to testing the three hypotheses just addressed, the present study was also interested in investigating which of the ten personality disorder diagnoses assessed were most prevalent in the sample. The present findings are perhaps best interpreted from a cognitive theoretical perspective. By definition, personality disorders are seen as relatively enduring traits which are maladaptive and interfere with the individuals functioning in various aspects of their life. How the personality disordered individual perceives and interacts with their environment is largely a function of their cognitive distortions and underlying belief system. As has been suggested by others (e.g. Reich & Vasile, 1993) it is possible that personality disorders serve as a vulnerability factor facilitating the onset of axis 1 disorders, such as bulimia nervosa. The dysfunctional cognitive beliefs that the personality disordered individual holds about themselves and others, in addition to the difficulties that they must experience in interpersonal contexts, may make them vulnerable to any number of destructive types of behavior. These behaviors may include the abuse of substances such as drugs or alcohol or, in the case of bulimia, extreme dieting and binge and purge behavior. Binge eating and vomiting may have become a habitual but ineffective coping or avoidance strategy for these individuals.

The three most common diagnoses in the present study were histrionic, obsessive compulsive and borderline. An examination of the beliefs associated with each of these personality disorders should help elucidate how these particular personality disorders might increase an individuals vulnerability to the development of an eating disorder.

Histrionic personality disorder has been frequently associated with bulimia (Levin & Hyler, 1986; Wonderlich & Swift, 1990; Yager et al., 1989; Yates et al., 1989). In the present study 40.1% of the subjects met DSM-III-R criteria for histrionic personality disorder. The individual with histrionic personality disorder is characterized by excessive

emotionality and attention seeking (see appendix B). They are continually seeking or demanding reassurance, approval, or praise from others. They also tend to be overly concerned with physical attractiveness and may be particularly seductive in appearance or behavior. Apparently, the female histrionic has been rewarded at an early age for cuteness, physical attractiveness and charm rather than for competence in any endeavor (Fleming, 1990). The histrionic is most comfortable when they are the center of attention. They tend to be perceived by others as self-centered, shallow, lacking in genuineness, demanding, and overly dependent (Fleming, 1990). According to the DSM-III-R, the interpersonal relationships of histrionic individuals are usually stormy and ungratifying. The underlying assumptions of the histrionic include "I am inadequate and unable to handle life on my own" and "It is necessary to be loved by everyone" (Fleming, 1990). They tend to lack any clear sense of identity. This is primarily due to the fact that they are so focused on external events and that they tend to ignore their own internal experience (Fleming, 1990). It is not difficult to understand how such an individual may be vulnerable to developing an eating disorder. The need for attention and approval in combination with the excessive focus on physical attractiveness could easily result in a number of behaviors designed to accomplish this end. In Western culture which places such a premium on thinness (Garner, Garfinkel, Schwartz, & Thompson, 1980), the histrionic could reach the conclusion that they must be thin in order to be adequate or to gain the attention and approval of others. In an effort to achieve this goal, they may engage in dieting or restrictive eating which puts them at risk for the development of an eating disorder.

Obsessive Compulsive personality disorder has been more frequently associated with restricting anorexics than bulimics (Piran et al., 1988; Steiger et al., 1991; Wonderlich & Swift, 1990) although others have failed to find this distinction (Gartner et al., 1989). In the current study it was the second most common diagnosis with 37.8% meeting DSM-III-R criteria for histrionic personality disorder. This finding may suggest that the subjects in the present study were more restrictive, with less specific bulimic

symptomatology than is usually found in a bulimic population. Also the fact that such a large percentage of bulimic subjects met criteria for obsessive-compulsive personality disorder suggests that they may have made use of tendencies associated with this personality disorder (i.e., being rigidly controlled and perfectionistic) to gain control of their binge and purge behavior in the short-term without addressing the underlying beliefs. This may place them at a greater risk for relapse.

The obsessive compulsive is best characterized by a rigid, perfectionistic style that leads to either significant functional impairment or subjective distress. Simon and Meyer (1990) have identified some of the more common assumptions that the obsessive compulsive ascribes to, these include the following: (1) "There are right and wrong behaviors, decisions, and emotions."; (2) "I must avoid mistakes to be worthwhile."; (3) "To make a mistake is to have failed."; (4) "To make a mistake is deserving of criticism."; (5) "I must be perfectly in control of my environment as well as of myself," "Loss of control is intolerable," and "Loss of control is dangerous."; (6) "If something is or may be dangerous, one must be terribly upset by it."; (7) "One is powerful enough to initiate or prevent the occurrence of catastrophes by magical rituals or obsessional ruminations."; (8) "If the perfect course of action is not clear, it is better to do nothing."; (9) "Without my rules and rituals, I'll collapse in an inert pile." Given this personality style it becomes apparent how such an individual could become vulnerable to the development of an eating disorder. They feel they "should" be in control of their lives and their bodies at all times. An obsessive compulsive individual who is trying to follow a strict diet would consider any deviation from the regimen to be a total failure. Thus, if they ate one cookie they would consider themselves to be a total failure and might just as well finish the bag. It is understandable how behavior such as this could lead into the binge-purge cycle; repeated attempts to maintain their weight at culturally desirable levels through restriction is followed by binge eating when their resolve collapses, and then purging to alleviate guilt and prevent the consequent weight gain.

That borderline personality disorder is commonly associated with bulimia has been well established (Ames-Frankel et al., 1992; Cooper et al., 1988; Gartner et al., 1989; Johnson et al., 1989; Kennedy et al., 1990; Levin & Hyler, 1986; Piran et al., 1988; Rossiter et al., 1993; Sansone et al., 1989; Schmidt & Telch, 1990; Steiger et al., 1991; Steiger et al., 1994; Wonderlich & Swift, 1990; Yager et al., 1989; Zanarini et al., 1990). In the present study 28.5% of patients with bulimia met criteria for borderline personality disorder. Borderline personality disorder has been defined in DSM-III-R (APA, 1987, pp. 346-347) as an enduring pattern of perceiving, relating to, and thinking about the environment and oneself in which there are problems in a variety of areas including interpersonal behavior, mood, and self-image. The most notable characteristics of individuals diagnosed with borderline personality disorder is the intensity of their emotional reactions, the instability of their moods, and the great variety of symptoms that they present (Pretzer, 1990). According to these authors, three basic assumptions appear to play a central role in borderline personality disorder, these include: "The world is dangerous and malevolent," "I am powerless and vulnerable," and "I am inherently unacceptable." These beliefs put the borderline individual into quite a quandary: They see themselves as helpless, in a hostile world without a source of security, which forces them to vacillate between autonomy and dependence without being able to rely on either (Pretzer, 1990).

One explanation for the high rate of borderline personality disorder found in the bulimic population is criteria overlap. The symptoms of BPD, as defined by DSM-III-R overlap considerably with those of bulimia nervosa and major depression, a disorder which frequently coexists with bulimia nervosa (Hudson et al., 1987; Pope & Hudson, 1989). It has been suggested then that the prevalence of borderline personality disorder has been overestimated in patients with eating disorders. In fact Pope et al. (1987), using standard scoring criteria, found that 25% of their bulimic sample fulfilled criteria. However when

the criteria were revised to reduce overlap, only 2% of the subjects received a BPD diagnosis.

It is particularly interesting that borderline personality disorder was only present in the group meeting criteria for three or more personality disorder diagnoses. While this supports the position taken in the present study that borderlines' typically meet criteria for a large number of other diagnoses we cannot disregard the possibility that perhaps these individuals are more dysfunctional (Johnson et al., 1989; Steiger et al., 1994) and/or less responsive to treatment (Johnson et al., 1990) than those with no or another personality disorder. This finding has been supported by other studies. While borderline personality did not impact the outcome of treatment in the present study in terms of binge eating/purging the possibility remains that a longer follow-up would have revealed differences between those with and without borderline personality disorder. In the present study subjects were assessed immediately following the last treatment session. Johnson et al. reported that 62% of their borderline group were bingeing and purging twice a week or more at a one-year follow-up, whereas only 21% of the nonborderline group exhibited this degree of symptomatic behavior. Furthermore, at the initial evaluation, the borderline group presented with a more complicated clinical picture in terms of general psychiatric symptoms as measured by subscales of the EDI, the BDI, and the SCL-90-R. This is similar to the present study which found that the group with the greatest number of personality disorders also demonstrated higher levels of psychiatric disturbances.

In the present study it was not possible to examine the impact of borderline personality disorder in isolation since there was not a single subject who received this diagnosis alone. It cannot then be ascertained with certainty whether the greater extent of disturbance is specifically characteristic of borderlines or rather is associated with a broader range of personality pathology. This question can only be addressed by comparing those with a single diagnosis of borderline personality disorder with those who obtain multiple diagnoses including borderline.

Whether borderline personality disorder is overestimated or not, the fact remains that variability in characteristics is one of the distinguishing aspects of BPD. When Beck and colleagues (1990) compiled a list of some of the typical beliefs associated with each personality disorder, they failed to include borderline personality disorder. The reason for this exclusion, according to the authors, was that BPD was not made up of a typical set of beliefs. Instead they saw the beliefs associated with BPD as overlapping with those from a broad range of personality disorders. Furthermore, not only did Clarkin and colleagues (1983) find that there were 93 different ways to meet DSM-III-R criteria for BPD, but also that one could receive a diagnosis without revealing a pattern of unstable-intense relations, identity disturbance, or affective instability. This is despite the fact that most would agree that these are the hallmarks of the disorder (i.e. Clarkin et al., 1983; Nurnberg, Hurt, Feldman, & Suh, 1987).

It is nevertheless understandable given the wide range of problems experienced by the individual with borderline personality disorder, along with the accompanying tension and anxiety these problems create, could lead them to bingeing and purging. Perhaps bingeing and purging provide an, albeit ineffective, means of coping for these individuals. One study found that bulimics with borderline features experienced diminished anxiety and depression after a binge-purge episode, while others reported a slight increase (Steinberg, Tobin, & Johnson, 1990).

Finally, since the borderline lacks a clear sense of identity they may look to the prevailing societal ideals to create an image. Since we live in a society that so highly values thinness it is apparent how they might pursue this image even though genetically they may not be “programmed” to be particularly thin.

Future Studies.

Future studies should address more general aspects of psychopathology post-treatment. The finding that those who were abstinent from binge eating and vomiting

following treatment were younger (Connors et al., 1984), had a shorter duration of their illness (Hsu & Holder, 1986), and were less depressed (Bossert et al., 1992; Swift et al., 1985) has been supported by other research. Fairburn et al. (1985) have demonstrated that patients who respond to treatment with marked reductions in bingeing and vomiting display a corresponding decline in depression and other signs of emotional distress.

What has yet to be discovered is whether the presence of personality disorders has an effect on recidivism in bulimia. Some studies have found that over 60% of formerly "abstinent" cases may relapse into regular bulimic behaviors within roughly 18 months (e.g. Keller et al., 1992). In a recent study a relapse rate of 31% was found in a 2-year follow-up period, with the majority of relapses occurring within the first six months following treatment (Olmsted, Kaplan, Rockert, 1994). Of particular interest in light of the current findings, was that one of the strongest predictors of relapse was a higher score on the interpersonal distrust subscale of the EDI at the end of treatment. In the present study those with the greatest extent of personality disorders also received the highest scores on the interpersonal distrust scale of the EDI.

When, in another study, the presence of personality disorders was assessed using structured interviews (SCID-II, PDE) they were found to be no more common among patients with current eating disorders than among patients without current eating disorders (Skodol, Oldham et al., 1993). However, when lifetime diagnoses were considered both interviews found that significantly more persons with eating disorders had personality disorders than those without eating disorders. More research is needed to ascertain the effect of personality disorders on the course of eating disorders. Prospective longitudinal follow-ups are clearly needed to meet this end.

Bulimia is probably in reality a heterogenous disorder. Not until we have a comprehensive understanding of the disorder and the various subtypes subsumed under the category we currently know as bulimia nervosa will we be able to treat all patients effectively. Since relapse is common in bulimia, regardless of treatment modality, research

is needed on how to best optimize the treatment effects. It is generally accepted that bulimia nervosa is a multifaceted disorder. It follows then that a multifaceted treatment approach such as cognitive-behavioral therapy should be the best choice of treatment modalities, particularly in a group setting. Given that bulimia is a syndrome with behavioral, cognitive, and affective components the task is to determine which are the crucial ingredients of treatment for which patients (Zimpfer, 1990).

Limitations.

Despite the shortcomings of this study the results clearly do not support the original prediction that those with the greatest extent of personality disorder psychopathology would be less likely to overcome their bulimic symptomatology following treatment than those without. Nevertheless, there are some limitations in this study that need to be acknowledged. The first concerns the small size of the subsample of bulimics who completed treatment ($n=44$). This results in a reduction in the power of the analysis and limits the conclusions that can be drawn.

The second limitation concerns the limited information collected at follow-up. The focus at follow-up was on eating behavior and therefore in order to reduce the time demands made on the subjects (who participated on a voluntary basis) only the data most crucial to the hypotheses being tested was collected. The critical instruments at follow-up were the Bulimic Symptom Checklist, the Beck Depression Inventory, the Eating Disorder Inventory, and the C-PDI. Ideally future studies would include instruments designed to measure a wide range of psychosocial and behavioral functioning.

A further limitation of the present study was the failure to administer the Eating Disorder Inventory to the control group at time one. This reason for this exclusion was time constraints. It was not uncommon for participants to take much longer than the estimated 30 minutes to complete the C-PDI. Since the next most critical instrument at time

one was the Bulimic Symptom Checklist, which collected information on binge and purge frequencies, this information was preferentially collected over the longer EDI.

The fact that all variables investigated were collected via self-report is another limitation of the present study. This reliance on self-reports remains a major constraint to research in the area of eating disorders (Wilson, 1987). Unfortunately, in terms of eating behavior, there is no valid alternative to self-report at this time. Furthermore, there is no way of knowing the amount of error introduced by self-reports. Since subjects were obviously not blind to the fact that they were receiving treatment, the possibility remains that subjects may have misrepresented the degree of their recovery. Another related problem is the fact that only three subjects with personality disorders, who were unremitted post treatment, agreed to complete the C-PDI at time two. This represents selective attrition and gives a false perception of differences between the remitted and unremitted groups. Future studies should be aware of this possibility and take extra precautions to ensure unremitted subjects complete measures post treatment. Nevertheless comparisons between the groups can still be informative.

A final limitation that needs to be addressed is the fact that the present study was restricted to an investigation of only the immediate effects of treatment. Obviously the more critical question is the efficacy of treatment over time and the impact of personality disorders on this outcome. This is a question that needs to be addressed in future studies.

Conclusions.

In conclusion, findings from the present study indicate that the extent of personality disorder pathology does not impact treatment outcome for bulimia. Additionally, personality disorder pathology does not differentiate between individuals, in terms of bulimic symptomatology, prior to treatment. Bulimics with comorbid personality disorders may represent a sub-group of bulimics whose illness tends to run a more chronic course (Herzog et al., 1992; Skodol, Oldham, et al., 1993). They may have a greater tendency

toward relapse especially when the supportive group of which they were a part comes to an end. In the present study those individuals with extensive personality disorder also reported the highest level of depression. While personality disorder psychopathology does not appear to impact short-term treatment outcome in bulimia, long-term follow-up studies are needed.

The finding of a greater number of personality disorder diagnoses in the abstinent group, following treatment, than the group who continued to display some bulimic symptomatology was unexpected. On closer examination it was revealed that selective attrition was responsible for this rather discrepant finding. In the unremitted group a disproportionate number of those with personality disorder diagnoses at time one failed to complete the C-PDI at time two. One can only speculate as to the reasons for this phenomena. Perhaps those individuals who continued to display bulimic symptomatology were reluctant to reveal further psychopathology. Another plausible explanation is that they lacked the resources to return to the clinic and complete a further assessment. They were, after all, clinically and significantly more depressed than those in the remitted group. Future research should make efforts to ensure this group completes follow-up measures.

Future studies should include, as outcome measures, numerous instruments designed to measure a wide range of psychosocial functioning. Additionally, in evaluating the impact of treatment an assessment should be included of the patients' eating habits and caloric/nutritional intake. In one study (Kirkley, Agras & Weiss, 1985) it was reported that a number of patients who showed a marked improvement in binge eating also demonstrated a significant decrease in caloric intake. It is not know how widespread this phenomena might be since dietary practices have not been routinely assessed in treatment outcome studies.

Finally, severity of personality disorder psychopathology has not yet been adequately addressed. It remains a possibility that type of personality disorder predicts outcome better than number of personality disorders. Furthermore, it is quite plausible that

certain personality disorders are more debilitating for some individuals than for others. For example, histrionic personality disorder would probably be an asset to someone whose occupation is in the entertainment industry, while it might leave a librarian chronically depressed. The question of personality disorder severity has not yet been adequately addressed and should be the focus of future research in the area.

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Appendix 1**Informed Consent Form**

Investigator: Sandra Comer
For Information Contact: Dr. A. Blouin (613) 761-4746

Informed Consent

This study is designed to identify factors which predict change in bulimic symptoms among individuals waiting for or undergoing treatment. It is being conducted by researchers from the Eating Disorder Clinic of the Ottawa Civic Hospital.

My participation will require that I come to the clinic on two occasions approximately ten weeks apart. On each occasion, I agree to complete a brief computerized interview (approximately 30 minutes) and a number of brief paper and pencil questionnaires (approximately 20 minutes). The computerized interview is designed to assess general personality characteristics while the questionnaires will specifically address eating disorder symptoms and common associated problems, such as depression. There are no risks or benefits to my participation in this research.

I understand that my participation is completely voluntary and that I may withdraw at any time, without prejudice, to my treatment in the Eating Disorder Clinic, or my relationship with any one or any service at the Ottawa Civic Hospital. I will not be identified as an individual in any publication resulting from this research or any material leaving this institution. All information in computer files or any other files will include code numbers and no other identifying information. Access to the research file will be strictly limited to the investigators and their research assistants.

I voluntarily agree to participate in this study. I may have a copy of this form if I wish.

Signed:_____ Date:_____ Age:_____

Witness:_____

Appendix 2 DSM-III-R criteria for Axis II Personality Disorders

CLUSTER A PERSONALITY DISORDERS

Paranoid Personality Disorder

A. A pervasive and unwarranted tendency, beginning in early adulthood and present in a variety of contexts, to interpret the actions of people as deliberately demeaning or threatening, as indicated by at least four of the following:

- (1) expects, without sufficient basis, to be exploited or harmed by others
- (2) questions, without justification, the loyalty or trustworthiness of friends or associates
- (3) reads hidden demeaning or threatening meanings into benign remarks or events, e.g., suspects that a neighbor put trash out early to annoy him
- (4) bears grudges or is unforgiving of insults or slights
- (5) is reluctant to confide in others because of unwarranted fear that the information will be used against him or her
- (6) is easily slighted and quick to react with anger or to counterattack
- (7) questions, without justification, fidelity of spouse or external partner

B. Occurrence not exclusively during the course of Schizophrenia or a Delusional Disorder

Schizoid Personality Disorder

A. A pervasive pattern of indifference to social relationships and a restricted range of emotional experience and expression, beginning by early adulthood and present in a variety of contexts, as indicated by at least four of the following:

- (1) neither desires or enjoys close relationships, including being part of a family
- (2) almost always chooses solitary activities
- (3) rarely, if ever, claims or appears to experience strong emotions, such as anger or joy
- (4) indicated little if any desire to have sexual experiences with another person (age being taken into account)
- (5) is indifferent to the praise and criticism of others
- (6) has no close friends or confidant (or only one) other than first-degree relatives
- (7) displays constricted affect, e.g., is aloof, cold, rarely reciprocates gestures or facial expressions, smiles or nods

B. Occurrence not exclusively during the course of Schizophrenia or a Delusional Disorder

Schizotypal Personality Disorder

A. A pervasive pattern of deficits in interpersonal relatedness and peculiarities of ideation, appearance, and behavior, beginning by early adulthood and present in a variety of contexts, as indicated by at least five of the following:

- (1) ideas of reference (excluding delusions of reference)
- (2) excessive social anxiety, e.g., extreme discomfort in social situations involving unfamiliar people
- (3) odd beliefs or magical thinking, influencing behavior and inconsistent with subcultural normal, e.g., superstitiousness, belief in clairvoyance, telepathy, or "sixth sense," "others can feel my feelings (in children and adolescents, bizarre fantasies or preoccupations)
- (4) unusual perceptual experiences, e.g., illusions, sensing the presence of a force or person not actually present (e.g., "I felt as if my dead mother were in the room with me")

- (5) odd or eccentric behavior or appearance e.g., unkempt, unusual mannerism, talks to self
- (6) no close friends or confidants (or only one) other than first-degree relatives
- (7) odd speech (without loosening of associations or incoherence), e.g., speech that is impoverished, digressive, vague, or inappropriately abstract
- (8) inappropriate or constricted affect, e.g., silly, aloof, rarely reciprocates gestures of facial expressions, such as smiles or nods
- (9) suspiciousness or paranoid ideation

B. Occurrence not exclusively during the course of Schizophrenia or a Pervasive Developmental Disorder.

CLUSTER B PERSONALITY DISORDERS

Antisocial Personality Disorder

A. Current age at least 18.

B. Evidence of Conduct Disorder with onset before age 15, as indicated by a history of three or more of the following:

- (1) was often truant
- (2) ran away from home overnight at least twice while living in parental or parental surrogate home (or once without returning)
- (3) often initiated physical fights
- (4) used a weapon in more than one fight
- (5) forced someone into sexual activity with him or her
- (6) was physically cruel to animals
- (7) was physically cruel to other people
- (8) deliberately destroyed others' property (other than by fire-setting)
- (9) deliberately engaged in fire setting
- (10) often lied (other than to avoid physical or sexual abuse)
- (11) has stolen without confrontation of a victim on more than one occasion (including forgery)
- (12) has stolen with confrontation of a victim (e.g., mugging, purse-snatching, extortion, armed robbery)

C. A pattern of irresponsible and antisocial behavior since the age of 15, as indicated by at least four of the following:

- (1) is unable to sustain consistent work behavior, as indicated by any of the following (including similar behavior in academic settings if the person is a student):
 - (a) significant unemployment for six months or more within five years when expected to work and work was available
 - (b) repeated absences from work unexplained by illness in self or family
 - (c) abandonment of several jobs without realistic plans for others
- (2) fails to conform to social norms with respect to lawful behavior, as indicated by repeatedly performing antisocial acts that are grounds for arrest (whether arrested or not), e.g., destroying property, harassing others, stealing, pursuing an illegal occupation
- (3) is irritable and aggressive, as indicated by repeated physical fights or assaults (not required by one's job or to defend someone or oneself), including spouse- or child-beating
- (4) repeatedly fails to honor financial obligations, as indicated by defaulting on debts or failing to provide child support or support for other dependents on a regular basis
- (5) fails to plan ahead, or is impulsive, as indicated by one or both of the following:

- (a) traveling from place to place without a prearranged job or clear goal for the period of travel or clear idea about when the travel will terminate
- (b) lack of a fixed address for a month or more
- (6) has no regard for the truth, as indicated by repeated lying, use of aliases, or “conning” others for personal profit or pleasure
- (7) is reckless regarding his or her own or others’ personal safety, as indicated by driving while intoxicated, or recurrent speeding
- (8) if a parent or guardian, lacks ability to function as a responsible parent, as indicated by one or more of the following:
 - (a) malnutrition of child
 - (b) child’s illness resulting from lack of minimal hygiene
 - (c) failure to obtain medical care for a seriously ill child
 - (d) child’s dependence on neighbors or nonresident relatives for food or shelter
 - (e) failure to arrange for a caretaker for young child when parent is away from home
 - (f) repeated squandering, on personal items, of money required for household necessities
- (9) has never sustained a totally monogamous relationship for more than one year
- (10) lacks remorse (feels justified in having hurt, mistreated, or stolen from another)

D. Occurrence of antisocial behavior not exclusively during the course of Schizophrenia or Manic Episodes.

Borderline Personality Disorder

A pervasive pattern of instability of mood, interpersonal relationships, and self-image, beginning by early adulthood and present in a variety of contexts, as indicated by at least five of the following:

- (1) a pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of overidealization and devaluation
- (2) impulsiveness in at least two areas that are potentially self-damaging, e.g., spending, sex, substance use, shoplifting, reckless driving, binge eating (Do not include suicidal or self-mutilating behavior covered in [5].)
- (3) affective instability: marked shifts from baseline mood to depression, irritability, or anxiety, usually lasting a few hours and only rarely more than a few days
- (4) inappropriate, intense anger or lack of control of anger, e.g., frequent displays of temper, constant anger, recurrent physical fights
- (5) recurrent suicidal threats, gestures, or behaviors, or self-mutilating behavior
- (6) marked and persistent identity disturbance manifested by uncertainty about at least two of the following: self-image, sexual orientation, long-term goals or career choice, type of friends desired, preferred values
- (7) chronic feelings of emptiness or boredom
- (8) frantic efforts to avoid real or imagined abandonment (Do not include suicidal or self-mutilating behavior covered in [5].)

Histrionic Personality Disorder

A pervasive pattern of excessive emotionality and attention-seeking, beginning by early adulthood and present in a variety of contexts, as indicated by at least four of the following:

- (1) constantly seeks or demands reassurance, approval, or praise
- (2) is inappropriately sexually seductive in appearance or behavior
- (3) is overly concerned with physical attractiveness
- (4) expresses emotion with inappropriate exaggeration, e.g., embraces casual acquaintances with excessive ardor, uncontrollable sobbing on minor sentimental occasions, has temper tantrums
- (5) is uncomfortable in situation in which he or she is not the center of attention

- (6) displays rapidly shifting and shallow expression of emotions
- (7) is self-centered, actions being directed toward obtaining immediate satisfaction; has no tolerance for the frustration of delayed gratification
- (8) has a style of speech that is excessively impressionistic and lacking in detail, e.g., when asked to describe mother, can be no more specific than, "She was a beautiful person."

Narcissistic Personality Disorder

A pervasive pattern of grandiosity (in fantasy or behavior), lack of empathy, and hypersensitivity to the evaluation of others, beginning by early adulthood and present in a variety of contexts, as indicated by at least five of the following:

- (1) reacts to criticisms with feelings of rage, shame, or humiliation (even if not expressed)
- (2) is interpersonally exploitative: takes advantage of others to achieve his or her own ends
- (3) has a grandiose sense of self-importance, e.g., exaggerates achievements and talents, expects to be noticed as "special" without appropriate achievement
- (4) believes that his or her problems are unique and can be understood only by other special people
- (5) is preoccupied with fantasies of unlimited success, power, brilliance, beauty, or ideal love
- (6) has a sense of entitlement: unreasonable expectation of especially favorable treatment, e.g., assumes that he or she does not have to wait in line when others must do so
- (7) requires constant attention and admiration, e.g., keeps fishing for compliments
- (8) lack of empathy: inability to recognize and experience how others feel, e.g., annoyance and surprise when a friend who is seriously ill cancels a date
- (9) is preoccupied with feelings of envy

CLUSTER C PERSONALITY DISORDERS

Avoidant Personality Disorder

A pervasive pattern of social discomfort, fear of negative evaluation, and timidity, beginning by early adulthood and present in a variety of context, as indicated by at least four of the following:

- (1) is easily hurt by criticism or disapproval
- (2) has no close friends or confidants (or only one) other than first-degree relatives
- (3) is unwilling to get involved with people unless certain of being liked
- (4) avoids social or occupational activities that involve significant interpersonal contact, e.g., refuses a promotion that will increase social demands
- (5) is reticent in social situations because of a fear of saying something inappropriate or foolish, or of being unable to answer a question
- (6) fears being embarrassed by blushing, crying, or showing signs of anxiety in front of other people
- (7) exaggerates the potential difficulties, physical dangers, or risks involved in doing something ordinary but outside his or her usual routine, e.g., may cancel social plans because she anticipates being exhausted by the effort of getting there

Dependent Personality Disorder

A pervasive pattern of dependent and submissive behavior beginning by early adulthood and present in a variety of contexts, as indicated by at least five of the following:

- (1) is unable to make everyday decisions without an excessive amount of advice or reassurance from others

- (2) allows others to make most of his or her important decisions, e.g., where to live, what job to take
- (3) agrees with people even when he or she believes they are wrong, because of fear of being rejected
- (4) has difficulty initiating projects or doing things on his or her own
- (5) volunteers to do things that are unpleasant or demeaning in order to get other people to like him or her
- (6) feels uncomfortable or helpless when close relationships end
- (7) feels devastated or helpless when close relationships end
- (8) is frequently preoccupied with fear of being abandoned
- (9) is easily hurt by criticism or disapproval

Obsessive Compulsive Personality Disorder

A pervasive pattern of perfectionism and inflexibility, beginning by early adulthood and present in a variety of contexts, as indicated by at least five of the following:

- (1) perfectionism that interferes with task completion, e.g., inability to complete a project because own overly strict standards are not met
- (2) preoccupation with details, rules, lists, order, organization, or schedules to the extent that the major point of the activity is lost
- (3) unreasonable insistence that others submit to exactly his or her way of doing things, or unreasonable reluctance to allow others to do things because of the conviction that they will not do them correctly
- (4) excessive devotion to work and productivity to the exclusion of leisure activities and friendships (not accounted for by obvious economic necessity)
- (5) indecisiveness: decision making is either avoided, postponed, or protracted, e.g., the person cannot get assignments done on time because of ruminating about priorities (do not include if indecisiveness is due to excessive need for advice or reassurance from others)
- (6) overconscientiousness, scrupulousness, and inflexibility about matters of morality, ethics, or values (not accounted for by cultural or religious identification)
- (7) restricted expression of affection
- (8) lack of generosity in giving time, money, or gifts when no personal gain is likely to result
- (9) inability to discard worn-out or worthless objects even when they have no sentimental value

Passive Aggressive Personality Disorder

A pervasive pattern of resistance to demands for adequate social and occupational performance, beginning by early adulthood and present in a variety of contexts, as indicated by at least five of the following:

- (1) procrastinates, i.e., puts off things that need to be done so that deadlines are not met
- (2) becomes sulky, irritable, or argumentative when asked to do something he or she does not want to do
- (3) seems to work deliberately slowly or do a bad job on tasks that he or she really does not want to do
- (4) protests, without justification, that others make unreasonable demands on him or her
- (5) avoids obligations by claiming to have "forgotten"
- (6) believes that he or she is doing a much better job than others think he or she is doing
- (7) resents useful suggestions of others concerning how he or she could be more productive
- (8) obstructs the efforts of others by failing to do his or her share of the work