THE FUNCTIONAL ANALYSIS AND TREATMENT OF BULIMIA

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ABSTRACT

Two studies were conducted to examine basic and applied issues in bulimia. Study 1 involved a functional analysis of bulimic episodes; that is, the consumption and subsequent self-induced vomiting of food. Twenty-seven bulimic and 24 nonbulimic women monitored mood, hunger, food intake, and social circumstance on an hourly basis over a number of consecutive days. The results supported a mood-as-antecedent model of bulimia. Bulimics experienced a rapid deterioration in mood prior to engaging in a bulimic episode. Other antecedent factors included being at home alone and having experienced one or more unpleasant events. Regarding food which the bulimic ate and retained, mood was relatively positive both before and after eating, while food consumption had a mood-enhancing effect for nonbulimics.

Study 1 failed to support the hypotheses derived from restraint theory that dieting is a characteristic feature of bulimia, or that hunger is an antecedent of bulimic episodes. The two groups did not differ significantly in total daily caloric intake (excluding bulimic episodes), frequency or caloric value of retained snacks and meals, or intensity of hunger prior to eating snacks and meals. In addition, bulimics failed to demonstrate significant elevations in hunger prior to engaging in a bulimic episode. These results are discussed in terms of

possible differences between factors which play a role in the development of bulimia versus those which maintain it over time.

Study 2 compared the relative efficacy of a 10-week cognitive-behaviour therapy for bulimia conducted in either a group or individual format. Collapsed across treatment conditions, bulimics reported significant improvements at posttreatment which were maintained at 3-month follow-up on psychometric tests measuring associated psychopathology. Both groups improved equally in reduction of dysphoria and frequency of bingeing and vomiting. Those bulimics who achieved a good outcome at posttreatment reported marked fluctuations in hostility over the course of treatment compared to moderate-to-poor outcome bulimics. These results are discussed with reference to the psychotherapy process literature concerning changes in affect, attitudes, and bulimic behaviours throughout treatment.

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Definition and Scope of the Present Research

Bulimia was given formal recognition as a psychiatric syndrome in 1980 with the publication of the third edition of the Diagnostic and Statistical Manual (DSM III; American Psychiatric Association, 1980). The syndrome is characterized by episodic binge eating, an awareness that the eating pattern is abnormal, fear of an inability to stop bingeing voluntarily, and depressed mood and self-deprecating thoughts following the binge. North American surveys indicate that approximately five percent of college women meet the DSM III criteria for bulimia, with a weekly or greater frequency of bingeing (Katzman, Wolchik, & Braver, 1984; Pyle et al., 1983).

The DSM III defines a binge as the "rapid consumption of a large amount of food in a discrete period of time, usually less than 2 hours" (p. 70). There is, however, no objective criteria for determining when an eating episode can be considered a binge either in terms of its caloric value or duration. Consequently, the present research defined a binge as that quantity of food consumed by the individual who, for whatever reason, nominates it as being a binge. This is consistent with the prevailing view in the literature that such eating is experienced as excessive and uncontrolled according to the individual's subjective standards regarding food intake (Fairburn, 1982).

A year prior to the publication of DSM III, Russell (1979) delineated a syndrome which he termed bulimia nervosa. The essential features of this condition are powerful and intractable

urges to overeat, a morbid fear of becoming fat, and the avoidance of the fattening effects of food through self-induced vomiting or the abuse of purgatives. The prevalence of bulimia nervosa in young women appears to be about two percent according to one study conducted in the United Kingdom (Cooper & Fairburn, 1983).

The present research adopted the DSM III criteria for bulimia with the additional inclusion criterion of self-induced vomiting. The reasons for the latter are threefold. First, this research was concerned with clinical, treatment-seeking bulimics, in which self-induced vomiting is typical (Mitchell, Hatsukami, Eckert, & Pyle, 1985; Pyle et al., 1983). Second, the majority of published studies selected research participants on the basis of the presence of self-induced vomiting. This procedure creates a more homogeneous subject pool representative of the type of individual seen in the treatment setting. Third, and perhaps most important, many of the current models of bulimia regard the combination of binge eating followed by self-induced vomiting as the pathognomonic symptoms of the disorder and, therefore, the appropriate unit for analysis. This behavioural sequence is herein referred to as a bulimic episode.

Investigative eclecticism characterizes this nacsent field of research. To be sure, some investigators have been guided by their allegiances to particular theoretical perspectives including behaviourism (W.G. Johnson & Brief, 1983), psychoanalytic theory (Swift & Letven, 1984), and biology (Rau & Green, 1984). There is, however, increasing acceptance of the

view that the development and maintenance of bulimia are multiply determined by the interplay of sociocultural, biological, and psychological factors (e.g., Fairburn, 1982; Hawkins & Clement, 1984; C.L. Johnson, Lewis, & Hagman, 1984). While this movement away from reductionistic theorizing is laudable, it does create a central problem for the student of bulimia: What is the appropriate choice in research paradigm?

For a number of reasons the functional analytic paradigm seems appropriate. First, this paradigm is concerned with the identification of empirical relationships between the behaviour (B) and its antecedents (A) and consequences (C) for the purpose of understanding mechanisms of maintenance of the disorder in question (Craighead, Kazdin, & Mahoney, 1981). This can only be accomplished when all three components of the ABC paradigm have been operationally defined according to some measurement scale (Wiggins, 1973). The hallmark of the DSM III definition of bulimia is that it is decidedly behavioural; the individual engages in episodic binge eating which invariably leads to specific behavioural and emotional consequences including depressed mood, self-deprecating thoughts, and weight controlling behaviours like self-induced vomiting, restrictive dieting, or abuse of purgatives. It is precisely because of this operational nature of the behaviour and its consequences that makes the study of bulimia a candidate for the functional analytic paradigm.

With respect to antecedents, a plethora of variables are presented by the theoretically diverse models of bulimia. The

functional analytic paradigm is a method of investigating relationships among facets of human behaviour; it is not a theoretical model of human behaviour in its own right (Owens & Ashcroft, 1982). While it is true that functional analysis is synonomous with methodological behaviourism (Craighead et al., 1981), there is no reason why the theoretical antecedents promulgated by the psychodynamic, sociocultural, or biological perspectives cannot be investigated within this paradigm. The only constraint on the choice of antecedents for investigation is that they must be operationalized according to some measurement scale. The first study in the present program of research examined the functional relationships between bulimic episodes, dysphoric mood and dietary restraint. Although widely cited in the theoretical literature as representing antecedents of bulimic episodes, dysphoric mood and dietary restraint have so far not been subjected to formal investigation within the functional analytic paradigm.

The close relationship between functional analysis and therapeutic intervention strategies (Nathan, 1981) also recommends this approach. Outcome research in the field of bulimia has been neglected despite the bevy of theoretical and impressionistic treatises on the subject. From the functional analytic perspective, if it can be demonstrated that certain factors reliably precede the occurrence of bulimic episodes, these may be targetted for change in an individualized treatment strategy. Such is the focus of the second study in this program of research.

Study 1: The Functional Analysis of Bulimia

Investigators who propose models of bulimia have focused on the question "Why do bulimics binge and purge"? Their models typically involve some hypothesis about the functional value of these behaviours to the individual. Two hypothetical functions are in current favour. One is that bingeing and purging serves to alleviate dysphoric mood states (Casper, 1983a; Fairburn, 1982; Goodsitt, 1983; Hawkins & Clement, 1984; C.L. Johnson et al., 1984; Orleans & Barnett, 1984; Swift & Letven, 1984). This functional hypothesis is rooted historically in the psychodynamic theory of obesity which states that over-weight people eat to relieve emotional distress, particularly anxiety and depression, rather than eating in response to internal hunger cues (Slochower, 1983). The second popular functional hypothesis of bulimia is that dietary restraint produces a biological press like chronic hunger; bingeing serves to alleviate this drive state (Polivy, Herman, Olmsted, & Jazwinski, 1984; Slade, 1982; Weiss & Ebert, 1983). This view is grounded in the literature on the physiological regulation of food intake in humans and subhuman species.

Such formulations are cast within a causal framework wherein bingeing and purging are viewed as behaviours which serve some functional value for the individual. Causality, however, can never be observed; it can only be inferred. A necessary though insufficient prerequisite for causal inference is the demonstration of contiguous relationships between antecedents and

behaviour, and between behaviour and consequences (Cook & Campbell, 1979; Craighead et al., 1981). Thus, from the functional analytic perspective the research question is not "Why do bulimics binge and purge", but rather "When do bulimics binge and what are the consequences"? The present study focused on the functional relationships between bulimic episodes and the hypothetical antecedents of dietary restraint and dysphoric mood states. The theory and supportive data for these relationships are reviewed in turn.

Dietary Restraint

Unlike anorexia nervosa, the term bulimia does not appear to have any precise historical referent. Scattered descriptions of young women having "voracious" appetites began to appear in the literature toward the end of the last century (Casper, 1983b). The etymological root of bulimia is the Greek word boulimos, meaning "great" hunger or "ox" hunger. Whether this term represents a misleading description of the syndrome, as some have argued (Fairburn, 1982; Mitchell & Pyle, 1982), or that it accurately reflects a central clinical feature is open to question. While some theorists invoke hunger as an antecedent for binge eating (Orleans & Barnett, 1984; Polivy et al., 1984; Polivy & Herman, 1985; Weiss & Ebert, 1983), research bearing on this issue is virtually nonexistent.

Hunger may be thought of as "a complex of sensations individuals feel when deprived of food", and satiety "the active suppression of interest in food and of feeding behaviour"

(Garfinkel & Coscina, 1982, p. 5). The precise physiological mechanisms governing hunger and satiety are varied and complex and beyond the scope of this discussion. (For comprehensive reviews of the physiological mechanisms involved in hunger and satiety see the following: Blundell, 1983; Garfinkel & Coscina, 1982; Geiselman & Novin, 1982; Harris & Martin, 1984; Powley, 1977; Smith & Gibbs, 1979.) For present purposes, use of these terms at the macro-behavioural level will suffice; the intensified, subjective experience of hunger increases the probability that a person will eat while satiety feelings diminish this likelihood.

Russell (1979) reported that his bulimia nervosa patients tended to deny that bingeing was due to hunger. Rather, he postulated that bingeing was a failure to achieve satiety resulting from a response of the hypothalamus to a sub-optimal body weight. Other clinical impressions published in the literature are consistent with Russell's observation. Only 29% of Pyle, Mitchell, and Eckert's (1981) patient series and 44% of Abraham and Beumont's (1982) sample retrospectively reported during interview that they felt hungry prior to binge eating. Interestingly, approximately 80% of patients in both studies reported craving certain foods prior to bingeing. This raises the possibility that hunger and food craving are not the same subjective experience for bulimic individuals and that the latter is more important to assess within a functional analytic paradigm. Alternatively, it is possible that intensified hunger

does precede bulimic episodes, but it is retrospectively recalled as a subjective experience of food craving. What is required is a prospective research design which frequently assesses hunger up to the point in time of bingeing to determine whether hunger is an antecedent of bulimic episodes.

C.L. Johnson and Larson (1982) conducted such a study. Fifteen normal-weight bulimics self-monitored their hunger and eating activity approximately every 2 hours for 1 week. Results indicated statistically significant elevations in hunger ratings up to 6 hours prior to binge eating, which dropped significantly below the subject's normative level in the 6 hours following. These findings appear to lend support to the functional hypothesis that bulimic individuals binge eat to reduce intensified hunger. However, the Johnson and Larson findings must be interpreted with caution because the authors did not describe the format of the hunger scale, nor did they report the type of statistical test used or if the familywise error rate was controlled for. One, therefore, must suspend an evaluation of the validity of the statistical conclusions reported in their findings. In addition, because ratings made up to six hours before and after the binges were included in the analysis, it is not known whether the subjects were hungry immediately prior to bingeing or, for that matter, whether consumption of snacks or meals took place during the interval. A replication study is warranted wherein the assessment of hunger and other eating behaviours are made more proximal in time to the bulimic episodes.

On what theoretical grounds might one expect dietary restraint and hunger to be antecedents of bulimic episodes? Janet Polivy and associates (Polivy et al., 1984; Polivy & Herman, 1985) have recently drawn a parallel between binge eating and the laboratory phenomenon of counterregulatory eating behaviour. According to their boundary model of food consumption, bulimic individuals are "restrained" eaters or habitual dieters who cognitively regulate caloric intake on the basis of some diet-enhancing standard as opposed to the normal unrestrained eater who presumably eats when hungry and stops when sated. However, when the restrained eater is led to believe that he/she has violated the standard (or has consumed alcohol or been stressed), then the consumption of a greater-than-usual amount of food ensues as the individual eats until satiety is reached or, as in the case of the bulimic, until the limits of physical space have been achieved.

Polivy et al. implicate a complex set of hypothetical mechanisms--both cognitively and physiologically based--to explain the counterregulatory eating phenomenon. What is relevant for the present discussion is their assertion that dieting causes bingeing. It is true that a majority of bulimic individuals report in the clinical interview or on questionnaires that the onset of their bingeing was antedated or coincident with often successful attempts at weight loss through restrictive dieting (Abraham & Beumont, 1982; Fairburn & Cooper, 1984; Johnson, Stuckey, Lewis, & Schwartz, 1982; Pyle et al., 1981;

Russell, 1979). This observation, however, addresses the etiology of binge eating but not its maintenance, the latter being the focus of the present study.

The boundary model of consumption is based on the premise that bulimics are habitual dieters. This should presumably translate into reduced caloric intake in the form of fewer eating episodes (snacks and meals) per day and/or the ingestion of fewer calories per eating episode excluding, of course, bulimic episodes. The caloric value and/or the frequency of eating episodes could then be compared to either an idiographic standard determined longitudinally or a nomothetic standard obtained cross-sectionally. Either comparison would permit the examination of the hypothesis that bulimics are habitual dieters.

Taking the cross-sectional approach, Weiss and Ebert (1983) found that normal-weight bulimics retrospectively reported in interview that they consumed significantly fewer snacks and meals per day compared to nonbulimic controls matched for age and weight. Furthermore, significantly more bulimics reported that they fasted on a regular basis. This finding has been corroborated by Pyle et al. (1983) who found that 4% of nonbulimics versus 27% of bulimic women admitted to 24-hour fasting on a weekly or greater frequency. Weiss and Ebert concluded that bingeing is maintained by the bulimic's dietary stance which produces chronic hunger and makes the individual vulnerable to bingeing. There are, however, two methodological limitations to their study which make such a conclusion tentative and in need of experimental replication. First, the frequency of

food intake was assessed using the recall method, the criterion validity of which is inferior to that obtained through the self-monitoring method (Krantz et al., 1982). Second, the authors inferred rather than actually observed chronic hunger on the basis of their interview data regarding frequency of food intake. A more rigorous cross-sectional research design would be to assess both hunger and frequency of snack and meal consumption using self-monitoring procedures. The present study adopted such a research strategy for the purposes of evaluating two hypotheses derived from the boundary model of consumption regarding the dieting behaviour of bulimic individuals.

Hypothesis 1. According to the model, bulimics "would be expected to eat within a more limited range up to but not beyond the upper boundary on consumption dictated by their diet calculations; that is, they should eat less than unrestrained eaters under normal (nondisinhibited) conditions" (Polivy et al., 1984, p. 116). If this boundary model of consumption is correct, then the caloric value and/or frequency of the bulimic's snacks and meals should be less than that of nonbulimic subjects. Such findings would support the hypothesis that dietary restraint is a characteristic feature of bulimia.

Hypothesis 2. The model implicates hunger as an antecedent for binge eating. Polivy et al. (1984) propose "that food restriction and/or starvation causes a physiological imbalance plus a psychological deprivation which, singly or together, create a potential for binge eating...the physiological potential

may consist simply of a chronic, heightened hunger..." (p. 114). If this hypothesis is correct, it was anticipated that bulimics would report greater hunger in a nomothetic comparison with nonbulimic controls, and that their prebinge level of hunger would be elevated compared to the idiographic norms of the bulimic individuals. Such results would support the hypothesis derived from the boundary model that hunger potentiates an episode of binge eating.

In summary, bulimics have been characterized as habitual dieters in the theoretical literature. It has been suggested that this dietary stance causes the paradoxical behaviour of binge eating. Specifically, reduced caloric intake is believed to render the individual chronically hungry and therefore vulnerable to bingeing. One purpose of the present study was to determine whether bulimics evince greater dietary restraint compared to nonbulimic controls and, from a functional analytic perspective, whether hunger is an antecedent of binge eating.

Dysphoric Mood

Dysphoric mood may be defined as a pervasive and sustained emotion which the person experiences as unpleasant (American Psychiatric Association, 1980). Common examples include depression, anxiety, or irritability. What is the relationship between dysphoric mood and bulimia? A review of the theoretical and clinical impressionistic literature reveals an overwhelming consensus that bulimics binge and purge to alleviate dysphoric mood states (Casper, 1983a; Fairburn, 1982, 1984; Goodsitt, 1983;

Hawkins & Clement, 1984; C.L. Johnson et al., 1984; Orleans & Barnett, 1984; Swift & Letven, 1984; Vincent & Kaczkowski, 1984). This has been variously described in the literature as "a defensive structure regulating and alleviating intolerable tension states" (Casper, 1983a, p. 391), "a defensive maneuver to alleviate disturbing thoughts and feelings" (Fairburn, 1982, p. 12), "misguided attempts to organize affects and internal states meaningfully" (Goodsitt, 1983, p. 59), "a relatively safe mechanism for regulating different tension states" (Johnson et al., 1984, p. 260), or "a defensive reparative maneuver which attempts to alleviate the intolerable internal tensions" (Swift & Letven, 1984, p. 489).

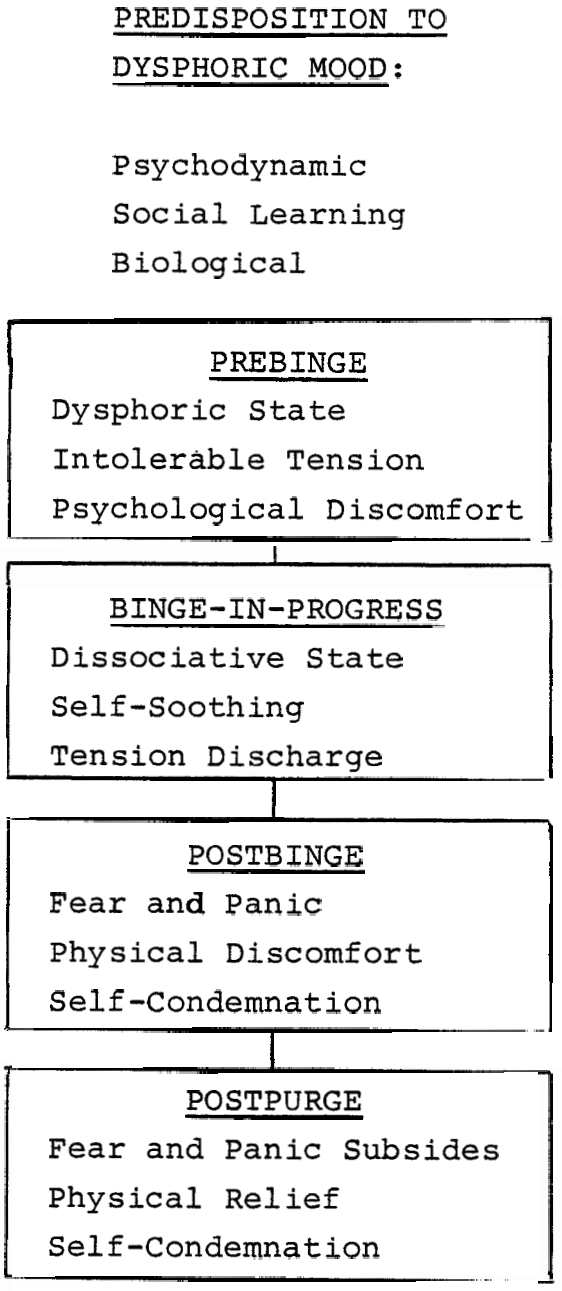
A common theme in the literature is that the bulimic individual's mood undergoes rapid transformations over the course of the binge-purge sequence; at least in the sense that the duration of a bulimic episode typically does not exceed 1 or 2 hours (Mitchell, Pyle, & Eckert, 1981). Figure 1 presents a synthesis of the published theoretical speculations and clinical impressions regarding the transformations in the bulimic's mood over the course of the bulimic episode.

Predisposition to Dysphoric Mood States

Most theorists begin with the premise that bulimic individuals are predisposed to experience recurrent, dysphoric mood states. There are two lines of evidence to support this. Using the clinical interview, Garner, Garfinkel and O'Shaughnessy

Figure 1

Hypothetical Transformations in Mood Over the Binge-Purge Sequence



(1983) found that 82% of their normal-weight bulimics experienced moderate to extreme fluctuations in mood compared to only 39% of restricting anorexics. Using psychometric instruments, numerous researchers have found that bulimics report greater anxiety and depression compared to nonbulimic women or test norms (Allerdissen, Florin, & Rost, 1981; Carter & Duncan, 1984; Hatsukami, Eckert, Mitchell, & Pyle, 1984; C.L. Johnson et al., 1982; Katzman & Wolchik, 1984; Pyle et al., 1981; Weiss & Ebert, 1983; Yates & Sambrailo, 1984).

The putative causes for this predisposition are as theoretically diverse. Psychodynamically oriented theorists have been most articulate about the nature of the predisposition yet unforthcoming in marshalling supportive data. A much over-simplified version of the psychodynamic position is that bulimic individuals suffer from a developmental impairment in certain ego functions which prevents them from regulating intolerable tension states in psychologically adaptive ways. Bingeing and purging is seen as a defensive maneuver in the face of internal tension states (Goodsitt, 1983; Swift & Letven, 1984).

Theorists who align themselves closer to the social learning perspective tend to view the bulimic's predisposition as a failure in the acquisition and/or production of the skills necessary for coping with such external stressors as interpersonal problems. The stressor is thought to precipitate a chain of events beginning with negative evaluation of the stressor, leading to failure to cope, dysphoric mood, perceived

loss of control over the environment, and finally binge eating which temporarily distracts the individual from the stressor and related dysphoria (Hawkins & Clement, 1984; Orleans & Barnett, 1984). Self-induced vomiting is seen acting as a negative reinforcer through reduction in the fear over impending weight gain brought on as a consequence of the binge.

There is, to date, a limited yet supportive body of psychometric evidence indicating that bulimic individuals tend to be interpersonally sensitive (C.L. Johnson et al., 1982; Weiss & Ebert, 1983) and experience considerable social maladjustment in social/leisure activities and in work, marital, and parental role areas (C.L. Johnson & Berndt, 1983; Norman & Herzog, 1984). There is also some evidence that stress plays a role in the etiology of bulimia. Strober (1984) found that bulimic anorectic patients experienced significantly more undesirable life events, particularly of an interpersonal nature, in the 18 months preceding illness onset compared to restricting anorexics. Furthermore, Wolf and Crowther (1983) found that the amount of stress experienced in the previous year was a significant predictor of the severity of self-report binge eating tendencies in college women. However, no study has yet to examine one central tenet of the social learning model: That is, do bulimic individuals experience environmental stress just prior to binge eating? One purpose of the present study was to determine whether the experience of unpleasant events are antecedents for bulimic episodes.

The third predominant view of the bulimic individual's predisposition to dysphoric mood states is that the person is biologically vulnerable to affective instability resulting in distressing mood swings. Bingeing is seen as a response to these fluctuating mood states (Fairburn, 1982; C.L. Johnson et al., 1984). There are three lines of evidence to support this view. First, family history studies reveal that approximately 49% of bulimic probands have at least one first- or second-degree relative with a history of affective disorder. The morbidity risk for familial depression in bulimic individuals is comparable to that for depressed persons (around 25%) and much higher than that found in the general population. Second, roughly 50% of bulimics obtain a positive dexamethasone suppression test (DST) result compared to the 4-10% positive response rate found in nonpsychiatric individuals (Yergevanian, Baciewicz, Iker, & Privitera, 1984). The DST is a biological test for depression with very high diagnostic specificity (Carroll et al., 1981). Third, about 39% of bulimic individuals receive a concurrent diagnosis for DSM III affective disorder including major, dysthymic, and cyclothymic subtypes; 57% receive a lifetime diagnosis. These estimates stand in marked contrast to the 4-9% prevalence rates for current affective disorder found in young adult community women (Myers et al., 1984). The above conclusions were derived by aggregating the results of nine studies, some of which present data on one or more issues including family history for affective disorder, DST, or current and lifetime diagnosis for affective disorder in bulimic samples

(Gwirtsman, Roy-Byrne, Yager, & Gerner, 1983; Hatsukami et al., 1984; Herzog, 1984; Hudson, Laffer, & Pope, 1982; Hudson, Pope, Jonas, & Yurgelun-Todd, 1983a; Hudson et al., 1983b; Hudson, Pope, Jonas, & Yurgelun-Todd, 1983c; Mitchell, Pyle, Hatsukami, & Boutacoff, 1984; Stern et al., 1984).

To summarize, there is considerable evidence to support the prevailing view that bulimic individuals experience recurrent, dysphoric mood states. Whether the vulnerability is a consequence of biological, psychodynamic, or social learning forces acting singly or interactively is an issue of some debate. However, from a functional analytic perspective the task at hand is not to determine the cause of the predisposition but, rather, to determine empirical relationships between dysphoric mood and the behaviours of bingeing and self-induced vomiting. In this context it is important to note that whatever the underlying mechanism(s) may be for this predisposition, all the theoretical perspectives reviewed above uniformly implicate dysphoric mood as an antecedent for binge eating.

Anatomy of the Bulimic Episode

Referring again to Figure 1, the clinical literature describes rapid transformations in mood over the course of the bulimic episode. These transformations are thought to be most salient at four specific points in the behavioural sequence; (a) immediately prior to bingeing (prebinge), (b) just after the individual has begun to binge (binge-in-progress), (c) the point when the individual ceases to binge (postbinge), and (d) in the

period of time immediately following self-induced vomiting (postpurge).

Prebinge mood. The mood of the bulimic individual just prior to bingeing has been variously described in the literature as a "dysphoric", "psychologically discomforting", or "intolerable tension" state (Goodsitt, 1983; Johnson et al., 1984). Frequently cited examples have included agitated restlessness, anger, anxiety, boredom, disappointment, depression, helplessness, loneliness, or stress.

Binge-in-progress mood. This period has been likened to a dissociative mental state where the bulimic individual is now distracted and otherwise oblivious to the dysphoric mood states which preceded the binge a few moments earlier (Rau & Green, 1984; Swift & Letven, 1984). According to the clinical impressions of Johnson et al. (1984), some bulimics have the phenomenological experience of "letting go" or "spacing out" during the binge.

Postbinge mood. The literature quite consistently describes the bulimic individual's mood at the termination of the binge as one of fear or panic about impending weight gain in combination with self-condemnation for losing control over their eating; the latter experienced as shame, disgust, or guilt. Spitzer, Marcus & Rodin (1980) present an interesting behavioural formulation of this particular transformation in mood:

> Since eating is not anxiety-reducing and does not remove a stressor but only temporarily distracts from the aversive stimulus, the discomfort that decreases while eating will return to a pre-eating level upon its cessation. Since the individual may not stop eating until that behaviour is more

> aversive than the eliciting state, there will be additional discomfort due to overeating. So, in sum, the discomfort experienced after eating may actually exceed that which preceded it. (p. 347)

The boundary model of consumption (Polivy et al., 1984) discussed above theoretically supports Spitzer's notion that the binge itself eventually becomes physically aversive as the individual binges to physical capacity, at which time nausea and painful abdominal distention may be experienced.

Postpurge mood. Finally, the individual induces vomiting, the act of which is described in the literature as being negatively reinforcing in terms of the immediate relief it brings from abdominal discomfort and fear/panic about weight gain. Self-condemnation is believed to continue. Indeed, "depressed mood and self-deprecating thoughts" following the bulimic episode is a necessary criterion for a DSM III diagnosis of bulimia.

What is the evidence for this functional analytic model of mood transformations over the course of the bulimic episode? Johnson-Sabine, Wood, and Wakeling (1984) had 50 bulimic nervosa patients complete the Multiple Affect Adjective Check List (MAACL) before retiring each evening over an 8-week period. Depression, anxiety, and hostility were all significantly elevated on days in which the subjects binged and/or vomited compared to days in which they did not. The authors interpreted their findings as evidence that dysphoria is a consequence rather than an antecedent of bulimic episodes. However, a major methodological flaw of their study was that mood was assessed each evening after the subjects had engaged in bulimic episodes.

Consequently, the possibility that dysphoric mood may actually precede binge eating cannot be discounted.

There are two lines of evidence in support of the hypothesis that dysphoric mood precedes binge eating. Each, however, is plagued by methodological problems which pose threats to the validity of the findings. The first line comes from three studies in which bulimic individuals are asked in clinical interview to recall or on a self-report check list how they typically felt prior to bingeing. In Abraham and Beumont's (1982) study, 91% of subjects described in the clinical interview what the authors interpreted as "tension" prior to binge eating. Pyle et al. (1981) found that 71% of their subjects cited feeling "unhappy" on a check list before bingeing, while Mitchell et al. (1985) found that 83% of their series reported they binged because they felt tense or anxious. These findings, while suggestive of a mood-as-antecedent relationship to bingeing, are based on the patient's subjective recall, the veridicality of which is open to question particularly in light of the frequent clinical observation that bulimics experience a dissociated mental state while binge eating.

The second line of evidence derives from a study which utilized the self-monitoring method to examine the relationship between various mood states and bulimic episodes. Johnson and Larson (1982) had 15 bulimic individuals rate their moods in response to a tone emitted by an electronic pager once approximately every 2 hours for a 1-week period. They found that subjects were significantly more irritable and weak, and felt

less in control and less adequate up to 6 hours prior to bingeing or vomiting compared to their normative levels determined idiographically over the self-monitoring period. In the 6 hours following the binge or purge, subjects felt greater levels of sadness, boredom, guilt and shame. Three problems limit both the internal and statistical conclusion validity (Cook & Campbell, 1979) of this study. First, the authors conducted 59 statistical tests without adjusting experimentwise alpha, therefore one would expect some of the statistically significant findings to represent Type I errors rather than actual transformations in mood. Second, mood ratings before a binge or purge (likewise, after a binge or purge) were combined in the statistical analysis. Clearly, these ratings should be analyzed separately as the model predicts the mood state before and after a binge to be different from before and after a purge. Third, Johnson and Larson included mood ratings within 6 hours of the binge or purge in the before and after averages. Consequently, it is impossible to determine what the subject's mood was at times more proximal (i.e., within minutes) to the binge and purge. In other words, this study may have missed the rapid transformations in mood predicted to occur by the model at these critical points over the binge-purge sequence.

To summarize, there is a rather large body of evidence to substantiate the commonly held notion that bulimic individuals have a predisposition to experience recurrent, dysphoric mood states. Psychometrically, it has been repeatedly observed that

bulimics evince significant levels of anxiety and depression. Furthermore, psychiatric investigations demonstrate that it is not uncommon for bulimic individuals to suffer from an affective disorder of the major, cyclothymic, or dysthymic subtype. The mechanisms for this predisposition have been variously described in the literature in psychodynamic, social learning, and biological terms. However, from a functional analytic perspective, the goal is not to determine the cause of this predisposition but, rather, to determine empirical relationships between dysphoric mood and the behaviours of binge eating and self-induced vomiting.

To date, no methodologically sound investigation has been conducted to examine such relationships. Thus, one purpose of the present study was to conduct such an investigation to determine the validity of two hypotheses derived from the current theoretical literature regarding the relationship between mood and engaging in bulimic episodes.

Hypothesis 3. Binge eating is regarded in the theoretical literature as a behaviour which the bulimic individual engages in to alleviate dysphoric mood states. Based on a logical extension of this assertion, it was predicted that subjects would report an idiographically more negative mood state immediately preceding a bulimic episode.

Hypothesis 4. It was further predicted that bulimic subjects would experience one or more unpleasant events prior to engaging in a bulimic episode. Such a finding would support the contention of the social learning perspective that bulimic

individuals binge in response to environmental stress.

Method

Subjects

The bulimic subjects were 27 women referred by local physicians and psychiatrists to the Shaughnessy Hospital Anorexia and Bulimia Clinic for treatment. Subjects were recruited over a 4-month period. Inclusion criteria were as follows (see Appendix A); (a) a diagnosis of bulimia according to DSM III criteria, (b) two or more binges in the 7 days prior to the diagnostic interview, (c) currently induced vomiting after bingeing, (d) a minimum one year illness duration, and (e) 16 years of age or more. Subjects who were potentially suicidal, inpatient, or weighed below 80% of standard body weight were excluded from the study. The diagnosis was made by a psychiatrist at the clinic who had several years experience in the diagnosis and treatment of bulimia.

The mean age of the bulimic sample was 23.7 years (*SD* = 3.9). Average illness duration from onset of bingeing and self-induced vomiting was 5.7 years (*SD* = 3.0). Subjects reported a mean of 6.8 binges (*SD* = 5.6) and 9.3 (*SD* = 9.2) episodes of self-induced vomiting per week.

The nonbulimic subjects were 24 women recruited from a local banking institution (*n* = 12) and a third-year university psychology course (*n* = 12). None of the subjects currently binged or induced vomiting according to their self-report on the Binge Scale. Bulimic and nonbulimic subjects did not differ significantly in age, weight, or occupational status. However,

significantly more bulimic subjects were single compared to nonbulimic subjects, $(1, N = 51) = 5.76$, $p<.05$ (see Table L-1 in Appendix L).

Procedure

Bulimic subjects were interviewed by the present author according to a modified version of the Personal Data Questionnaire (PDQ: Orleans & Barnett, 1984, see Appendix M). The PDQ is a self-report functional analytic questionnaire designed to elicit information about the current severity, topography, emotional antecedents, and consequences of the individual's bulimic symptoms, as well as motivation and expectancy for behavioural change. The PDQ was adopted for use in an interview format because of the structure and breadth of information it affords the interviewer. A detailed history of the subject's weight and symptom history was also obtained during the interview. Subjects were asked to begin at the age at which they reached their current adult height, usually around 15 years, and describe to the interviewer any significant changes in weight, dieting behaviour, or onset and change in bulimic symptoms that occurred over the subject's lifespan up to the present. Upon completion of the interview subjects were informed that a psychotherapeutic treatment project was being conducted by the author and that she could participate if she so desired. (The treatment project is the subject of Study 2.) After the project was fully described, subjects gave their informed, signed consent to participate (see Appendix B).

Bulimic subjects were then told that as part of their pretreatment evaluation they would be required to complete one Self-Monitoring Scale (SMS) each day for the next 6 consecutive days (see Appendix C). The SMS contained 20 preprinted slips of paper stapled together in one package. Each subject was instructed to complete the first slip upon waking and one slip each hour on the hour thereafter until she retired in the evening. On the front of each slip the subject wrote down (a) the time of day, (b) a description of all food and beverage consumed in the previous hour including quantity and brand, (c) whether she considered what she had eaten to be a snack, meal, or a binge (intentionally left undefined), (d) where she was and if she was alone or accompanied, and (e) whether she had induced vomiting.

The reverse side of each SMS slip contained two 100-millimeter Visual Analogue Scales; one for mood (VAS-Mood) and one for hunger (VAS-Hunger). The VAS-Mood scale was anchored worst mood and best mood on the extreme left and right, respectively. The VAS-Hunger was similarly anchored not at all hungry and extremely hungry. Written instructions on the SMS requested that subjects "place a slash through the line that best describes your mood (how hungry you are) right this minute". Subjects completed the two scales every hour on the hour after filling in the front side of each SMS slip.

The VAS method was chosen to assess mood and hunger for four reasons. First, this method provides a quantitative score of a

subjective feeling state which is sensitive to perceived changes in intensity of the experience (Mayer, 1978). Second, the VAS can be completed in a matter of seconds compared to other psychometric instruments for assessing mood (Howarth & Schokman-Gates, 1981) and hunger (Garfinkel, 1974) which require considerably more time. This is particularly important when assessing mood and hunger many times per day as in the present study. Third, the concurrent validity of the VAS has been demonstrated in a number of studies. For example, the VAS-Mood scale correlates highly with the Hamilton Rating Scale for Depression (.79), psychiatrist's global ratings of depression (.78), the Zung Self-Rating Depression Scale (.56), and the Clyde Mood Scales (.39 - .65) (Folstein & Luria, 1973; Luria, 1975; Zeally & Aitken, 1969). Regarding VAS-Hunger, ratings correlate signficantly (.41) with amount of salivary excretion in food-deprived women (Hodgson & Green, 1980), and amount of food consumed (.53 - .77) by nonpsychiatric and psychiatric individuals (Robinson, McHugh, & Folstein, 1975). Finally, the VAS has been employed in research which--consistent with the aims of the present study--have examined the relationship between mood and nutrient intake (Leathwood & Pollet, 1982; Lieberman, Corkin, Spring, Growdon, & Wurtman, 1982) or acute environmental stress (Eckenrode, 1984).

Attached to the back of each SMS package was a list of 38 unpleasant events (see Appendix D) chosen from a larger item pool which have been found to correlate .40 or greater with mood ratings in nonpsychiatric and psychiatric individuals (Lewinsohn

& Amenson, 1978; Lewinsohn & Talkington, 1979). Factor and cluster analytic studies have shown that the items group together according to social isolation, negative social interaction, marital discord, physical discomfort, incompetence, and work failure/pressure. Subjects were instructed on the SMS to read down this list of unpleasant events upon retiring each evening and, if they experienced any of the events that day, to write beside the item the time of day when they first began to experience it.

Bulimic subjects were told in the interview that the self-monitoring scales were designed so that, once completed, the information would provide both the researcher and the subject with important information regarding possible targets for therapeutic intervention. Subjects were instructed that they should try to "carry on as usual" over the self-monitoring period in terms of their eating behaviour and that this exercise should be regarded as assessment of their current functioning and not part of the treatment per se. This was done in an attempt to minimize the potential for reactivity which is known to occur during self-monitoring (Fremouw & Brown, 1980; Nelson & Hayes, 1981).

Bulimic subjects completed one SMS for each day over 6 consecutive days following the interview. On the seventh day they were instructed to complete a battery of five psychometric tests, place them into an envelope along with the completed SMS, and return them to the author at the next appointment scheduled

to take place 1 or 2 weeks after the intial interview. The questionnaires included the following:

Eating Disorder Inventory (EDI). The EDI is a 64-item self-report instrument designed to assess the severity of eating and related pathology in anorectic individuals (Garner, Olmsted, & Polivy, 1983). The inventory consists of eight rationally constructed subscales including Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness, and Maturity Fears (see Appendix E). Internal reliability for each subscale is high (Cronbach's alpha ranging .72 - .93) based on the psychometric findings from a large group of non-eating disordered college women and anorectic patients (Garner & Olmsted, 1984). To date, there does not appear to be any published report comparing the results of the EDI in DSM III-defined bulimic patients with nonbulimic individuals.

Binge Scale (BS). Hawkins and Clement (1980) developed this nine-item self-report scale to measure severity of bulimic symptoms as per DSM III criteria (see Appendix F). The instrument has satisfactory internal consistency (Cronbach's alpha = .68) and good test-retest reliability over a 1-month period (.88). The BS is not associated with body weight nor measures of social desirability. The scale was chosen for use in the present study primarily as a method for screening out subjects who binge and purge in the nonbulimic comparison sample.

Beck Depression Inventory (BDI). This instrument was originally developed as an index of the extent and severity of

depressive symptoms (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; see Appendix G). It is currently one of the most widely used self-report measures for quantifying depressive symptomatology in research involving normal and clinical populations (Hammen, 1981). Reliability estimates include test-retest (.78) and internal consistency (.91) (Oliver & Burkham, 1979; Watson & Clark, 1984). The validity of this 21-item instrument is well established (Mayer, 1978).

Social Adjustment Self-Report Scale (SAS). This 42-item scale was designed to assess a person's overall social adjustment in areas of work, social/leisure activities, extended family, and in marital and parental roles (Weissman & Bothwell, 1976; see Appendix H). The SAS has good internal consistency (.74) and test-retest reliability (.80) (Edwards, Yarvis, Mueller, Zingale, & Wagman, 1978).

Multiple Affect Adjective Check List (MAACL). The MAACL is a 132-adjective check list which measures three negative moods; anxiety, depression, and hostility (Zuckerman & Lubin, 1965). The General form of the MAACL was used wherein subjects were instructed to check all the adjectives which described how they generally felt (see Appendix I). The psychometric characteristics of the Anxiety and Depression subscales have been extensively investigated. The Anxiety subscale correlates significantly with the Taylor Manifest Anxiety Scale (.53), the trait scale of the State-Trait Anxiety Inventory (.52), and the IPAT Anxiety Scale Questionnaire (.57), thereby demonstrating its

concurrent validity. It has internal reliability and test-retest reliability of .72 and .68, respectively (Zuckerman & Lubin, 1965). Similarly, the Depression subscale of the MAACL General form has demonstrable concurrent validity and test-retest reliability (Mayer, 1978). Psychometric data for the Hostility subscale of the General form were unavailable.

Regarding the nonbulimic comparison sample, subjects were recruited from two sources. The author announced to a third-year university psychology course that he was conducting a study on the eating habits of women and that volunteers were needed to participate. For those who came forth (n = 20), a package was given containing (a) a brief description of the purpose and procedures of the study (see Appendix J), (b) a consent form (see Appendix K), (c) two Self-Monitoring Scales identical to the ones completed by the bulimic subjects, and (d) the battery of five psychometric tests. It was requested on the instruction sheet that the subjects first complete the SMS scales on the next two consecutive, non-weekend days followed by completion of the psychometric tests. Afterwards, they were instructed to return all completed materials to the author's mailbox at the university in a sealed envelope. Twelve subjects out of the original 20 did so. A female research assistant followed the same procedure when recruiting subjects at a local banking institution. Of 18 packages distributed 12 were returned. The overall rate of return was 63%. None of the 24 subjects who returned the materials indicated that they binged or induced vomiting on the Binge Scale.

Results

Hypothesis 1

It was predicted that bulimic subjects would consume and retain fewer snacks and meals over the self-monitoring period compared to nonbulimic subjects. A one-between (group; bulimic vs. nonbulimic) one-within (episode; snack vs. meal) analysis of variance was conducted on the daily frequency of consumption. Contrary to expectations, the two groups did not differ in their frequency of snack or meal consumption. There was no group main effect or group x episode interaction (see Tables L-2 and L-3 in Appendix L).

It was further predicted that the caloric value of retained snacks and meals would be less for bulimics compared to nonbulimic subjects. However, the analysis of variance did not reveal a group main effect or a group x episode interaction (see Tables L-4 and L-5 in Appendix L). As might be expected, a significant episode main effect was obtained, indicating that--collapsed across groups--meals were greater in caloric value than snacks, F (1, 46) = 325.49, $p<.0001$. Meals averaged 466 calories versus 154 calories for snacks across both groups. The caloric values were derived by a research assistant who converted all foods reportedly consumed by subjects on the Self-Monitoring Scales into caloric equivalents according to tables in Nutrient Value of Some Common Foods (Health & Welfare Canada 1979).

The mean daily total caloric intake for the nonbulimic subjects was 1,595.50 calories (SD = 435.12). For bulimic subjects the mean daily number of calories consumed and retained in the form of snacks and meals was 1,434.67 (SD = 544.42). The daily caloric intake for the two groups (excluding food which the bulimics vomited) was not significantly different, $t(49) = 1.16$, $p > .05$.

Thus, contrary to expectations, bulimic subjects did not display the dietary restraint predicted from the boundary model of consumption. Neither frequency of consumption nor caloric value of snacks and meals discriminated between bulimic and nonbulimic subjects.

Visual Analogue Scale Data Preparation

The data to examine the validity of Hypotheses 2 and 3 derive from the VAS-Mood and VAS-Hunger ratings made by the subjects every hour on the Self-Monitoring Scales. A measurement was taken in millimeters from the extreme left of the mood and hunger scales to the slash made by the subject on the 100-millimeter lines. VAS-Mood and VAS-Hunger ratings could range from 0 to 100 with higher scores representing more positive mood and greater intensity of hunger, respectively.

Hypotheses 2 and 3 were concerned with the intensity of the subjective experience of hunger and mood at times more proximal to eating episodes. A measure was required which would be sensitive to deviations in the subject's hunger and mood at these times relative to her idiographic norm determined over the entire self-monitoring period. Subsequent analyses to be reported in

the present study involve mood and hunger data which were transformed from VAS raw scores to z scores according to the following formula: (a) The mean of the individual subject's raw scores for mood or hunger at a particular point in time (e.g., last rating prior to all meals), (b) subtracting out the overall mean for the subject, and (c) dividing by the subject's overall standard deviation. Consequently, a positive mood or hunger z score would indicate that the subject was in a more positive mood or more hungry at a particular point in time (e.g., immediately preceding all meals) relative the subject's typical mood or hunger. Negative values would indicate a relatively more negative mood or less hunger at that point.

Recall that a bulimic episode was originally defined as the consumption of a quantity of food which the subject called a binge and which she subsequently vomited. However, once the completed Self-Monitoring Scales were scrutinized it became apparent that some bulimic subjects occasionally vomited food which they called a snack or meal. Specifically, of the 154 occasions in which subjects reported self-induced vomiting, 71.4% of these had been preceded by the consumption of a binge while the remaining 28.6% had been preceded by snacks or meals. Consequently, a bulimic episode was redefined as the consumption of any quantity of food which is followed by self-induced vomiting. Snacks, meals, and binges did not qualify as a bulimic episode unless the subject indicated on the SMS that she proceeded to induce vomiting within 60 minutes of consuming the

food.

Hypothesis 2

According to the boundary model of consumption, bulimic individuals are chronically hungry. It was therefore predicted that bulimic subjects would evince a greater overall VAS-Hunger mean compared to nonbulimic subjects. This was not the case. The mean VAS-Hunger rating (using raw scores) was 22.5 (*SD* = 11.8) for the bulimics and 27.4 (*SD* = 8.9) for the nonbulimics; a difference which failed to reach statistical significance, $t(49) = 1.67$, $p>.05$ (see Table L-6 in Appendix L).

It was further predicted that the bulimic subject's level of hunger would be idiographically greater just prior to engaging in a bulimic episode. To examine this hypothesis, those hunger ratings immediately preceding (preprandial) bulimic episodes and retained meals were contrasted with ratings immediately following (postprandial). A two-factor (episode; bulimic episode vs. meal, and time; preprandial vs. postprandial) within-subjects analysis of variance yielded significant main effects for episode and time, as well as an episode x time interaction, $F(1, 20) = 5.62$, $p<.03$ (see Tables L-7 and L-8 in Appendix L). Contrary to expectations, bulimic subjects did not show a significant, idiographic elevation in hunger immediately prior to engaging in a bulimic episode (*M* = 0.10, *SD* = 0.65). A one-sample *t* test failed to reject the null hypothesis that the mean hunger rating immediately preceding bulimic episodes was equal to zero, $t(20) = 0.73$, $p>.05$.

Thus, bulimic subjects were neither more nor less hungry in

the hour preceding a bulimic episode compared to their usual state of hunger. They were, however, significantly more hungry (M = 0.99, SD = 0.64) in the minutes preceding a meal which they subsequently retained, $t(20) = 7.10$, $p<.001$. Infact, both bulimic and nonbulimic subjects experienced significant elevations in hunger in the minutes preceding a meal which--as one might expect--fell markedly in the minutes that followed (see Tables L-9 and L-10 in Appendix L). Interestingly, neither group experienced a significant elevation in hunger prior to consuming snacks (see Tables L-11 and L-12 in Appendix L).

To summarize the results so far, bulimic and nonbulimic subjects were not significantly different from each other in (a) number of snacks and meals consumed (and retained) per day, (b) caloric value of snacks and meals, (c) daily total caloric intake (excluding bulimic episodes), (d) intensity or variability of hunger in general, or (e) intensity of hunger immediately preceding and following snacks and meals. These results do not support the predictions derived from the boundary model of consumption that bulimic individuals are restrained eaters; where dietary restraint was operationally defined in terms of frequency and caloric value of snacks and meals.

The only significant finding was that bulimic subjects were more hungry prior to meals than bulimic episodes. One possible reason for this might have been that bulimics consumed a quantity of food more proximal in time to the bulimic episode which had the effect of placating hunger. This was in fact what happened.

Eleven bulimic subjects experienced both bulimic days (days in which they binged and vomited) and nonbulimic days over the self-monitoring period. Taking the main meals on nonbulimic days and the first bulimic episode on bulimic days as the starting points, the Self-Monitoring Scales were examined backwards in time for 3 consecutive hours to see if food had been consumed (i.e., retained snacks or meals) prior to eating a main meal on nonbulimic days or engaging in a bulimic episode on bulimic days. The two-factor, within-subjects analysis of variance yielded a significant day x hour interation, $F(2, 20) = 3.64$, $p<.05$ (see Tables L-13 and L-14 in Appendix L). Forty-nine percent of the bulimic episodes were preceded by the consumption of a snack or meal in the preceding hour. This stands in contrast to the 3.64% of main meals on nonbulimic days which were preceded by the consumption of a quantity of food in the preceding hour. This might account for the significant day x hour interaction [$F(2, 20) = 7.38$, $p<.005$] in hunger ratings made by bulimics prior to meals versus bulimic episodes (see Tables L-15 and L-16 in Appendix L). It is evident from Table L-15 that bulimic subjects became increasingly hungry in the hours leading up to the main meal of the day compared to the hours preceding the first bulimic episode on bulimic days.

Hypothesis 3

Consistent with Hypothesis 3, bulimic subjects reported an idiographically more negative mood in the minutes preceding a bulimic episode. A directional t test rejected the null hypothesis that the mean mood rating prior to bulimic episodes

was equal to zero (M = -0.40, SD = 0.98; $t(20)$ = 5.74, $p<.03$; see Tables L-17 and L-18 in Appendix L). As is evident from Table L-17, the bulimic subjects' mood was slightly positive both before and after the consumption of a meal. In contrast, their mood was significantly more negative in the minutes preceding a bulimic episode, which worsened still further in the minutes that followed. This effect is consistent with the prebinge and postpurge components of the model presented in Figure 1 with regard to the transformations in the bulimic's mood over the binge-purge sequence.

From a functional analytic perspective it would be of interest to know whether bulimic episodes were preceded by a relatively stable dysphoric state or whether the bulimic's mood deteriorated rapidly, culminating in a bulimic episode. To examine this issue, the bulimic subject's mood ratings in the 3 consecutive hours prior to the first bulimic episode on bulimic days and prior to the main meal on nonbulimic days were entered into a two-factor (day and hour) within-subjects analysis of variance. Results yielded a significant day x hour interaction, $F(2, 20)$ = 19.11, $p<.0001$ (see Tables L-19 and L-20 in Appendix L). As is evident from Table L-19, the bulimic subjects' mood was slightly elevated in the third hour preceding a meal and remained so up to the point of consuming a meal. In contrast, mood deteriorated rapidly over not more than a 2-hour timespan prior to engaging in a bulimic episode. This rapid deterioration in mood was confirmed by a significant negative

linear trend in mood prior to bulimic episodes, $F(1, 20) = 6.26$, $p<.03$.

Additional analyses were conducted to determine whether the consumption and retention of snacks and meals had a differential effect on the mood of subjects in the two groups. Tables L-21 and L-23 depict the mood-enhancing effect which snacks and meals had on nonbulimic subjects in the minutes following food consumption. In contrast, the mood of bulimic subjects was slightly positive immediately preceding and following retained snacks and meals. There were significant group x time interactions for mood at snacks [$F(1, 46) = 5.40$, $p<.03$] and mood at meals, $F(1, 49) = 4.81$, $p<.04$ (see Tables L-22 and L-24 in Appendix L).

Two aspects regarding the general nature of the bulimic subject's mood require comment. First, VAS-Mood raw scores indicated that bulimics typically reported a more negative mood over the self-monitoring period compared to nonbulimic subjects. The mean overall mood rating for bulimics was 51.0 versus 60.9 for the nonbulimics. This difference was significant, $t(49) = -3.03$, $p<.05$ (see Table L-6). There was, however, no significant difference between groups in the overall variability of their mood ratings, $t(49) = 0.32$, $p>.05$. This pattern of results would appear to indicate that bulimic individuals do experience greater dysphoria in general but their mood is no more labile than nonbulimic individuals.

The results of this section may be summarizied as follows: (a) Bulimic subjects tended to report a slightly positive mood

prior to and following the consumption of retained snacks and meals compared to their typical mood state; (b) snack and meal consumption had a mood-enhancing effect for nonbulimic subjects but not for bulimic subjects; (c) consistent with Hypothesis 3, bulimic subjects reported an idiographically more negative mood in the minutes preceding a bulimic episode; (d) this mood had deteriorated rapidly from a relatively normal state to a dysphoric state in not more than 2 hours; (e) the bulimics' mood deteriorated still further in the minutes following the bulimic episode; and (f) bulimics were generally more dysphoric than nonbulimic subjects yet no more labile.

Hypothesis 4

Bulimic subjects experienced a mean of 5.53 (*SD* = 2.96) unpleasant events per day compared to a mean of 4.00 (*SD* = 1.79) for nonbulimic subjects. This difference was significant, $t(49) = 2.19$, $p<.04$. It was predicted that bulimic subjects would experience one or more such events prior to engaging in a bulimic episode. A two-factor (day and hour) within-subjects analysis of variance yielded a significant main effect for day [$F(1, 10) = 7.23$, $p<.03$], indicating that bulimics were more likely to experience one or more unpleasant events in the 3 hours preceding a bulimic episode on bulimic days compared to the 3 hours preceding the main meal on nonbulimic days (see Tables L-25 and L-26).

A further analysis was conducted to determine whether subjects in the two groups differentially responded to

interpersonal versus noninterpersonal unpleasant events with a deterioration in mood. The 38 unpleasant events in Appendix D were divided into those which connote interpersonal rejection (n = 14 items) versus those which were more impersonal in nature (n = 24 items). Mood ratings in the 2 hours prior to and following the experience of an event were entered into a one-between (group), two-within (event and time) analysis of variance. A significant event x time interaction was obtained [$F(1, 41) = 4.99$, $p<.04$], indicating that--collapsed across groups--the subject's mood became significantly more negative in the two hours following unpleasant events of an interpersonal nature but not following events of a more impersonal nature (see Tables L-27 and L-28 in Appendix L). Thus, the moods of bulimic and nonbulimic subjects responded in like fashion to unpleasant events involving interpersonal rejection.

Additional Analyses

Weight history. Table L-29 displays relevant weight history data for bulimic and nonbulimic subjects. The data derive from the subject's self-report on the Eating Disorder Inventory. The two groups did not differ in current weight, highest past adult weight, or personal ideal weight. Bulimic subjects had, however, achieved a significantly lower weight at some point in their lives compared to nonbulimics. Furthermore, bulimics subjects reached both their highest and lowest past adult weight at a significantly younger age.

Psychometric measures. The results of the psychometric test battery are displayed in Table L-30 for the two groups. Bulimic

subjects' scores were significantly more pathological on 13 of 14 tests and subscales. The only nonsignificant difference between the two groups was on the Interpersonal Distrust subscale of the Eating Disorder Inventory.

Parameters of bulimic episodes. Bulimic subjects reported a mean of 1.20 (SD = 0.96) bulimic episodes per day on the Self-Monitoring Scales (see Table L-31 in Appendix L). The average caloric value of a bulimic episode was 1,234.32 calories (SD = 988.07) which far exceeded that for snacks and meals. In addition, bulimic subjects were signficantly more likely to have been at home and alone during a bulimic episode compared to snacks and meals.

Sociability. The percent of time subjects reported being in the company of another person over the entire self-monitoring period was 69.9% for bulimics and 74.6% for nonbulimics. This difference failed to reach statistical significance, $t(49) = 0.88$, $p>.05$. The two goups did not differ in the percent of snacks and meals consumed while accompanied or at home (see Tables L-32, L-33, L-34 and L-35 in Appendix L).

Summary of Results

1. Contrary to Hypothesis 1, bulimic subjects did not evince greater dietary restraint compared to nonbulimic women. There were no significant group differences in total daily caloric intake (excluding bulimic episodes), snack and meal frequency, or caloric value of snacks and meals.

2. Contrary to Hypothesis 2, bulimics did not differ

signficantly from nonbulimics in magnitude of hunger ratings over the self-monitoring period, or in their intensity of hunger in the minutes preceding and following the consumption of snacks and meals.

3. Contrary to Hypothesis 2, bulimic subjects did not experience an idiographic increase in hunger in the minutes preceding a bulimic episode. This might be accounted for by the finding that they were significantly more likely to have already consumed a snack or meal prior to engaging in a bulimic episode.

4. Consistent with Hypothesis 3, bulimic subjects reported on idiographically more negative mood in the minutes preceding a bulimic episode. This mood had deteriorated rapidly from a relatively normal state to a dysphoric state in not more than 2 hours. Mood continued to deteriorate further in the minutes following the bulimic episode.

5. Bulimic subjects reported an idiographically more positive mood prior to consuming a snack or meal compared to nonbulimic subjects. Their mood remained positive and unchanged in the minutes following the consumption of a snack or meal. In contrast, snack and meal consumption had a mood-enhancing effect for nonbulimic subjects.

6. Consistent with Hypothesis 4, bulimic subjects were significantly more likely to have experienced one or more unpleasant events in the 3 hours preceding a bulimic episode compared to when they consumed and retain a meal. While bulimic subjects reported more unpleasant events over the entire self-monitoring period, they did not differ from nonbulimics in their

affective reaction to such events. Specifically, both groups evinced significant deterioration in mood in the 2 hours following an event involving interpersonal rejection but there was no significant affective response to impersonal events.

7. The two groups did not differ in the percent of snacks and meals consumed at home or in the presence of another person. Bulimics, however, were more often at home and alone during a bulimic episode compared to when they consumed and retained snacks and meals.

Discussion

On balance, the results of this study lend support to a mood-as-antecedent model of bulimia. When bulimics consumed a quantity of food which they subsequently vomited, this was reliably preceded by a rapid deterioration in mood from a relatively normal state to a dysphoric state. The reasons for this dysphoria are unknown but the unpleasant events data provide an interesting lead. Specifically, it was found that bulimics ran an increased risk of experiencing one or more unpleasant events in the 3 hours prior to engaging in a bulimic episode. In contrast, the likelihood of experiencing such events prior to a retained meal was significantly lower. A plausible hypothesis would be that the bulimic individual reacts in an emotionally negative manner to such events which, in turn, act as one stimulus for engaging in a bulimic episode. Other setting conditions appear to involve being at home alone. This line of reasoning is consistent with the social learning perspective which holds that bulimics fail to cope with environmental stress in psychologically adaptive ways but, instead, resort to food and subsequent vomiting.

Alternative explanations for the dysphoria could, of course, be put forth from the psychodynamic or biological perspectives. The observed pre-episode dysphoria could involve tension states stemming from intrapsychic conflict (Goodsitt, 1983; Swift & Letven, 1984) or neural/hormonal biological aberrations (Strober, 1984). This could place the bulimic at risk for either

experiencing or perceiving greater external stress in the world around her. What is interesting is the finding that the stress is interpersonal in nature and seems to involve perceived or veridical rejection from others. Furthermore, while bulimics and nonbulimics alike demonstrated a similar affective reaction to these events, for bulimics this sometimes culminated in a bulimic episode. This implicates a deficiency in the bulimic's repertiore of skills or production of adaptive coping mechanisms for dealing with dysphoric states as an important characteristic of bulimia.

The correlational nature of the data does not permit a more penetrating examination of the causal associations between dysphoric mood, unpleasant events, and the engagement in bulimic episodes. This, however, does not detract from the important observation that dysphoric mood and the experience of unpleasant events frequently precede bulimic episodes. That these findings derive from a data base which was collected in a prospective manner eliminates the alternative explanation that the act of eating followed by self-induced vomiting in some way causes the bulimic to recall her pre-episode mood and environment in a negative manner. Certainly, it is likely that the bulimic episode itself causes the individual's mood to deteriorate even further; as was observed in the present study.

This raises a very important issue and one that the present study cannot resolve. That is, does the bulimic's mood undergo the kind of transformations over the binge-purge sequence which are detailed in the mood model of Figure 1? This issue

necessitates a finer delineation of the construct "mood". The present study used the term in the generic sense to refer to a feeling tone which the individual experiences as unpleasant. This usage is consistent with the current psychiatric nomenclature (see American Psychiatric Association, 1980). It is, however, very likely that what is occurring over the binge-purge sequence involves multidirectional changes in a constellation of mood states, each rapidly fluctuating from positive to negative poles (and visa versa) in concert with the different phases of the sequence. What was observed in this study was a significant dysphoric state in the minutes preceding and following a bulimic episode. Future research might address what constellation of moods characterize these two states. It is conceivable that anxiety, depression, or boredom are central features of the bulimic's mood prior to engaging in a bulimic episode; with guilt, shame, and fear typifying the mood in the minutes following. Not to be excluded are the possible post-vomiting physical consequences which might involve mental confusion and feelings of unreality.

Perhaps the most important component of the mood model requiring further study is the binge-in-progress phase. This study demonstrated a functional relationship between dysphoric mood and the engagement in bulimic episodes. However, going beyond statements of association to statements of causality would be desirable. One issue which future research might address is whether the act of eating during a bulimic episode causes change

in the pre-eating constellation of moods which this study identified as being dysphoric. This is important because a central tenet of the psychodynamic and social learning models is that bulimics derive tension release or distraction during the act of eating. This implies a biphasic oscillation in mood; going from greater-to-less intense dysphoria during eating, to greater dysphoria post-purging and perhaps pre-purging. The present study addressed only the endpoints of this hypothetical biphasic fluctuation in mood over the binge-purge sequence. If future research is able to demonstrate the midpoint of this fluctuation--that is, less dysphoria during the act of eating--this would support the notion from the social learning and psychodynamic perspectives that food consumption during the bulimic episode is negatively reinforcing via tension discharge and/or distraction.

Following from the above, it is of interest to note that snack and meal consumption had a mood-enhancing effect for nonbulimic women but not for bulimics. When bulimics ate and retained food, their mood was relatively positive both before and after. However, when they consumed food which was subsequently vomited, their mood was appreciably more negative both before and after. It could be that the bulimic needs to ingest a greater amount of calories of specific nutrients before she achieves the same mood-enhancing effect that nonbulimics experience when they consume a snack or meal. That is, perhaps a "binge" represents a self-medicated attempt by bulimics to derive a temporary mood-enhancing effect which snacks and meals are unable to produce.

Indeed, the food consumed during a typical bulimic episode in this study was more than twice the caloric value of their retained meals. Recent research has demonstrated that the dietary amino acid tryptophan has a sedative effect as well as reducing pain sensitivity in normal adults (Hartmann, 1982; Leathwood & Pollet, 1982; Lieberman et al., 1982; Seltzer, Dewart, Pollack, & Jackson, 1982; Spring, Maller, Wurtman, Digman, & Cozolino, 1982). Carbohydrate consumption is known to increase levels of brain tryptophan (Wurtman, 1982) and it is carbohydrates which bulimics commonly consume during a bulimic episode (Abraham & Beumont, 1982; Johnson et al., 1982; Mitchell et al., 1981; Russell, 1979).

Regarding dietary restraint, this study failed to support the hypothesis derived from the boundary model of consumption that caloric restriction and hunger are functionally related to bulimic episodes. Bulimic subjects did not differ from nonbulimics in either the frequency or caloric value of snacks and meals; nor did they differ in magnitude of hunger prior to eating snacks and meals or, more generally, across the self-monitoring period. This failure to demonstrate meaningful group differences in dietary restraint might be due to any number of factors which threaten the validity of this study.

One threat to internal validity is the possibility of reactivity to the self-monitoring procedure. Reactivity occurs when the response frequency of an individual's behaviour is altered as a consequence of self-observation and self-recording

of that behaviour (Nelson & Hayes, 1979). Studies have shown that lean and obese people lose weight when they self-monitor food intake and factors associated with eating such as mood, social circumstance, and location (Green, 1978; Lowe & Fisher, 1983). Presumably, caloric restriction during self-monitoring would account for the weight loss in these studies. One possible reason why bulimic and nonbulimic subjects did not differ significantly in total daily caloric intake (excluding bulimic episodes) or frequency and caloric value of snacks and meals may be due to the reactive consequences of self-monitoring food intake and associated factors. That is, nonbulimics may have consumed less and/or bulimics consumed more during self-monitoring, thereby masking true differences between the groups in caloric intake. The former appears unlikely because Marlett and Bokram (1981) found that college women reported a mean caloric intake of 1,409 calories (SD = 465) per day for 2 consecutive self-monitoring days. The methodology and results of their study are very similar to the present one which found that nonbulimic subjects consumed a mean daily intake of 1,595 calories (SD = 435). Of course, both nonbulimics in this study and subjects in the Marlett and Bokram study may have restricted caloric intake during self-monitoring and, thus, not providing an accurate estimate of their typical caloric intake. There is, however, no reason to presume that bulimics in the present study did not react in the same manner (i.e., caloric restriction) to the self-monitoring procedure, thereby cancelling out possible differential reactivity between groups. Afterall, positively

valenced or socially desirable behaviours--like weight control--tend to increase during self-monitoring (Fremouw & Brown, 1980), and one would expect bulimics to value dieting behaviour and thinness as much as nonbulimics, if not moreso. This issue of reactivity remains unresolved and in need of further study. To date, there does not appear to be any published daily intake data by which to compare present results with those of other bulimic samples.

A second threat involves sample size which bears on the validity of the statistical conclusions reached in this study. Failure to marshal enough support for the dietary restraint hypothesis that bulimics consume and retain fewer calories may be due to an inadequate sample size. However, with an obtained difference in group means for daily caloric intake of only 160 calories, approximately 245 bulimic and nonbulimic subjects each would be required before one could accept the hypothesis that bulimics are dieters (Hall, 1983). Such a result could not, however, be considered theoretically or clinically significant.

A final consideration is that of the representativeness of the bulimic subjects and the external validity or generalizability of the present findings. It could be argued that subjects in this study were experiencing a "less severe" form of bulimia and, had "severe" bulimics been studied, the restraint hypothesis would have been supported. Until the issue is settled whether bulimia is a discrete clinical entity or a continuously distributed syndrome varying in severity--the

criteria for which has not yet been specified in the literature--this will remain an arguable point. It is possible that subtypes of bulimia exist wherein different factors such as chronic dieting or mood fluctuation are principle antecedents of bulimic episodes for different individuals. It has, for example, been suggested that bingeing in response to environmental stress might be more characteristic of individuals who engage in bulimic episodes intermittently in contrast to those who do so on an at-least-daily basis (Fairburn, 1982). This hypothesis would appear to be quite testable.

Following from the above, the results of this study might reflect the reality of a certain group of bulimic women. That is, contrary to restraint theory, chronic dieting may be no more characteristic of normal-weight bulimics than nonbulimic women in general. It is true that bulimics have a strong drive for thinness as reflected in their high scores on the EDI subscale. However, it may be that this drive only manifests itself as an intent, desire, or wish to be thin rather than an ongoing behavioural act directed towards achieving thinness. The finding that both groups were of near identical and normal weight suggests that caloric intake is roughly equal in both groups and, indeed, this is what was found.

The anorectic individual who engages in bulimic episodes or the normal-weight bulimic who binges but does not purge may fit the dieting-causes-bingeing formulation of restraint theory (Polivy et al., 1984; Polivy & Herman, 1985). Additionally, the normal-weight bulimic who has been bingeing and vomiting for

several years (such as those in the present study) may no longer be restricting caloric intake, but may well have done so in the earlier stages of the illness. The weight history data presented in Table L-29 shows that the bulimics achieved a significantly lower adult body weight in addition to weighing both their highest and lowest weight at a significantly younger age (around 18 years) compared to the nonbulimic subjects. Bearing in mind that it is during this age that dieting is most prevalent in females (Nylander, 1971) combined with the fact that the typical bulimic in the present study began engaging in bulimic episodes at this age, it is plausible to suggest that dieting was functionally related to bulimic episodes in the distal past of the now-chronic bulimic, however the two are not now proximally related.

This study found some support for a distal relationship between dieting and bulimia. All bulimic subjects underwent an interview to determine weight history. Sixty-four percent recalled perceiving themselves as over-weight at the onset of their bulimic behaviours. Seventy-seven percent recalled being on a diet during this period while 61% could actually recall how much weight they lost and over how long a period of time. This amounted to an astounding 9.5 kg weight loss (range 3 - 25) over an average of 6.1 weeks (range 1 - 16), which translates into a loss of 1.6 kg per week. Thirty-five percent of the bulimics had actually attended a commercial weight loss clinic at the onset of their bulimia to facilitate weight loss (which was usually

substantial and rapid).

In closing, a few speculations are offered regarding the functional relationship of mood and dietary restraint to bulimia. First, the finding that dysphoric mood reliably preceded bulimic episodes could be due to as-yet-undetermined psychological factors, physiological factors, or the combination of both. Psychologically, the bulimic may experience negative reinforcement involving temporary distraction and/or amelioration of dysphoria during the bulimic eating episode. Regarding physiology, the individual may experience a mood-enhancing effect due to the ingestion of a greater-than-normal amount of certain nutrients like carbohydrate which has the effect of increasing levels of brain tryptophan and, in turn, producing a mood altering effect. Future research is needed to determine whether the eating which occurs during a bulimic episode produces a positive change in mood, perhaps a consequence of mechanisms alluded to above. One treatment implication of the mood-as-antecedent relationship is for therapy to focus on the coping skills of the bulimic for dealing with mood fluctuation.

As for dietary restraint, the results of the self-monitoring data are at odds with the interview data for weight history, suggesting that the relationship of dieting to bulimia may change over the course of the illness. Specifically, it is suggested here that actual dieting--conscious, sustained caloric restriction--plays a precipitating role in the development of bulimia but, over time, the dieting behaviours abate and leave only a residual desire to return to a once-thinner state.

That a majority of dieters have difficulty maintaining weight loss (Stunkard & Penick, 1979), perhaps the result of the relentless struggle of the dieter against his/her body weight "setpoint" (Bennett, 1984), strongly suggests that some bulimics cannot sustain a significant loss in weight through prolonged caloric restriction, unlike their more successful anorectic counterparts. Cross-sectional research involving chronicity of bulimic symptoms as an independent variable and actual dieting behaviour as a dependent variable is required to test this hypothesis. However, obtaining bulimic subjects who are in the early stages of the syndrome will be difficult because most present themselves for treatment only after having suffered for many years. Yet, it is precisely this group wherein one might expect to find a functional relationship between dieting and engaging in bulimic episodes.

Study 2: Psychotherapeutic Outcome in Bulimia

Research into basic psychological processes of bulimia is very much in its infancy, a state also true for outcome research in the treatment of bulimia. Table 1 summarizes available research into the outcome of psychotherapy for bulimia. Two common themes become apparent in reviewing this work. First, there is a convergence across the studies of both therapeutic foci and techniques which can be broadly defined as cognitive-behavioural. Second, therapeutic outcome has been operationalized almost without exception according to the ultimate criterion of reduction in specific eating pathology without regard for change in the theoretically relevant instrumental outcome of associated psychopathology. These issues are reviewed in turn.

Therapeutic Foci and Techniques

The current therapies appear to follow what Garner and Isaacs (1985) describe as the "two-track" approach to treating bulimics. One track focuses on the patient's specific eating pathology with the aim of reducing frequency of bingeing and vomiting right from the beginning stages of treatment. A number of specific behavioural techniques are utilized by the therapist to accomplish this task, many of which were borrowed from the behavioural treatments for obesity (e.g., Mahoney & Mahoney, 1976; Stuart, 1978). These may be classified as self-monitoring

Table 1

Psychotherapy Outcome Studies in the Treatment of Bulimia

Investigators	n	Therapeutic techniques	Sessions/ format	Outcome[a]
Abraham et al. (1983)	43	-coping skills -marital counseling -psychoeducation -relaxation	?/ individual	40%
Fairburn (1981)	11	-behavioural contracting -cognitive restructuring -exposure -self-monitoring	7 months/ individual	82%
Fairburn et al. (1984)	24	-same as above	19/ individual	27%
Johnson et al. (1983)	13	-assertiveness -behavioural contracting -cognitive restructuring -psychoeducation -relaxation -self-monitoring	12/ group	20%
Johnson et al. (1984)	6	-cognitive restructuring -exposure and response prevention -nutrition balance -self-monitoring	8 - 12/ individual	16%

Table 1 con't

Table 1 cont'd

Investigators	n	Therapeutic techniques	Sessions/ format	Outcome[a]
Lacey (1983)	30	-behavioural contracting -problem-solving -self-monitoring	10/ individual and group	80%
Leitenberg et al. (1984)	5	-cognitive restructuring -exposure and response prevention -self-monitoring	18/ individual	40%
Roy-Byrne et al. (1984)	19	-cognitive restructuring -psychoeducation -self-monitoring	12 months/ group	27%
Schneider & Agras (1985)	13	-cognitive restructuring -relaxation -self-monitoring	16/ group	54%
Stevens & Salisbury (1984)	8	-behavioural contracting -cognitive restructuring -self-monitoring	16/ group	0%
Yates & Sambrailo (1984)	24	-assertiveness -cognitive restructuring -psychoeducation -self-monitoring	6/ group	6%

[a]Outcome refers to the percent of patients who were not bingeing and vomiting at the end of treatment.

and behavioural contracting.

Self-monitoring involves the systematic self-observation and recording of dysfunctional behaviour along with antecedents and consequences as they occur in the natural environment (Nelson, 1981). Self-monitoring is one facet of behavioural self-control training, the purpose of which is to decrease the probability of engaging in undesirable behaviours in the absence of immediate external constraints (Mahoney & Arnkoff, 1978). Ten of the 11 psychotherapy studies displayed in Table 1 utilized self-monitoring procedures in the treatment of bulimia. All of the studies had patients self-monitor occurrences of bingeing and vomiting. Many requested that patients also monitor feeling states, thoughts, and environmental events preceding and following bulimic episodes. A smaller number of studies had patients monitor all food intake and associated environmental and emotional antecedents and consequences.

The self-monitoring data are typically discussed by therapist and patient at weekly meetings during which time stimulus control factors are elucidated in an individualized functional analysis of the patient's disturbed eating pathology. This information is frequently cast by the therapist within a stimulus control and problem-solving framework (e.g., Goldfried & Goldfried, 1975; Mahoney, 1977), and the patient is taught to progressively reduce "the cues associated with undesirable behaviours and the simultaneous expansion of stimuli that correlate with more adaptive responses" (Mahoney & Arnkoff, 1978, p. 694). This

involves (a) the identification of antecedent stimulus control factors which precede bulimic episodes (e.g., arguments with mate), (b) listing of alternative behaviours (bingeing, reconciliation), (c) trying one alternative, (d) continuous monitoring of progress, and (e) selection of another alternative if unsuccessful. Eight of the 11 studies listed in Table 1 utilized some form of problem-solving involving the identification of stimulus control factors followed by behavioural contracting. An example of the latter would be for the patient to contract verbally or in writing to eat regular meals at set times regardless of temporal proximity to binges.

The second therapeutic track common to most treatments is to focus on the patient's associated psychopathology including anxiety, depression, low self-esteem, interpersonal maladjustment, and dysfunctional attitudes toward food and weight utilizing cognitive restructuring and coping skills techniques. All of the studies listed in Table 1 used some form of cognitive restructuring to deal with the patient's associated psychopathology, particularly in the areas of emotional control and interpersonal adjustment. A smaller number utilized coping skills therapies including relaxation and social skills training.

It is apparent from this review that current psychotherapies for bulimia converge with respect to both therapeutic foci and techniques. The format of treatment delivery is, however, much less consistent across the studies. Five studies treated patients on an individual basis while five others were conducted in a group format. In one study (Lacey, 1983), patients were

treated in both individual sessions, with a focus on specific eating pathology, and group sessions where associated psychopathology was dealt with. Lacey (1984) anecdotely reported that while patients benefit equally from a group or individual approach, fewer group-treated patients drop out because of the esprit de corps which quickly develops within the context of the group. On the other hand, Fairburn (1984) has suggested that patients treated individually likely benefit more from therapy because cognitive restructuring is best delivered on an individual basis. One purpose of the present study was to examine the efficacy of a cognitive-behavioural therapy for bulimia delivered on a group versus individual basis. No predictions about differential efficacy were made because of the current divergence of opinion on the matter.

Outcome

All of the studies presented in Table 1 operationalized treatment outcome in terms of the number of patients who were abstinent--that is, not bingeing and vomiting--by the end of treatment. While outcome varies across the studies, it is clear that only a minority of patients achieve clinically significant change in their specific eating pathology. The range of outcomes extends from 0% to 82% across the studies with a median posttreatment abstinence rate of 27%. This finding is quite consistent with Garfields's (1981) claim that most current therapies produce a truly marked improvement in only a minority of patients.

Much has been written over the years about how the effects of psychotherapy should be evaluated. Based on the understanding that clinical problems are typically multifaceted, the use of multiple measures is advocated by many as a general strategy for evaluating therapies (Nelson, 1981; Kazdin, 1980). Nowhere should this advice be heeded more than in the assessment of the psychotherapeutic effects for the treatment of bulimia, wherein several areas of psychological dysfunction have been highlighted in the literature. It was found in Study 1, for example, that bulimics scored more pathologically than nonbulimics on tests measuring mood states, depression, social adjustment, feelings of ineffectiveness, perfectionism, and the like. With few notable exceptions, however, researchers have limited their assessment of treatment effects to the specific eating pathology of bingeing and vomiting frequency with little or no attention being paid to whether treatment produced changes in associated psychopathology. Given that these treatments followed the two-track approach regarding therapeutic foci, it is both surprising and unfortunate that our current understanding of the effects of treatment in bulimia is limited to only one sphere within a range of possible outcomes.

According to Rosen and Proctor (1981), a distinction should be made between ultimate and instrumental outcomes when evaluating the effects of treatment. Ultimate outcomes are those for which the patient originally sought treatment and, when achieved, "constitute sufficient conditions for treatment to be terminated and considered a success" (p. 419). In the case of

bulimia, a reduction or complete cessation in the specific eating pathology of bingeing and purging would constitute the ultimate outcome. This is precisely how the current treatment studies have operationalized outcome. Most, however, have neglected to examine changes in instrumental outcomes.

Instrumental outcomes are those changes observed in the patient over the course of treatment which have been shown on empirical or theoretical grounds to be functionally related to the ultimate outcome. For example, if a researcher has evidence that dysphoric mood and the experience of unpleasant events are functionally related to bulimic episodes, then he/she should look for therapeutic change in both the ultimate outcome of binge/purge cessation and in the instrumental outcomes of decreased dysphoric mood and improvement in coping skills. For those patients who achieve the best outcome on the ultimate criterion of binge/purge cessation, one would also expect to see greatest change on the theoretically-relevant instrumental outcomes.

The findings of Study 1 suggest that dysphoric mood might constitute one instrumental outcome to be assessed in the treatment of bulimia because this was found to frequently precede the occurrence of bulimic episodes. In a treatment which has a focus on this area of functioning, one should evaluate whether the degree of therapeutic success in the ultimate outcome is matched by comparable improvements in dysphoric mood. Such was the purpose of the present study. Following upon Garfield's

(1981) suggestion for researchers "to investigate the possible correlates of marked success in psychotherapy" (p. 303), the present study set out to determine whether those bulimics who achieve a "good" outcome (no more than one binge or vomiting episode in the last 4 weeks of treatment) also experience a significant reduction in dysphoric mood over the course of treatment compared to "moderate-to-poor" outcome patients (those who experience two or more binges and/or episodes of vomiting in the final 4 weeks of treatment).

Three studies examined changes in the bulimic's depressive symptomatology and all have found significant pre- to posttreatment changes (Fairburn, Cooper, Kirk, & O'Connor, 1984; Schneider & Agras, 1985; Yates & Sambrailo, 1984). Cooper and Fairburn found that patients who achieved a good outcome at posttreatment also experienced greatest reduction in depressive symptomatology. A fourth study, however, found that weekly ratings of depression rose over the course of a 10-week treatment and did not abate in spite of the finding that 80% of patients were not bingeing and vomiting at the end of treatment (Lacey, 1983). At first glance, this result appears contrary to what one might expect given the support for the mood-as-antecedent model of bulimia reported in Study 1. However, Lacey (1983) may have effectively decoupled bingeing and vomiting behaviours from antecedent dysphoric mood because he explicitly contracted with his patients to progressively diminish and eventually cease all bingeing and vomiting behaviour over the course of treatment. The present study did not instruct patients to cease bingeing and

purging behaviours. This was done in an attempt to examine the hypothesis that good outcome patients would evince greatest reduction in dysphoric mood

METHOD

Subjects

Two of the 27 bulimic patients who participated in Study 1 decided not to enter the current psychotherapy study. A third patient had to be discontinued from treatment and placed into psychiatric care when she became suicidal. The remaining 24 patients were randomly assigned to individual or group treatment, n = 12 per condition. Two-thirds of the sample had previously received treatment for depression or an eating disorder where anti-depressant medication was prescribed in one-half of these cases. None of the patients was currently on anti-depressants or receiving concurrent psychotherapy from another source.

Procedure

The two-track approach discussed above was adopted in this partial replication of the Fairburn (1981) and Lacey (1983) studies. The 10-week treatment involved three overlapping phases.

Phase 1. The purpose of this phase to educate the patient about the medical sequelae of bulimia, the need for proper nutrition, and instruction in self-monitoring. All patients received a medical consultation by the end of the first week of treatment. This included a complete physical, urine and serum electrolyte assessment, echocardiogram, the dexamethasone suppression test, and other tests when indicated. An endocrinologist discussed with the patient the medical consequences of bingeing, vomiting, and purgative abuse and

indicated to the patient which, if any, of the symptoms she was currently experiencing. While cardiac arrhythmias, altered electrolyte levels, and a positive DST were not uncommon, in no case did a patient require continued medical attention.

The therapist discussed with the patient during session 1 the need to put dieting "on hold" for the duration of treatment. To this end, patients contracted verbally to maintain their presenting weight within a range of 1.5 kg and that weekly weighing by the therapist would be done to monitor this. A didactic presentation of the following topics was then made; (a) recommended dietary allowances for nutrients and the distinction between simple and complex carbohydrates (Whitney & Cataldo, 1983), (b) caloric expenditure and the setpoint concept for body weight (Bennett & Gurin, 1982), (c) functional hypoglycemia and carbohydrate craving (Geiselmean & Novin, 1982), and (d) body composition including lean versus adipose tissue (Katch & McArdle, 1983).

At the close of session 1, patients contracted verbally to eat regularly with the goal to eventually consuming three meals and one snack per day. A nutritionally balanced meal plan of not less than 1,200 calories was given to each patient along with a sample menu for 1 week (Simonson & Heilman, 1983). The need for planned, balanced, and regular meals was emphasized. Selection of foods within each of the four major food groups was also encouraged and patients were instructed to consume not less than the minimum amount of each nutrient as set forth in the meal

plan.

Patients were given a dietary diary at this and each subsequent session (see Appendix N). They were instructed to carry the diary with them at all times and to present it for discussion at each therapy session. Subjects were instructed to write the following information into the diary everytime they ate; type and quantity of food, time, and location. They were also requested to monitor bingeing and vomiting behaviours and to write instances of these into the diary along with associated feelings, thoughts, and events. The guidelines set forth by Nelson (1981) for increasing compliance and accuracy of self-recording were followed during the presentation of the self-monitoring instructions. This involved (a) instruction in continuous monitoring, (b) explicit definition of the activities to be monitored, (c) modeling the appropriate use of the dietary diary, and (d) emphasizing the integral value of the self-monitoring information to the treatment program and ramifications for therapeutic success.

Phase 2. This phase began at session 2 and continued throughout treatment. The aim of this phase was to reduce the frequency with which patients engaged in the specific eating pathology of bingeing and vomiting. The principle therapeutic technique utilized was that of problem-solving (Goldfried & Goldfried, 1975). Subjects received training in the use of problem-solving so that they could implement this coping strategy during times when they were at greatest risk for engaging in a

bulimic episode. The procedure involves five basic steps; (a) identification of the problem, (b) listing of alternative behaviours, (c) evaluation of alternative behaviours in terms of probable success and feasibility of being implemented, (d) implementing a plan of action, and (e) evaluation of the success of the strategy and implementing another alternative if unsuccessful. (See Appendix O for a complete example of the way in which problem-solving was introduced to patients in the group treatment condition.)

Patients reviewed the previously completed Self-Monitoring Scales during session 2 and this material was incorporated into a stimulus control and functional analytic framework regarding the patient's bingeing and vomiting behaviours. At the close of session 2, patients contracted in writing on the front of the dietary diary which problem they would focus on over the next 7 days and which activities they planned to engage in as alternatives bingeing and vomiting. At no time did patients contract to cease bingeing and vomiting; only to systematically attempt activities which were antithetical to bingeing and vomiting (e.g., engage in exercise or stay in the company of another during "risky" times). At each subsequent session, success of the planned strategy was evaluated, the problem-solving steps were reviewed, and revision of alternative plans was done on the basis of the information contained within the patient's dietary diary for that week as need be. The patient then contracted in writing on the dietary diary to carry out the new plans in the upcoming week.

The problem-solving procedure was initially focused on instances of bingeing, vomiting, and antecedents thereof. Common problems involved social eating, food preparation and time management regarding meal taking, and how to deal with specific food cravings. Gradual incorporation of "banned" or "binge" foods into the meal plan was encouraged. As treatment sessions progressed this procedure was applied to the patient's associated psychopathology. Such problems frequently involved issues related to interpersonal stress, mood fluctuation, unstructured time and boredom; all of which were antecedents of bulimic episodes for different patients. The scheduling of pleasant events was discussed and implemented (Lewinsohn, Munoz, Youngren, & Zeiss, 1978), as were components of assertive behaviour (Lange & Jakubowski, 1976).

The attitude adopted by the therapist during this phase of treatment was that of "collaborative empiricism". Following upon the suggestion of Garner and Bemis (1982), each patient was encouraged to regard the problem-solving procedure as a series of personal experiments wherein new strategies would be tried in the process of overcoming her specific eating pathology. Above all, every attempt was made to convey to the patient the need for her input in this balanced therapeutic relationship.

Phase 3. From the beginning of treatment, patients were encouraged to examine, challenge, and replace those beliefs and assumptions which were associated with feelings of distress. Faulty beliefs related to food and weight were recurrent themes

for many patients. Some patients, for example, frequently attributed their fluctuations in mood to perceived changes in body weight; saying "I am depressed today because I am fat today". Exploring the patient's personal meanings of such statements frequently led to the uncovering of errors in reasoning like dichotomous thinking, misattribution, and concomitant emotional upset. Patients were taught to explore the validity of such beliefs and to replace them with more adaptive ones according to the cognitive restructuring techniques advocated in the treatment of depression and anorexia nervosa (Beck, Rush, Shaw, & Emery, 1979; Garner & Bemis, 1982; Garner, Garfinkel, & Bemis, 1982). To continue with the above example, patients were asked to entertain the possibility that "I feel fat because I am depressed" instead of "I feel depressed because I am fat". This reattribution of the patient's dysphoria would be facilitated by pointing out the stability of the patient's weight relative to her mood fluctuation, and that factors other than weight change were likely responsible for the dysphoria. In this way patients came to understand that they used their bodies as a metaphor for mood and that the dysphoria should more realistically be attributed to factors other than fluctuations in body weight, like interpersonal stress.

The treatment protocol involved weekly sessions for 10 consecutive weeks. All patients went through the three phases of treatment as outlined above. Those in the group treatment condition were seen individually by the author for 20 minutes prior to the group meetings. During this time, patients were

weighed, dietary diaries and MAACL sheets collected, and problem-solving in the areas of bingeing, vomiting, and adherence to the meal plan were attended to. Problem-solving and cognitive restructuring in the areas of associated psychopathology were dealt with during the 1.5-hour group meetings.

Two groups were run. The first involved seven patients while the second contained five. A female co-therapist assisted in the running of the groups. The group treatment was a systematic replication of Lacey (1983). Patients in the individual treatment condition were seen by the author for 1-hour sessions over 10 consecutive weeks.

All patients underwent the assessments previously outlined in Study 1 which included a diagnostic interview, a functional analytic interview, self-monitoring using the Self-Monitoring Scales, and the completion of the battery of psychometric tests. The latter served as the pretreatment measures of associated psychopathology. The pretreatment estimate of weekly frequency of bingeing and vomiting was established during the functional analytic interview by asking the patients how many times they had binged and vomited in the 7 days prior to the interview. Weekly frequency of bingeing and vomiting over the course of treatment was established according to the patient's tally on the dietary diaries. In addition, patients completed and turned in one MAACL at the beginning of each therapy session. Patients rated their moods on the MAACL according to how they generally felt in the preceding 7 days. Patients completed the battery of psychometric

tests again at posttreatment and at a 3-month follow-up interview.

Results

The individual and group treatment conditions did not differ significantly at pretreatment in weekly frequency of bingeing and vomiting, duration of illness, or in motivation to change and therapeutic expectancy as rated on the PDQ (see Table P-1). There was a tendency, however, for more patients to drop out of the group treatment condition compared to the individual treatment condition (six vs. two), but this difference failed to reach statistical significance; Fisher exact probability = .19 (Siegal, 1956). Treatment completers did not differ from dropouts on any of the above variables at pretreatment except for weekly frequency of vomiting wherein a tendency was noted for dropouts to vomit more often, $t(22) = -1.94$, $p = .09$ (see Table P-2).

Collapsed across treatment conditions, patients evinced significant reductions from pre- to posttreatment in the specific eating pathology of bingeing and vomiting, and in self-reported bulimic tendencies and drive for thinness on the EDI (see Table P-3). Significant improvements in the associated psychopathology of depression (BDI), dysphoria (MAACL), and interpersonal distrust (EDI) were also evident at posttreatment. All of these improvements were maintained at 3-month follow-up. Patients did not report any statistically significant changes from pre- to posttreatment on the Social Adjustment Scale or on the EDI subscales of Interoceptive Awareness, Body Dissatisfaction, Ineffectiveness, Maturity Fears, or Perfectionism (see Table P-3).

Because of the large number of outcome variables relative to the number of treatment completers, only a few were examined to determine whether there was a differential efficacy between the individual and group treatment conditions. Bingeing frequency, vomiting frequency, and the Dysphoria subscale of the MAACL [scored according to the criteria outlined by Zuckerman, Lubin, & Rinck (1983)] were entered into a one-between (group; individual vs. group), one-within (time; pretreatment vs. week 1 vs. posttreatment) MANOVA. The cell means for each variable are displayed in Tables P-4, P-5, and P-6. The MANOVA yielded a significant time effect across the three variables [$\underline{F}(6, 9) = 11.26$, $\underline{p}<.001$] but no group or group x time effects (see Table P-7). Univariate analyses produced significant time main effects for bingeing frequency [$\underline{F}(2, 13) = 10.43$, $\underline{p}<.002$], vomiting frequency [$\underline{F}(2, 13) = 8.35$, $\underline{p}<.005$], and dysphoria, $\underline{F}(2, 13) = 8.83$, $\underline{p}<.004$). Thus, individual- and group-treated patients improved equally in specific eating pathology and dysphoria over the course of treatment.

Two additional MANOVAs were conducted to determine whether the above therapeutic effects could be attributed to the activities of phase 1 of treatment (i.e., psychoeducation, prescription of the meal plan, instruction in self-monitoring) and possible nonspecific effects of participating in Study 1 (i.e., diagnostic and functional analytic interviews, medical consultation, completion of the pretreatment questionnaires, intensive self-monitoring). The first MANOVA did not yield any

significant main effects for group and time (i.e., pretreatment vs. week 1), or group x time interaction in frequency of bingeing and vomiting or dysphoria (see Table P-8). The second MANOVA, however, revealed a significant main effect for time across the three variables from week 1 to week 10 of treatment, $F(3, 12) = 15.75$, $p<.0002$ (see Table P-9). Significant univariate main effects for time were obtained in bingeing frequency [$F(1, 14) = 10.68$, $p<.006$] and dysphoria, $F(1, 14) = 8.16$, $p<.02$. There was a tendency for vomiting frequency to reduce as well between week 1 and week 10 of treatment, $F(1, 14) = 4.18$, $p<.06$ (see Table P-9). Thus, the possible nonspecific effects of Study 1 and the activities of phase 1 of treatment could not account for the observed improvements in specific eating pathology and dysphoria in and of themselves. Greatest improvement appeared to coincide with the therapeutic activities of phases 2 and 3 which took place in weeks 2 through 10 of treatment.

Five of the 16 treatment completers achieved a good outcome while 11 had a moderate-to-poor outcome. Good outcome was defined as no more than one binge or vomiting episode in the final 4 weeks of treatment while moderate-to-poor outcome was two or more such episodes in the same period (Fairburn et al., 1984). It was predicted that good outcome patients would experience a greater reduction in dysphoric mood over the course of treatment compared to moderate-to-poor outcome patients. To examine this hypothesis, weekly ratings of MAACL anxiety, depression, and hostility were entered into separate, one-between (outcome; good vs. moderate-to-poor), one-within (time; 1 - 10 weeks of

treatment) univariate analyses of variance. The analysis of anxiety ratings did not reveal any significant main or interaction effects, indicating that anxiety did not change appreciably over the course of therapy (see Tables P-10 and P-11). A significant time main effect was found for depression [$F(9, 126) = 2.40$, $p<.02$], suggesting that patients became less depressed over the course of treatment regardless of their outcome status in terms of bingeing and vomiting frequency (see Tables P-12 and P-13). Finally, there was a significant outcome main effect for hostility ratings as well as an outcome x time interaction, $F(9, 126) = 2.46$, $p<.02$ (see Table P-15). It is evident from Table P-14 that the hostility ratings of moderate-to-poor outcome patients did not change appreciably over the course of treatment. In contrast, good outcome patients experienced marked fluctuations in hostility. Specifically, good outcome patients reported a decrease in hostility by session 2 which then rose dramatically and peaked by session 5, and finally dropped thereafter in the remaining 4 weeks of treatment. It is of interest to note that all good outcome patients had completely ceased to binge and vomit in these final 4 weeks and they remained abstinent in the 3-month follow-up interval.

A further analysis was conducted to determine whether good outcome patients experienced greater improvements in associated psychopathology compared to moderate-to-poor outcome patients. Table P-16 displays the mean change scores on the psychometric tests from pre- to posttreatment. The only group comparison

which proved statistically significant was on the Drive for Thinness subscale of the EDI, $t(14) = 3.63$, $p<.05$. Good outcome patients had a mean change score of 11.2 ($SD = 5.3$) in drive for thinness compared to a mean of 3.4 ($SD = 3.4$) for the moderate-to-poor outcome patients.

In summary, tendencies were noted for the group treatment condition to experience a higher dropout rate compared to the individual treatment condition, and for dropouts to induce vomiting more frequently than treatment completers. Insufficient power due to the relatively small sample sizes likely accounts for the inability of the present study to reject the null hypothesis in either case. There was no differential superiority of the group and individual approaches in terms of ameliorating specific eating pathology or dysphoria. Collapsed across treatment conditions, patients evinced significant pre- to posttreatment improvements in the associated psychopathology of interpersonal distrust, depressive symptomatology, and drive for thinness. These improvements were maintained at 3-month follow-up. Other facets of associated psychopathology did not change significantly from pre- to posttreatment (i.e., social maladjustment, ineffectiveness, perfectionism, body dissatisfaction, interoceptive awareness, maturity fears). Twenty-one percent of all patients who started treatment achieved a good outcome and they remained abstinent from bingeing and vomiting in the 3-month follow-up interval. Compared to moderate-to-poor outcome patients, good outcome patients evinced both a significantly greater reduction in their drive for

thinness and a greater fluctuation in hostility over the course of treatment.

Discussion

This study did not find a differential superiority in the individual or group approach to treating bulimia. Patients benefited equally in terms of amelioration of specific eating pathology and dysphoria regardless of the way in which the cognitive-behaviour therapy was delivered. There was a tendency, however, for more patients to drop out of the group treatment condition, as well as a tendency for dropouts to induce vomiting with greater frequency. A plausible hypothesis would be that such patients fail to obtain the therapeutic attention necessary to deal with their multifarious pathology within the group context and, as a consequence, they become frustrated and prematurely terminate therapy. Future research might examine whether frequent self-induced vomiting is a contraindication for treating bulimics in a group format.

This study replicated and extended the findings of previous psychotherapy outcome research in bulimia. Regarding specific eating pathology, the 21% abstinence rate obtained in this study is similar to the median 27% figure obtained over 11 other studies (see Table 1). As for associated psychopathology, the present study replicated previous observations that patients experience marked improvements in depressive symptomatology from pre- to posttreatment (cf. Fairburn et al., 1984; Schneider & Agras, 1985; Yates & Sambrailo, 1984). However, when one looks at the weekly mood ratings, an interesting pattern emerges which

is inconsistent with previous findings. Specifically, it was found that MAACL ratings of depression declined significantly and synchronously with reductions in the frequency of bingeing and vomiting over the course of treatment. This is precisely what was predicted to occur. Lacey (1983), on the other hand, found that weekly ratings of depression on a visual analogue scale rose steadily and peaked by the end of treatment in spite of the finding that 80% of patients were no longer bingeing and vomiting. In other words, he observed a desynchrony between change in mood and specific eating pathology. How are these paradoxical findings to be reconciled?

It is suggested that the difference in results between the two studies is attributable--at least in part--to differences in both therapeutic foci and techniques. In the Lacey study, patients contracted with the therapist to reduce and eventually abstain from bingeing and vomiting. It could be concluded that the patient's specific eating pathology was brought under the instructional control of the therapist in such a way as to effectively decouple bingeing and vomiting from the affective antecedents. In contrast, the present study utilized cognitive restructuring techniques for the purposes of altering the patient's associated psychopathology of dysfunctional attitudes towards food, weight, and concomitant dysphoria. This choice in therapeutic focus and technique was based on the rationale that such factors maintain the disturbed eating pathology and that improvement in these areas is a necessary prerequisite to recovery (Fairburn, 1984; Garner, in press).

Following from the above, it is plausible to suggest that the good outcome patients in the present study were able to cease bingeing and vomiting because they experienced a significant attitudinal change during the course of treatment. Indeed, it was observed that good outcome patients reported significantly greater change scores on the drive for thinness subscale of the EDI compared to those patients who were unable to completely stop bingeing and vomiting (i.e., moderate-to-poor outcome patients). High scores on this scale "reflect both an ardent wish to lose weight as well as a fear of weight gain" (Garner et al., 1983, p. 17). It could be argued that those patients who successfully alter their maladaptive attitudes toward food and weight will eventually cease to engage in the pathological eating behaviours which these attitudes perpetuate. This interpretation of the present results is consistent with the tenets of cognitive therapy (Beck et al., 1979; Fairburn, 1984; Garner, in press; Guidano & Liotti, 1983), yet it remains speculative and in need of future study.

Jerome Frank (1974) has written extensively on the topic of commonalities among the different psychological therapies and he notes that changes in the patient's "assumptive world" is a common therapeutic goal; the latter defined as "a highly structured, complex, interacting set of values, expectations, and images of oneself and others, which are guided by a person's perceptions and behaviour and which are closely related to his emotional states and feelings of well-being" (p. 27). Relevant

to the present discussion is Frank's assertion that "emotional arousal seems to be a prerequisite and a concomitant of attitude change" (p. 191). Similarly, Guidano and Liotti (1983) have argued that intense resistance and affective distress accompanies "deep" structural change in personal beliefs and attitudes.

Relating the above to bulimia, one might expect those patients who experience marked attitude change toward food and weight will also experience pronounced affective distress. This is precisely what happened to good outcome patients in the present study. Their hostility ratings rose markedly from sessions 2 through 5 and declined thereafter. Interestingly, this intensification of hostility was followed by a cessation in bingeing and vomiting for all good outcome patients in the final 4 weeks of treatment. While this finding indirectly supports the notion that attitude change is a prerequisite for behaviour change in treating bulimia, more conclusive evidence can only come from studies which frequently assess the bulimic's attitudes towards food and weight concurrent with frequency of bingeing and vomiting over the course of treatment. The present study assessed attitudes only at the beginning and end of the therapeutic program and found that both attitudes and eating pathology had changed in the adaptive direction. Consequently, it is impossible to make definitive statements about the direction of influence between attitude and behaviour change given the correlational nature of the data.

A few comments are in order regarding the validity of the present experimental design. Without the use of a control group,

it is not possible to attribute the observed improvements in specific eating pathology and associated psychopathology solely to the therapeutic ingredients of treatment (i.e., problem-solving, cognitive restructuring). It could be argued, for example, that the observed changes were nothing more than a spontaneous remission of symptoms. This seems unlikely for a number of reasons. First, many of the patients had been previously treated for bulimia without success. Second, the typical patient in this study would be considered chronic given that the mean illness duration was 5.7 years. Third, in previous studies using control groups, patients did not reduce the frequency of bingeing and vomiting; nor did dysphoric moods improve according to weekly MAACL or visual analogue scale ratings (Johnson-Sabine et al., 1984; Lacey, 1983). Finally, the intensive and highly intrusive assessment procedures of Study 1 failed to produce a significant change in the patient's pathology.

Thus, it seems that the cognitive-behaviour "package" utilized in the present study had significant therapeutic impact on patients. Future research might adopt Kazdin's (1980) dismantling research strategy to determine which components of the package are necessary to produce which changes in bulimic patients. Problem-solving may, for example, produce significant changes in frequency of bingeing and vomiting, while cognitive restructuring may be particularly effective in ameliorating the patient's dysfunctional attitudes about food, weight, and

concomitant dysphoria. From a clinical point of view, it would seem most important to match specific techniques to the patient's particular areas of dysfunction. This is facilitated by a thorough functional analytic assessment of the individual. For example, it was found that patients did not restrict their caloric intake any more than nonbulimic women when the data was aggregated over the group (see Study 1). However, it was certainly the case that some patients did in fact restrict caloric intake and to ignore this in therapy would probably result in a less than satisfactory therapeutic outcome for these individuals. Herein lies the value of functional analysis for understanding and treating bulimia.

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Appendix A

Patient Criteria for Bulimia Study

Name of patient:_____

Date of interview:_____

Check each of the following criteria as they apply to the patient:

___Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time, usually less than 2 hours).

___Has experienced two or more such episodes in the past 7 days.

___Consumption of high-caloric, easily ingested food during a binge.

___Inconspicuous eating during a binge.

___Termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting.

___Currently uses vomiting as a means of controlling weight.

___Frequent weight fluctuations greater than ten pounds due to alternating binges and fasts.

___Duration of binge eating of at least 1 year.

___Eighteen to 45 years of age and female.

___Suitable for treatment on an outpatient basis.

___Is willing to go on a waiting list not to exceed 8 weeks.

Check each of the following exclusion criteria as they apply to the patient:

___Suicidal symptoms.

___Concurrent treatment from another source.

___Current weight below 80% of standard body weight.

Is the patient a suitable candidate for the study?

Yes ___ No ___

Appendix B

Patient Consent Form

The Functional Analysis and Treatment of Bulimia.

A study conducted by Dr. L. Solyom and R. Davis.

I am being asked to participate in a study to evaluate the effectiveness of a psychological treatment for bulimia. Studies have demonstrated that psychotherapy is effective in treating bulimic symptoms.

At the beginning of the study, I will be interviewed, requested to fill out a number of questionnaires, and undergo a dexamethasone suppression test and a body image test. The dexamenthasone suppression test requires that I give two samples of blood for the purposes of determining whether or not I am clinically depressed. The body image test requires that I stand in front of a video monitor and adjust the camera until the image fits my perception of my body size. The purpose of this test is to determine how satisfied I am with my body image. The questionnaires should not take more than 90 minutes to complete.

I will then attend 10 weekly treatment sessions at Shaughnessy Hospital. Each session will last for 2 hours and be conducted in a group of six bulimic patients. I will be asked to provide blood and urine samples during each week of the study for laboratory tests. The purpose of these tests is to monitor my electrolytes throughout the study. I will also complete a food diary on a daily basis and a mood scale on a weekly basis.

I will again be requested to undergo another body image test and complete the battery of questionnaires at the end of treatment. I will also be interviewed at 3 and 12 months post-treatment and requested to complete the questionnaires each time.

The possible benefit of taking part in this study is that my illness may be treated successfully. I understand that participation in this study in no way guarantees full recovery or improvement. I understand that I have the right to withdraw from the study at any time, for any reason, if I so desire. In no way will my withdrawl from the study jeopardize my opportunity to receive continued medical care. I am permitted to ask questions of the investigators at any time concerning my treatment or about the study.

Patient Consent Form

.....2

All information and data collection will be handled in a confidential manner. Each participant will be assigned a study code number. Only this code number will be used to identify all of each patient's data so as to protect the participant's personal identity. All questionnaires completed by all participants will be shredded upon completion of the study.

A copy of this form will be given to me as a participant in a study in which I have agreed to participate.

Having read and understood the above, I agree to participate in the study.

_____

SIGNED

_____

WITNESS

_____

DATE

Appendix C

SELF-MONITORING SCALE

DIRECTIONS: This package contains twenty slips of paper and one full-page questionnaire attached to the end. As soon as you awake in the morning, AND BEFORE YOU EAT BREAKFAST, fill out the first slip (front and back). Write the precise time that you awake in the space beside "wake-up time" (e.g., 7:30 a.m.). For every hour-on-the-hour thereafter, complete a different slip (front and back). For example, on the next slip, you would enter "8:00 a.m." in the space beside "hour", and proceed to complete both the front and back of the slip. When entering the foods/beverages that you consumed, be as specific as possible. For example, when reporting what you ate for breakfast in the previous hour, you might include the following information: one large egg fried in one tablespoon of butter, one piece of white toast buttered, eight ounces of unsweetened grapefruit juice, coffee with cream and two teaspoons of sugar. Complete a different slip every hour-on-the-hour until you go to bed at night. At that time, turn to the full-page questionnaire at the end of this package and complete it.

PLEASE KEEP THIS PACKAGE OF SLIPS WITH YOU AT ALL TIMES AND MAKE SURE YOU COMPLETE ONE SLIP EVERY HOUR-ON-THE-HOUR.

Hour:_____

Have you eaten anything in the last hour? Yes___ No___

If so, would you consider this a snack__, a meal__, a binge__?

Have you vomited in the last hour? No___ Yes___ (times___)

Where were you in the last hour?_____

Were you alone___or accompanied___?

Give a complete description of foods and beverages consumed in the last hour. Be as precise as possible by including volume, weight, number.

FOODS/BEVERAGES	BRAND NAME	QUANTITY CONSUMED

PLEASE TURN OVER...

Appendix C con't

Place an "X" through the line that best describes your mood right this minute.

WORST MOOD _____ BEST MOOD

Place an "X" through the line that best describes how hungry you are right this minute.

NOT AT ALL HUNGRY _____ EXTREMELY HUNGRY

PLEASE KEEP THESE SLIPS WITH YOU AT ALL TIMES AND MAKE SURE YOU COMPLETE THE NEXT ONE SIXTY MINUTES FROM NOW ON THE HOUR.

Appendix D

DIRECTIONS: Below is a list of events. For each event that you personally experienced today, enter the time of day today when you FIRST BEGAN TO EXPERIENCE THE EVENT. Enter the time (e.g., 9:30a.m.) to the right of the event. COMPLETE THIS QUESTIONNAIRE JUST BEFORE RETIRING TO BED.

TIME

Having my spouse (living partner, mate) dissatisfied with me....._____

Realizing that I and someone I love are growing apart...._____

Being near unpleasant people....._____

Learning a friend or relative has just become ill, injured, or hospitalized, or is in need of an operation.._____

Arguments with spouse (living partner, mate)....._____

Being dissatisfied with my spouse (living partner, mate)._____

Talking with an unpleasant person (stubborn, unreasonable aggressive, conceited, etc.)....._____

Being physically uncomfortable (dizzy, constipated, headache, itchy, cold, having hiccups, etc.)....._____

Having a minor illness or injury (toothache, allergy attack, cold, flu, hangover, acne breakout, etc.)....._____

Eating food I don't enjoy....._____

Working under pressure....._____

Performing poorly in athletics....._____

Being forced to do something....._____

Bad weather....._____

Not having enough money for extras....._____

Doing a job poorly....._____

Realizing I can't do something that I thought I could...._____

Having something break or run poorly (car, appliances,etc)_____

Doing something I don't want in order to please someone.._____

Appendix D con't

TIME

Having someone disagree with me....._____

Living in a dirty or messy place....._____

Being insulted....._____

Leaving a task uncompleted, procrastinating....._____

Having a project or assignment overdue....._____

Failing at something (a test, etc.)....._____

Being without privacy....._____

Being rushed....._____

Having too much to do....._____

Having someone criticize or evaluate me....._____

Being in an unfamiliar place....._____

Being excluded or left out....._____

Being with people who don't share my interests....._____

Being in a situation where I don't know many people....._____

Being alone....._____

Lying to someone....._____

Being misled, bluffed, or tricked....._____

Saying something unclearly to someone....._____

Being misunderstood or misquoted....._____

EDI

David M. Garner, Ph. D.
Marion P. Olmsted, M.A.
Janet Polivy, Ph. D.

Name _____ Date _____

Age _____ Sex _____ Marital status _____

Present weight _____ Height _____

Highest past weight (excluding pregnancy) _____ (lbs)

How long ago? _____ (months)

How long did you weigh this weight? _____ (months)

Lowest past adult weight _____ (months)

How long ago? _____ (months)

How long did you weigh this weight? _____ (months)

What do you consider your ideal weight? _____ (lbs)

Age at which weight problems began (if any) _____

Present occupation _____

Father's occupation _____ Mother's occupation _____

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PAR

PSYCHOLOGICAL ASSESSMENT RESOURCES, INC.

INSTRUCTIONS

This is a scale which measures a variety of attitudes, feelings and behaviors. Some of the items relate to food and eating. Others ask you about your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and fill in the circle under the column which applies best to you. Please answer each question *very* carefully. Thank you.

	ALWAYS	USUALLY	OFTEN	SOMETIMES	RARELY	NEVER
1. I eat sweets and carbohydrates without feeling nervous.	○	○	○	○	○	○
2. I think that my stomach is too big.	○	○	○	○	○	○
3. I wish that I could return to the security of childhood.	○	○	○	○	○	○
4. I eat when I am upset.	○	○	○	○	○	○
5. I stuff myself with food.	○	○	○	○	○	○
6. I wish that I could be younger.	○	○	○	○	○	○
7. I think about dieting.	○	○	○	○	○	○
8. I get frightened when my feelings are too strong.	○	○	○	○	○	○
9. I think that my thighs are too large.	○	○	○	○	○	○
10. I feel ineffective as a person.	○	○	○	○	○	○
11. I feel extremely guilty after overeating.	○	○	○	○	○	○
12. I think that my stomach is just the right size.	○	○	○	○	○	○
13. Only outstanding performance is good enough in my family.	○	○	○	○	○	○
14. The happiest time in life is when you are a child.	○	○	○	○	○	○
15. I am open about my feelings.	○	○	○	○	○	○
16. I am terrified of gaining weight.	○	○	○	○	○	○
17. I trust others.	○	○	○	○	○	○
18. I feel alone in the world.	○	○	○	○	○	○
19. I feel satisfied with the shape of my body.	○	○	○	○	○	○
20. I feel generally in control of things in my life.	○	○	○	○	○	○
21. I get confused about what emotion I am feeling.	○	○	○	○	○	○
22. I would rather be an adult than a child.	○	○	○	○	○	○
23. I can communicate with others easily.	○	○	○	○	○	○
24. I wish I were someone else.	○	○	○	○	○	○
25. I exaggerate or magnify the importance of weight.	○	○	○	○	○	○
26. I can clearly identify what emotion I am feeling.	○	○	○	○	○	○
27. I feel inadequate.	○	○	○	○	○	○
28. I have gone on eating binges where I have felt that I could not stop.	○	○	○	○	○	○
29. As a child, I tried very hard to avoid disappointing my parents and teachers.	○	○	○	○	○	○
30. I have close relationships.	○	○	○	○	○	○

	ALWAYS	USUALLY	OFTEN	SOMETIMES	RARELY	NEVER
31. I like the shape of my buttocks.	O	O	O	O	O	O
32. I am preoccupied with the desire to be thinner.	O	O	O	O	O	O
33. I don't know what's going on inside me.	O	O	O	O	O	O
34. I have trouble expressing my emotions to others.	O	O	O	O	O	O
35. The demands of adulthood are too great.	O	O	O	O	O	O
36. I hate being less than best at things.	O	O	O	O	O	O
37. I feel secure about myself.	O	O	O	O	O	O
38. I thing about bingeing (over-eating).	O	O	O	O	O	O
39. I feel happy that I am not a child anymore.	O	O	O	O	O	O
40. I get confused as to whether or not I am hungry.	O	O	O	O	O	O
41. I have a low opinion of myself.	O	O	O	O	O	O
42. I feel that I can achieve my standards.	O	O	O	O	O	O
43. My parents have expected excellence of me.	O	O	O	O	O	O
44. I worry that my feelings will get out of control.	O	O	O	O	O	O
45. I think that my hips are too big.	O	O	O	O	O	O
46. I eat moderately in front of others and stuff myself when they're gone	O	O	O	O	O	O
47. I feel bloated after eating a normal meal.	O	O	O	O	O	O
48. I feel that people are happiest when they are children.	O	O	O	O	O	O
49. If I gain a pound, I worry that I will keep gaining.	O	O	O	O	O	O
50. I feel that I am a worthwhile person.	O	O	O	O	O	O
51. When I am upset, I don't know if I am sad, frightened, or angry.	O	O	O	O	O	O
52. I feel that I must do things perfectly, or not do them at all.	O	O	O	O	O	O
53. I have the thought of trying to vomit in order to lose weight.	O	O	O	O	O	O
54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).	O	O	O	O	O	O
55. I think that my thighs are just the right size.	O	O	O	O	O	O
56. I feel empty inside (emotionally).	O	O	O	O	O	O
57. I can talk about personal thoughts or feelings.	O	O	O	O	O	O
58. The best years of your life are when you become an adult.	O	O	O	O	O	O
59. I think that my buttocks are too large.	O	O	O	O	O	O
60. I have feelings that I can't quite identify.	O	O	O	O	O	O
61. I eat or drink in secrecy.	O	O	O	O	O	O
62. I think that my hips are just the right size.	O	O	O	O	O	O
63. I have extremely high goals.	O	O	O	O	O	O
64. When I am upset, I worry that I will start eating.	O	O	O	O	O	O

FOR OFFICE USE ONLY

			109				
DT	B	BD	I	P	ID	IA	MF

Appendix F

B SCALE

NAME:_____ DATE:_____

DIRECTIONS: Please read each item carefully and cirle the number beside the statement that best applies to you.

1. Binge eating is the rapid consumption of a large amount of food in a discrete period of time. How often do you binge eat?
   0 seldom.
   1 once or twice a month.
   2 once a week.
   3 almost every day.

2. What is the average length of a binge eating episode?
   0 less than 15 minutes.
   1 15 minutes to one hour.
   2 one hour to four hours.
   3 more than four hours.

3. Which of the following statements best applies to your binge eating?
   0 I eat until I have had enough to satisfy me.
   1 I eat until my stomach feels full.
   2 I eat until my stomach is painfully full.
   3 I eat until I can't eat anymore.

4. Do you ever vomit after a binge?
   0 never.
   1 sometimes.
   2 usually
   3 always.

5. Which of the following best applies to your eating behaviour when binge eating?
   0 I eat more slowly than usual.
   0 I eat about the same as I usually do.
   1 I eat very rapidly.

6. How much are you concerned about your binge eating?
   0 not bothered at all.
   1 bothers me a little.
   2 moderately concerned.
   3 a major concern.

7. Which best describes your feelings during a binge?
   0 I feel that I could control the eating if I chose.
   1 I feel that I have at least some control.
   2 I feel completely out of control.

8. Which of the following describes your feelings after a binge?
   0 I feel fairly neutral, not too concerned.
   1 I am moderately upset.
   2 I hate myself.

9. Which most accurately describes your feelings after a binge?
   0 not depressed at all.
   1 mildly depressed.
   2 moderately depressed.
   3 very depressed.

Appendix G

BECK INVENTORY

NAME:_____ DATE:_____

DIRECTIONS: On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the PAST WEEK, INCLUDING TODAY! Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

0 I do not feel sad.
1 I feel sad.
2 I am sad all the time and I can't snap out of it.
3 I am so sad or unhappy that I can't stand it.

0 I am not particularly discouraged about the future.
1 I feel discouraged about the future.
2 I feel I have nothing to look forward to.
3 I feel that the future is hopeless and that things cannot improve.

0 I get as much satisfaction out of things as I used to.
1 I don't enjoy things the way I used to.
2 I don't get real satisfaction out of anything anymore.
3 I am dissatisfied or bored with everything.

0 I don't feel like a failure.
1 I feel I have failed more than the average person.
2 As I look back on my life, all I can see is a lot of failures.
3 I feel I am a complete failure as a person.

0 I don't feel particularly guilty.
1 I feel guilty a good part of the time.
2 I feel quite guilty most of the time.
3 I feel guilty all of the time.

0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect to be punished.
3 I feel I am being punished.

0 I don't feel disappointed in myself.
1 I am disappointed in myself.
2 I am disgusted with myself.
3 I hate myself.

0 I don't feel I am any worse than anybody else.
1 I am critical of myself for my weaknesses or mistakes.
2 I blame myself all the time for my faults.
3 I blame myself for everything bad that happens.

0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
2 I would like to kill myself.
3 I would kill myself if I had the chance.

0 I don't cry anymore than usual.
1 I cry more now than I used to.
2 I cry all the time now.
3 I used to be able to cry, but now I can't cry even though I want to.

0 I am no more irritated now than I ever am.
1 I get annoyed or irritated more easily than I used to.
2 I feel irritated all the time now.
3 I don't get irritated at all by the things that used to irritate me.

0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.

0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions than before.
3 I can't make decisions anymore.

0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old and unattractive.
2 I feel that there are permanent changes in my appearance that make me look unattractive.
3 I believe that I look ugly.

0 I can work about as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.

0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.

0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.

0 I haven't lost much weight, if any lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds. I am purposely trying to
3 I have lost more than 15 pounds. lose weight by eating less.
Yes___ No___

0 I am no more worried about my health than usual.
1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
2 I am very worried about physical problems and it's hard to think of much else.
3 I am so worried about my physical problems, that I cannot think of anything else.

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

SOCIAL ADJUSTMENT SELF REPORT QUESTIONNAIRE

We are interested in finding out how you have been doing in the last *two weeks*. We would like you to answer some questions about york work, spare time and your family life. There are no right or wrong answers to these questions. Check the answers that best describes how you have been in the last *two weeks*.

WORK OUTSIDE THE HOME

Please check the situation that best describes you.

I am
1 ☐ a worker for pay
2 ☐ a housewife
3 ☐ a student
4 ☐ retired
5 ☐ unemployed
(14)

Do you usually work for pay more than 15 hours per week?

1 ☐ YES 2 ☐ NO (15)

Did you work any hours for pay in the last two weeks?

1 ☐ YES 2 ☐ NO (16)

Check the answer that best describes how you have been in the last two weeks.

1. How many days did you miss from work in the last two weeks?

1 ☐ No days missed. (17)
2 ☐ One day.
3 ☐ I missed about half the time.
4 ☐ Missed more than half the time but did make at least one day.
5 ☐ I did not work any days.
8 ☐ On vacation all of the last two weeks.

If you have not worked any days in the last two weeks, go on to Question 7.

2. Have you been able to do your work in the last 2 weeks?

1 ☐ I did my work very well. (18)
2 ☐ I did my work well but had some minor problems.
3 ☐ I needed help with work and did not do well about half the time.
4 ☐ I did my work poorly most of the time.
5 ☐ I did my work poorly all the time.

3. Have you been ashamed of how you do your work in the last 2 weeks?

1 ☐ I never felt ashamed. (19)
2 ☐ Once or twice I felt a little ashamed.
3 ☐ About half the time I felt ashamed.
4 ☐ I felt ashamed most of the time.
5 ☐ I felt ashamed all the time.

4. Have you had any arguments with people at work in the last 2 weeks?

1 ☐ I had no arguments and got along very well. (20)
2 ☐ I usually got along well but had minor arguments.
3 ☐ I had more than one argument.
4 ☐ I had many arguments.
5 ☐ I was constantly in arguments.

5. Have you felt upset, worried, or uncomfortable while doing your work during the last 2 weeks?

1 ☐ I never felt upset. (21)
2 ☐ Once or twice I felt upset.
3 ☐ Half the time I felt upset.
4 ☐ I felt upset most of the time.
5 ☐ I felt upset all of the time.

6. Have you found your work interesting these last two weeks?

1 ☐ My work was almost always interesting. (22)
2 ☐ Once or twice my work was not interesting.
3 ☐ Half the time my work was uninteresting.
4 ☐ Most of the time my work was uninteresting.
5 ☐ My work was always uninteresting.

WORK AT HOME – HOUSEWIVES ANSWER QUESTIONS 7-12. OTHERWISE, GO ON TO QUESTION 13.

7. How many days did you do some housework during the last 2 weeks?

1 ☐ Every day. (23)
2 ☐ I did the housework almost every day.
3 ☐ I did the housework about half the time.
4 ☐ I usually did not do the housework.
5 ☐ I was completely unable to do housework.
8 ☐ I was away from home all of the last two weeks.

8. During the last two weeks, have you kept up with your housework? This includes cooking, cleaning, laundry, grocery shopping, and errands.

1 ☐ I did my work very well. (24)
2 ☐ I did my work well but had some minor problems.
3 ☐ I needed help with my work and did not do it well about half the time.
4 ☐ I did my work poorly most of the time.
5 ☐ I did my work poorly all of the time.

9. Have you been ashamed of how you did your housework during the last 2 weeks?

1 ☐ I never felt ashamed. (25)
2 ☐ Once or twice I felt a little ashamed.
3 ☐ About half the time I felt ashamed.
4 ☐ I felt ashamed most of the time.
5 ☐ I felt ashamed all the time.

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10. Have you had any arguments with salespeople, tradesmen or neighbors in the last 2 weeks?

1☐ I had no arguments and got along very well. (26)
2☐ I usually got along well, but had minor arguments.
3☐ I had more than one argument
4☐ I had many arguments.
5☐ I was constantly in arguments.

11. Have you felt upset while doing your housework during the last 2 weeks?

1☐ I never felt upset. (27)
2☐ Once or twice I felt upset.
3☐ Half the time I felt upset.
4☐ I felt upset most of the time.
5☐ I felt upset all of the time.

12. Have you found your housework interesting these last 2 weeks?

1☐ My work was almost always interesting. (28)
2☐ Once or twice my work was not interesting.
3☐ Half the time my work was uninteresting.
4☐ Most of the time my work was uninteresting.
5☐ My work was always uninteresting.

FOR STUDENTS

Answer Questions 13-18 if you go to school half time or more. Otherwise, go on to Question 19.

What best describes your school program? (Choose one)

1☐ Full Time (29)
2☐ 3/4 Time
3☐ Half Time

Check the answer that best describes how you have been the last 2 weeks.

13. How many days of classes did you miss in the last 2 weeks?

1☐ No days missed. (30)
2☐ A few days missed.
3☐ I missed about half the time.
4☐ Missed more than half time but did make at least one day.
5☐ I did not go to classes at all.
8☐ I was on vacation all of the last two weeks.

14. Have you been able to keep up with your class work in the last 2 weeks?

1☐ I did my work very well. (31)
2☐ I did my work well but had minor problems.
3☐ I needed help with my work and did not do well about half the time.
4☐ I did my work poorly most of the time.
5☐ I did my work poorly all the time.

15. During the last 2 weeks, have you been ashamed of how you do your school work? (32)

1☐ I never felt ashamed.
2☐ Once or twice I felt ashamed.
3☐ About half the time I felt ashamed.
4☐ I felt ashamed most of the time.
5☐ I felt ashamed all of the time.

16. Have you had any arguments with people at school in the last 2 weeks?

1☐ I had no arguments and got along very well. (33)
2☐ I usually got along well but had minor arguments.
3☐ I had more than one argument.
4☐ I had many arguments.
5☐ I was constantly in arguments.
8☐ Not applicable; I did not attend school.

17. Have you felt upset at school during the last 2 weeks?

1☐ I never felt upset. (34)
2☐ Once or twice I felt upset.
3☐ Half the time I felt upset.
4☐ I felt upset most of the time.
5☐ I felt upset all of the time.
8☐ Not applicable; I did not attend school.

18. Have you found your school work interesting these last 2 weeks?

1☐ My work was almost always interesting. (35)
2☐ Once or twice my work was not interesting.
3☐ Half the time my work was uninteresting.
4☐ Most of the time my work was uninteresting.
5☐ My work was always uninteresting.

SPARE TIME – EVERYONE ANSWER QUESTIONS 19-27.

Check the answer that best describes how you have been in the last 2 weeks.

19. How many friends have you seen or spoken to on the telephone in the last 2 weeks?

1 ☐ Nine or more friends. (36)
2 ☐ Five to eight friends.
3 ☐ Two to four friends.
4 ☐ One friend
5 ☐ No friends.

20. Have you been able to talk about your feelings and problems with at least one friend during the last 2 weeks?

1 ☐ I can always talk about my innermost feelings. (37)
2 ☐ I usually can talk about my feelings.
3 ☐ About half the time I felt eble to talk about my feelings.
4 ☐ I usually was not able to talk about my feelings.
5 ☐ I was never able to talk about my feelings.
8 ☐ Not applicable; I have no friends.

21. How may times in the last two weeks have you gone out socially with other people? For example, visited friends, gone to movies, bowling, church, restaurants, invited friends to your home?

1 ☐ More than 3 times. (38)
2 ☐ Three times.
3 ☐ Twice.
4 ☐ Once.
5 ☐ None.

22. How much time have you spent on hobbies or spare time interests during the last 2 weeks? For example, bowling, sewing, gardening, sports, reading?

1 ☐ I spent most of my spare time on hobbies almost every day. (39)
2 ☐ I spent some spare time on hobbies some of the days.
3 ☐ I spent a little spare time on hobbies.
4 ☐ I usually did not spend any time on hobbies but did watch TV.
5 ☐ I did not spend any spare time on hobbies or watching TV.

23. Have you had open arguments with your friends in the last 2 weeks?

1 ☐ I had no argumants and got along very well. (40)
2 ☐ I usually got along well but had minor arguments.
3 ☐ I had more than one argument.
4 ☐ I had many argumants.
5 ☐ I was constantly in arguments.
8 ☐ Not applicable; I have no friends.

24. If your feelings were hurt or offended by a friend during the last two weeks, how badly did you take it?

1 ☐ It did not affect me or it did not happen. (41)
2 ☐ I got over it in a few hours.
3 ☐ I got over it in a few days.
4 ☐ I got over it in a week.
5 ☐ It will take me months to recover.
8 ☐ Not applicable; I have no friends.

25. Have you felt shy or uncomfortable with people in the last 2 weeks?

1 ☐ I always felt comfortable. (42)
2 ☐ Sometimes I felt uncomfortable but could relax after a while.
3 ☐ About half the time I felt uncomfortable.
4 ☐ I usually felt uncomfortable.
5 ☐ I always felt uncomfortable.
8 ☐ Not applicable; I was never with people.

26. Have you felt lonely and wished for more friends during the last 2 weeks?

1 ☐ I have not felt lonely. (43)
2 ☐ I have felt lonely a few times.
3 ☐ About half the time I felt lonely.
4 ☐ I usually felt lonely.
5 ☐ I always felt lonely and wished for more friends.

27. Have you felt bored in your spare time during the last 2 weeks?

1 ☐ I never felt bored. (44)
2 ☐ I usually did not feel bored.
3 ☐ About half the time I felt bored.
4 ☐ Most of the time I felt bored.
5 ☐ I was constantly bored.

Are you a Single, Separated, or Divorced Person not living with a person of opposite sex; please answer below:

1 ☐ YES, Answer questions 28 & 29. (45)
2 ☐ NO, go to question 30.

28. How many times have you been with a date these last 2 weeks?

1 ☐ More than 3 times. (46)
2 ☐ Three times.
3 ☐ Twice.
4 ☐ Once.
5 ☐ Never.

29. **Have you been interested in dating during the last 2 weeks. If you have not dated, would you have liked to?**

1 ☐ I was always interested in dating. (47)
2 ☐ Most of the time I was interested.
3 ☐ About half of the time I was interested.
4 ☐ Most of the time I was not interested.
5 ☐ I was completely uninterested.

FAMILY

Answer Questions 30-37 about your parents, brothers, sisters, in laws, and children not living at home. Have you been in contact with any of them in the last two weeks?

1 ☐ YES, Answer questions 30-37.
2 ☐ NO, Go to question 36

30. **Have you had open arguments with your relatives in the last 2 weeks?**

1 ☐ We always got along very well. (48)
2 ☐ We usually got along very well but had some minor arguments.
3 ☐ I had more than one argument with at least one relative.
4 ☐ I had many arguments.
5 ☐ I was constantly in arguments.

31. **Have you been able to talk about your feelings and problems with at least one of your relatives in the last 2 weeks?**

1 ☐ I can always talk about my feelings with at least one relative. (49)
2 ☐ I usually can talk about my feelings.
3 ☐ About half the time I felt able to talk about my feelings.
4 ☐ I usually was not able to talk about my feelings.
5 ☐ I was never able to talk about my feelings.

32. **Have you avoided contacts with your relatives these last two weeks?**

1 ☐ I have contacted relatives regularly. (50)
2 ☐ I have contacted a relative at least once.
3 ☐ I have waited for my relatives to contact me.
4 ☐ I avoided my relatives, but they contacted me.
5 ☐ I have no contacts with any relatives.

33. **Did you depend on your relatives for help, advice, money or friendship during the last 2 weeks?**

1 ☐ I never need to depend on them. (51)
2 ☐ I usually did not need to depend on them.
3 ☐ About half the time I needed to depend on them.
4 ☐ Most of the time I depend on them.
5 ☐ I depend completely on them.

34. **Have you wanted to do the opposite of what your relatives wanted in order to make them angry during the last 2 weeks?**

1 ☐ I never wanted to oppose them. (52)
2 ☐ Once or twice I wanted to oppose them.
3 ☐ About half the time I wanted to oppose them.
4 ☐ Most of the time I wanted to oppose them.
5 ☐ I always opposed them.

35. **Have you been worried about things happening to your relatives without good reason in the last 2 weeks?**

1 ☐ I have not worried without reason (53)
2 ☐ Once or twice I worried.
3 ☐ About half the time I worried.
4 ☐ Most of the time I worried.
5 ☐ I have worried the entire time.
8 ☐ Not applicable; my relatives are no longer living.

EVERYONE answer Questions 36 and 37, even if your relatives are not living.

36. **During the last two weeks, have you been thinking that you have let any of your relatives down or have been unfair to them at any time?**

1 ☐ I did not feel that I let them down at all. (54)
2 ☐ I usually did not feel that I let them down.
3 ☐ About half the time I felt that I let them down.
4 ☐ Most of the time I have felt that I let them down.
5 ☐ I always felt that I let them down.

37. **During the last two weeks, have you been thinking that any of your relatives have let you down or have been unfair to you at any time?**

1 ☐ I never felt that they let me down. (55)
2 ☐ I felt that they usually did not let me down.
3 ☐ About half the time I felt they let me down.
4 ☐ I usually have felt that they let me down.
5 ☐ I am very bitter that they let me down.

Are you living with your spouse or have been living with a person of the opposite sex in a permanent relationship?

1 ☐ YES, Please answer questions 38-46. (56)
2 ☐ NO, Go to question 47.

38. **Have you had open arguments with your partner in the last 2 weeks?**

1 ☐ We had no arguments and we got along well. (57)
2 ☐ We usually got along well but had minor arguments.
3 ☐ We had more than one argument.
4 ☐ We had many arguments.
5 ☐ We were constantly in arguments.

39. Have you been able to talk about your feelings and problems with your partner during the last 2 weeks?

1 ☐ I could always talk freely about my feelings. (58)
2 ☐ I usually could talk about my feelings.
3 ☐ About half the time I felt able to talk about my feelings.
4 ☐ I usually was not able to talk about my feelings.
5 ☐ I was never able to talk about my feelings.

40. Have you been demanding to have your own way at home during the last 2 weeks?

1 ☐ I have not insis[illegible] always having my own way. (59)
2 ☐ I usually have [illegible]isted on having my own way.
3 ☐ About half the time I insisted on having my own way.
4 ☐ I usually insisted on having my own way.
5 ☐ I always insisted on having my own way.

41. Have you been bossed around by your partner these last 2 weeks?

1 ☐ Almost never. (60)
2 ☐ Once in a while.
3 ☐ About half the time.
4 ☐ Most of the time.
5 ☐ Always.

42. How much have you felt dependent on your partner these last 2 weeks?

1 ☐ I was independent. (61)
2 ☐ I was usually independent.
3 ☐ I was somewhat dependent.
4 ☐ I was usually dependent.
5 ☐ I depended on my partner for everything.

43. How have you felt about your partner during the last 2 weeks?

1 ■ I always felt affection. (62)
2 ☐ I usually felt affection.
3 ☐ About half the time I felt dislike and half the time affection.
4 ☐ I usually felt dislike.
5 ☐ I always felt dislike.

44. How many times have you and your partner had intercourse?

1 ☐ More than twice a week. (63)
2 ☐ Once or twice a week.
3 ☐ Once every two weeks.
4 ☐ Less than once every two weeks but at least once in the last month.
5 ☐ Not at all in a month or longer.

45. Have you had any problems during intercourse, such as pain these last two weeks?

1 ☐ None. (64)
2 ☐ Once or twice.
3 ☐ About half the time.
4 ☐ Most of the time.
5 ☐ Always.
8 ☐ Not applicable; no intercourse in the last two weeks.

46. How have you felt about intercourse during the last 2 weeks?

1 ☐ I always enjoyed it. (65)
2 ☐ I usually enjoyed it.
3 ☐ About half the time I did and half the time I did not enjoy it.
4 ☐ I usually did not enjoy it.
5 ☐ I never enjoyed it.

QUESTIONS 47-54 On Next Page.

CHILDREN

Have you had unmarried children, stepchildren, or foster children living at home during the last two weeks?

1 ☐ YES, Answer questions 47-50. (66)
2 ☐ NO, Go to question 51.

47. Have you been interested in what your children are doing – school, play or hobbies during the last 2 weeks?

1 ☐ I was always interested and actively involved. (67)
2 ☐ I usually was interested and involved.
3 ☐ About half the time interested and half the time not interested.
4 ☐ I usually was disinterested.
5 ☐ I wasl always disinterested.

48. Have you been able to talk and listen to your children during the last 2 weeks? Include only children over the age of 2.

1 ☐ I always was able to communicate with them. (68)
2 ☐ I usually was able to communicate with them.
3 ☐ About half the time I could communicate.
4 ☐ I usually was not able to communicate.
5 ☐ I was completely unable to communicate.
8 ☐ Not applicable; no children over the age of 2.

49. How have you been getting along with the children during the last 2 weeks?

1 ☐ I had no arguments and got along very well. (69)
2 ☐ I usually got along well but had minor arguments.
3 ☐ I had more than one argument.
4 ☐ I had many arguments.
5 ☐ I was constantly in arguments.

50. How have you felt toward your children these last 2 weeks?

1 ☐ I always felt affection. (70)
2 ☐ I mostly felt affection.
3 ☐ About half the time I felt affection.
4 ☐ Most of the time I did not feel affection.
5 ☐ I never felt affection toward them.

FAMILY UNIT

Have you ever been married, ever lived with a person of the opposite sex, or ever had children? Please check

1 ☐ YES, Please answer questions 51-53. (71)
2 ☐ NO, Go to question 54.

51. Have you worried about your partner or any of your children without any reason during the last 2 weeks, even if you are not living together now?

1 ☐ I never worried. (72)
2 ☐ Once or twice I worried.
3 ☐ About half the time I worried.
4 ☐ Most of the time I worried.
5 ☐ I always worried.
8 ☐ Not applicable; partner and children not living.

52. During the last 2 weeks have you been thinking that you have let down your partner or any of your children at any time?

1 ☐ I did not feel I let them down at all. (73)
2 ☐ I usually did not feel that I let them down.
3 ☐ About half the time I felt I let them down.
4 ☐ Most of the time I have felt that I let them down.
5 ☐ I let them down completely.

53. During the last 2 weeks, have you been thinking that your partner or any of your children have let you down at any time?

1 ☐ I never felt that they let me down. (74)
2 ☐ I felt they usually did not let me down.
3 ☐ About half the time I felt they let me down.
4 ☐ I usually felt they let me down.
5 ☐ I feel bitter that they have let me down.

FINANCIAL – *EVERYONE PLEASE ANSWER QUESTION 54.*

54. Have you had enough money to take care of your own and your family's financial needs during the last 2 weeks?

1 ☐ I had anought money for needs. (75)
2 ☐ I usually had enough money with minor problems.
3 ☐ About half the time I did not have enough money but did not have to borrow money.
4 ☐ I usualiy did not have enough money and had to borrow from others.
5 ☐ I had great financial difficulty.

		2	1	1

VISIT FORM CARD (76-80)

Appendix I

MAACL

NAME:_____ DATE:_____

DIRECTIONS: On the following page you will find words which describe different kinds of moods and feelings. Mark an "X" in the boxes beside the words which describe how you generally feel. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly.

1 ☐ active
2 ☐ adventurous
3 ☐ affectionate
4 ☐ afraid
5 ☐ agitated
6 ☐ agreeable
7 ☐ aggressive
8 ☐ alive
9 ☐ alone
10 ☐ amiable
11 ☐ amused
12 ☐ angry
13 ☐ annoyed
14 ☐ awful
15 ☐ bashful
16 ☐ bitter
17 ☐ blue
18 ☐ bored
19 ☐ calm
20 ☐ cautious
21 ☐ cheerful
22 ☐ clean
23 ☐ complaining
24 ☐ contented
25 ☐ contrary
26 ☐ cool
27 ☐ cooperative
28 ☐ critical
29 ☐ cross
30 ☐ cruel
31 ☐ daring
32 ☐ desperate
33 ☐ destroyed
34 ☐ devoted
35 ☐ disagreeable
36 ☐ discontented
37 ☐ discouraged
38 ☐ disgusted
39 ☐ displeased
40 ☐ energetic
41 ☐ enraged
42 ☐ enthusiastic
43 ☐ fearful
44 ☐ fine
45 ☐ fit
46 ☐ forlorn
47 ☐ frank
48 ☐ free
49 ☐ friendly
50 ☐ frightened
51 ☐ furious
52 ☐ gay
53 ☐ gentle
54 ☐ glad
55 ☐ gloomy
56 ☐ good
57 ☐ good-natured
58 ☐ grim
59 ☐ happy
60 ☐ healthy
61 ☐ hopeless
62 ☐ hostile
63 ☐ impatient
64 ☐ incensed
65 ☐ indignant
66 ☐ inspired
67 ☐ interested
68 ☐ irritated
69 ☐ jealous
70 ☐ joyful
71 ☐ kindly
72 ☐ lonely
73 ☐ lost
74 ☐ loving
75 ☐ low
76 ☐ lucky
77 ☐ mad
78 ☐ mean
79 ☐ meek
80 ☐ merry
81 ☐ mild
82 ☐ miserable
83 ☐ nervous
84 ☐ obliging
85 ☐ offended
86 ☐ outraged
87 ☐ panicky
88 ☐ patient
89 ☐ peaceful
90 ☐ pleased
91 ☐ pleasant
92 ☐ polite
93 ☐ powerful
94 ☐ quiet
95 ☐ reckless
96 ☐ rejected
97 ☐ rough
98 ☐ sad
99 ☐ safe
100 ☐ satisfied
101 ☐ secure
102 ☐ shaky
103 ☐ shy
104 ☐ soothed
105 ☐ steady
106 ☐ stubborn
107 ☐ stormy
108 ☐ strong
109 ☐ suffering
110 ☐ sullen
111 ☐ sunk
112 ☐ sympathetic
113 ☐ tame
114 ☐ tender
115 ☐ tense
116 ☐ terrible
117 ☐ terrified
118 ☐ thoughtful
119 ☐ timid
120 ☐ tormented
121 ☐ understandin
122 ☐ unhappy
123 ☐ unsociable
124 ☐ upset
125 ☐ vexed
126 ☐ warm
127 ☐ whole
128 ☐ wild
129 ☐ willful
130 ☐ wilted
131 ☐ worrying
132 ☐ young

Appendix J

Information Sheet

My name is Ron Davis. I am a doctoral candidate in clinical psychology at Simon Fraser University. I am conducting research of the eating habits of women. I am particularly interested in the times of day when women eat, where they eat, and how their hunger and mood fluctuates. If you would like to participate in this research, please read the following instructions:

1. Sign and date the attached Consent Form.

2. As soon as you wake up Tuesday morning, take one SELF-MONITORING SCALE out of this package and follow the instructions provided on the face page of the Scale. Do the same as soon as you wake up Wednesday morning using the second Self-Monitoring Scale provided in this package.

3. Complete the seven questionnaires on Thursday, place both completed Self-Monitoring Scales and the seven questionnaires into the envelope, seal it, and return the envelope to _____ on Friday.

Thank you very much for helping me out!

Appendix K

Consent Form

I understand that I am participating in a study being conducted by Ron Davis as part of his dissertation research in the Department of Psychology, Simon Fraser University. This research has received full approval by the University Ethics Committee. I understand that I will be completing a series of questionnaires solely for research purposes and that complete confidentially regarding my responses to items on the questionnaires is assured me. If I choose to withdraw my voluntary participation now, or at some future point, I may retrieve all questionnaires that I completed from Ron Davis. I give my consent to Ron Davis to use my responses on the questionnaires for his research.

Name(please print)_____

Signature_____

Date_____

Table L-1

Group Comparisons on Demographic Variables

Variable	Group		Statistic
	Bulimic (n = 27)	Nonbulimic (n = 24)	
Age			
M (SD)	23.7 (3.9)	25.5 (3.9)	t = 1.73
Weight (Kgs)			
M (SD)	58.7 (4.8)	58.6 (5.1)	t =-0.08
Weight (%MPMW)			
M (SD)	98.2 (6.1)	98.6 (9.1)	t = 0.17
Working			
%	63.0	66.7	χ^2 =0.00
Single			
%	85.2	50.0	χ^2 =5.76*

%MPMW refers to subject's bodyweight expressed as a percent of matched population mean weight using the upper weight in the "small frame" range for height according to the 1983 Metropolitan height and weight tables (Whitney & Cataldo, 1983).

*p<.05.

Table L-2

Daily Frequency of Snacks and Meals Consumed by Bulimic and Nonbulimic Subjects

Group	n	Episode	
		Snacks	Meals
Bulimic	27		
M		2.12	1.83
SD		1.70	0.70
Nonbulimic	24		
M		2.46	2.35
SD		2.21	0.62

Table L-3

Analysis of Variance of Daily Frequency of Snacks and Meals Consumed by Bulimic and Nonbulimic Subjects

Source	df	MS	F	p
Group (G)	1	4.71	2.56	NS
S/G	49	1.84		
Episode (E)	1	1.00	0.41	NS
G x E	1	0.23	0.09	NS
E x S/G	49	2.42		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-4

Mean Caloric Value of Snacks and Meals Consumed by Bulimic and Nonbulimic Subjects

Group	n	Episode	
		Snacks	Meals
Bulimic	24		
M		151.54	458.42
SD		68.73	141.18
Nonbulimic	24		
M		156.88	473.71
SD		59.92	106.21

Note: Three bulimic subjects did not consume any snacks therefore $n = 24$.

Table L-5

Analysis of Variance of Caloric Value of Snacks and Meals Consumed by Bulimic and Nonbulimic Subjects

Source	df	MS	F	p
Group (G)	1	2,552.34	0.20	NS
S/G	46	12,592.55		
Episode	1	2,334,072.51	325.49	.0000
G x E	1	595.01	0.08	NS
E x S/G	46	7,171.04		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-6

Group Comparisons for Means and Variances in Overall Mood and Hunger Raw Scores

	Bulimic (n = 27)		Nonbulimic (n = 24)		
Variable	M	SD	M	SD	t
VAS-Mood					
Mean	51.0	12.2	60.9	11.3	-3.03*
Variance	332.2	220.7	354.3	272.6	0.32
VAS-Hunger					
Mean	22.5	11.8	27.4	8.9	1.67
Variance	446.0	301.3	613.0	316.2	1.93

*$p < .05$ familywise alpha using the Bonferroni multistage procedure.

Table L-7

Mean Hunger Ratings Reported by Bulimic Subjects Prior to and Following Meals and Bulimic Episodes

	Time	
Episode	Preprandial	Postprandial
Meals		
M	0.99	-0.31
SD	0.64	0.81
Bulimic episodes		
M	0.10	-0.52
SD	0.65	0.37

Note: *n* = 21 because six subjects did not engage in any bulimic episodes.

Table L-8

Analysis of Variance of Hunger Ratings Reported by Bulimic Subjects Prior to and Following Meals and Bulimic Episodes

Source	df	MS	F	p
Episode (E)	1	6.39	11.41	.003
E x S	20	0.56		
Time (T)	1	19.51	74.66	.0000
T x S	20	0.26		
E x T	1	2.47	5.62	.03
E x T x S	20	0.44		

Table L-9

Mean Hunger Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Meals

Group	n	Time	
		Preprandial	Postprandial
Bulimic	27		
M		0.93	-0.30
SD		0.62	0.73
Nonbulimic	24		
M		1.19	-0.41
SD		0.45	0.58

Table L-10

Analysis of Variance of Hunger Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Meals

Source	df	MS	F	p
Group (G)	1	0.14	0.35	NS
S/G	49	0.40		
Time (T)	1	51.07	151.65	.0000
G x T	1	0.87	2.58	NS
T x S/G	49	0.34		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-11

Mean Hunger Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Snacks

Group	n	Time	
		Preprandial	Postprandial
Bulimic	24		
M		0.30	0.16
SD		0.60	0.42
Nonbulimic	24		
M		0.16	0.08
SD		0.52	0.51

Note: Three of 27 bulimic subjects did not consume any snacks therefore *n* = 24.

Table L-12

Analysis of Variance of Hunger Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Snacks

Source	df	MS	F	p
Group (G)	1	0.30	1.24	NS
S/G	46	0.24		
Time (T)	1	0.32	1.10	NS
G x T	1	0.02	0.08	NS
T x S/G	46	0.29		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-13

Percent of Time Food was Consumed by Bulimic Subjects in the Three Consecutive Hours Preceding Main Meals on Nonbulimic Days and Bulimic Episodes on Bulimic Days

	Day	
Hours Preprandial	Bulimic	Nonbulimic
Third		
M	22.73	29.64
SD	41.01	33.34
Second		
M	47.36	24.82
SD	35.64	39.89
First		
M	49.46	3.64
SD	31.25	12.06

Note: *n* = 11

Table L-14

Analysis of Variance of Percent of Time Food was Consumed by Bulimic Subjects in the Three Consecutive Hours Preceding Main Meals on Nonbulimic Days and Bulimic Episodes on Bulimic Days

Source	df	MS	F	p
Day (D)	1	6,923.88	5.88	.04
D x S	10	1,177.65		
Hour (H)	2	694.61	0.61	NS
H x S	20	1,139.31		
D x H	2	3,840.24	3.64	.05
D x H x S	20	1,056.41		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-15

Mean Hunger Ratings Reported by Bulimic Subjects in the Three Consecutive Hours Preceding Main Meals on Nonbulimic Days and Bulimic Episodes on Bulimic Days

	Day	
Hours preprandial	Bulimic	Nonbulimic
Third		
M	0.28	0.15
SD	0.52	1.23
Second		
M	0.31	0.48
SD	0.47	0.75
First		
M	0.03	1.24
SD	0.71	1.13

Note: *n* = 11.

Table L-16

Analysis of Variance of Hunger Ratings Reported by Bulimic Subjects in the Three Consecutive Hours Preceding Main Meals on Nonbulimic Days and Bulimic Episodes on Bulimic Days

Source	df	MS	F	p
Day (D)	1	2.89	1.85	NS
D x S	10	1.56		
Hour (H)	2	0.98	1.83	NS
H x S	20	0.54		
D x H	2	2.75	7.38	.004
D x H x S	20	0.37		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-17

Mean Mood Ratings Reported by Bulimic Subjects Prior to and Following Meals and Bulimic Episodes

	Time	
Episode	Preprandial	Postprandial
Meals		
M	0.21	0.20
SD	0.30	0.34
Bulimic episodes		
M	-0.40	-0.77
SD	0.98	0.79

Note: *n* = 21 because six subjects did not engage in any bulimic episodes.

Table L-18

Analysis of Variance of Mood Ratings Reported by Bulimic Subjects Prior to and Following Meals and Bulimic Episodes

Source	df	MS	F	p
Episode (E) .	1	13.22	15.54	.0008
E x S	20	0.85		
Time (T)	1	0.76	5.30	.04
T x S	20	0.14		
E x T	1	0.64	5.74	.03
E x T x S	20	0.11		

Table L-19

Mean Mood Ratings Reported by Bulimic Subjects in the Three Consecutive Hours Preceding Main Meals on Nonbulimic Days and Bulimic Episodes on Bulimic Days

	Day	
Hours preprandial	Bulimic	Nonbulimic
Third		
M	0.41	0.45
SD	0.41	0.72
Second		
M	-0.16	0.63
SD	0.52	0.51
First		
M	-0.50	0.76
SD	0.70	0.47

Note: *n* = 11.

Table L-20

Analysis of Variance of Mood Ratings Reported by Bulimic Subjects in the Three Consecutive Hours Preceding Main Meals on Nonbulimic Day and Bulimic Episodes on Bulimic Days

Source	df	MS	F	p
Day (D)	1	8.12	8.67	.02
D x S	10	0.94		
Hour (H)	2	0.50	3.25	NS
H x S	20	0.15		
D x H	2	2.09	19.11	.0000
D x H x S	20	0.11		

Note: NS means nonsignificant at the .05 level of alpha

Table L-21

Mean Mood Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Snacks

Group	n	Time	
		Preprandial	Postprandial
Bulimic	24		
M		0.24	0.20
SD		0.52	0.53
Nonbulimic	24		
M		-0.10	0.15
SD		0.46	0.49

Note: Three of 27 bulimic subjects did not consume any snacks therefore *n* = 24.

Table L-22

Analysis of Variance of Mood Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Snacks

Source	df	MS	F	p
Group (G)	1	0.90	2.18	NS
S/G	46	0.41		
Time (T)	1	0.27	2.85	NS
G x T	1	0.51	5.40	.03
T x S/G	46	0.09		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-23

Mean Mood Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Meals

Group	n	Time	
		Preprandial	Postprandial
Bulimic	27		
M		0.16	0.18
SD		0.31	0.33
Nonbulimic	24		
M		-0.06	0.21
SD		0.38	0.38

Table L-24

Analysis of Variance of Mood Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Meals

Source	df	MS	F	p
Group (G)	1	0.24	1.50	NS
S/G	49	0.16		
Time (T)	1	0.52	5.96	.02
G x T	1	0.42	4.81	.04
T x S/G	49	0.09		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-25

Percent of Time that Bulimic Subjects Experienced One or More Unpleasant Events in the Three Consecutive Hours Preceding Main Meals on Nonbulimic Days and Bulimic Episodes on Bulimic Days

	Day	
Hours preprandial	Bulimic	Nonbulimic
Third		
M	19.36	0.00
SD	22.73	0.00
Second		
M	16.91	18.18
SD	30.71	33.71
First		
M	30.00	10.91
SD	31.62	30.15

Note: *n* = 11.

Table L-26

Analysis of Variance of Percent of Time that Bulimic Subjects Experienced One or More Unpleasant Events in the Three Consecutive Hours Preceding Main Meals on Nonbulimic Days and Bulimic Episodes on Bulimic Days

Source	df	MS	F	p
Day (D)	1	2534.56	7.23	.03
D x S	10	350.63		
Hour (H)	2	683.29	0.91	NS
H x S	20	752.97		
D x H	2	770.56	1.00	NS
D x H x S	20	767.58		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-27

Mean Mood Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Interpersonal and Noninterpersonal Unpleasant Events

Group	n	Time	
		Pre	Post
		Interpersonal events	
Bulimic	25		
M		-0.09	-0.32
SD		0.54	0.67
Nonbulimic	18		
M		0.05	-0.42
SD		0.76	1.02
		Noninterpersonal events	
Bulimic	25		
M		-0.04	-0.10
SD		0.37	0.45
Nonbulimic	18		
M		-0.04	-0.13
SD		0.45	0.52

Note: Two bulimic and six nonbulimic subjects did not report experiencing any interpersonal unpleasant events.

Table L-28

Analysis of Variance of Mood Ratings Reported by Bulimic and Nonbulimic Subjects Prior to and Following Interpersonal and Noninterpersonal Unpleasant Events

Source	df	MS	F	p
Group (G)	1	0.00	0.00	NS
S/G	41	0.82		
Event (E)	1	0.53	1.82	NS
G x E	1	0.02	0.06	NS
E x S/G	41	0.29		
Time (T)	1	1.85	8.67	.006
G x T	1	0.20	0.94	NS
T x S/G	41	0.21		
E x T	1	0.83	4.99	.04
E x T x G	1	0.11	0.66	NS
T x E x S/G	41	0.17		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-29

Group Comparisons on Weight History Variables

Variable	Bulimic (n = 26) M	Bulimic (n = 26) SD	Nonbulimic (n = 23) M	Nonbulimic (n = 23) SD	t(47)
Current weight	98.3	6.4	98.6	9.4	0.12
Highest weight	109.6	8.6	108.6	14.4	0.31
Lowest weight	85.3	7.8	91.8	8.0	-2.84*
Personal ideal weight	89.6	4.5	93.2	6.5	2.30
Age at highest weight	18.7	3.9	22.4	4.7	-2.89*
Age at lowest weight	18.9	3.3	21.7	3.9	-2.71*

Note: Weight data are expressed in terms of the percent of matched population mean weight (% MPMW) according to the 1983 Metropolitan height and weight tables. Weight history data were unavailable for one bulimic and one nonbulimic subject.

*$p < .05$ familywise alpha using the Bonferroni multistage procedure.

Table L-30

Group Comparisons on Psychometric Measures

	Bulimic (n = 27)		Nonbulimic (n = 24)		
Measure	M	SD	M	SD	t(49)
Binge Scale	17.3	2.4	2.5	2.7	20.42*
Drive for Thinness	14.4	5.0	3.7	4.5	7.99*
Bulimia	8.2	4.4	0.7	1.4	8.00*
Body Dissatisfaction	15.7	7.7	9.0	6.7	3.21*
Interoceptive Awareness	9.3	5.1	1.3	1.6	7.60*
Ineffectiveness	7.3	4.4	1.3	2.2	6.20*
Maturity Fears	3.1	2.6	1.0	1.5	3.39*
Perfectionism	8.0	5.3	3.3	3.6	3.71*
Interpersonal Distrust	3.9	3.5	2.4	3.3	1.62
Social Adjustment Scale	2.2	0.5	1.7	0.3	3.99*
Beck Depression	18.3	8.6	5.4	3.8	7.10*
MAACL-Depression	19.8	6.3	12.5	4.6	4.64*
MAACL-Anxiety	11.0	3.5	5.8	2.8	5.79*
MAACL-Hostility	9.3	4.3	6.2	3.2	2.91*

Note: Higher mean scores on all measures reflect greater pathology.

*$p < .05$ familywise alpha using the Bonferroni multistage procedure.

Table L-31

Analyses of Variance of Frequency, Caloric Value, Location, and Social Circumstances of Snacks, Meals, and Bulimic Episodes Consumed by Bulimic Subjects

Variable	Snacks	Meals	Bulimic Episodes	N	F
Daily Frequency					
M	2.30	1.67	1.20	21	3.51*
SD	1.74	0.69	0.96		
Caloric Value					
M	147.11	459.16	1,234.32	19	17.79**
SD	68.33	155.70	988.07		
% Time consumed at home					
M	42.42	53.32	87.00	19	31.05**
SD	27.77	19.72	21.13		
% Time consumed alone					
M	23.74	28.26	65.26	19	19.34**
SD	15.41	21.66	33.09		

Note: *df* = 19 because two of the bulimic subjects who engaged in bulimic episodes did not consume any snacks.

*$p < .05$.

**$p < .0000$.

Table L-32

Percent of Snacks and Meals Consumed by Bulimic and Nonbulimic Subjects While Accompanied

Group	n	Episode	
		Snacks	Meals
Bulimic	24		
M		74.63	69.88
SD		18.63	23.15
Nonbulimic	24		
M		72.88	71.88
SD		36.77	34.08

Note: Three of 27 bulimic subjects did not consume any snacks.

Table L-33

Analysis of Variance of Percent of Snacks and Meals Consumed by Bulimic and Nonbulimic Subjects While Accompanied

Source	df	MS	F	p
Group (G)	1	0.38	0.00	NS
S/G	46	1,369.09		
Episode (E)	1	198.38	0.60	NS
G x E	1	84.38	0.26	NS
E x S/G	46	329.42		

Note: NS means nonsignificant at the .05 level of alpha.

Table L-34

Percent of Snacks and Meals Consumed by Bulimic and Nonbulimic Subjects at Home

Group	n	Episode	
		Snacks	Meals
Bulimic	24		
M		46.42	56.75
SD		27.60	19.43
Nonbulimic	24		
M		52.08	64.42
SD		39.40	30.34

Note: Three of 27 bulimic subjects did not consume any snacks.

Table L-35

Analysis of Variance of Percent of Snacks and Meals Consumed by Bulimic and Nonbulimic Subjects at Home

Source	df	MS	F	p
Group (G)	1	1,066.67	0.79	NS
S/G	46	1,356.60		
Episode (E)	1	3,082.67	6.86	.02
G x E	1	24.00	0.05	NS
E x S/G	46	449.44		

Note: NS means nonsignificant at the .05 level of alpha.

Appendix M

Personal Data Questionnaire

We have designed this questionnaire to help us understand your bingeing/purging habit. Your responses will help us plan and evaluate a treatment program.

First, a few questions about you.

Name:_____ Date:_____
Age:_____ Marital Status_____ Children_____
Education_____ Occupation_____
Number of Brothers and Sisters_____
Your Birth Order_____
Height_____ Weight_____ Goal Weight_____

Next, we'd like to ask you a few questions about how your bingeing/purging habit got started.

1) When did your bingeing/purging behaviour begin: Please give the month, year, and circumstance.

2) How did you "discover the purging habit"? (illness? seeing or learning of others with this habit)?

3) What were the circumstances surrounding the onset of this habit? (Check as many as apply and give a brief description for items you check).

a) Were you:

- concerned about your weight or appearance?

_ having problems in a personal relationship?

- involved in a serious dating relationship?

- changing your living environment (moving to school, away from home, etc)?

- dealing with outside pressures related to family, friends, school or work?

- dieting?

b) How much did you weight at that time?
For you, was this overweight?
underweight?
normal weight?

Now a few questions about your typical patterns of bingeing and purging.

4) Briefly describe your eating/purging behaviour. (Please describe your typical behaviour in the month before starting this treatment program).

a) How many times a week do you eat/purge or binge/purge?

b) If you binge eat, how often do you do so?

c) What do you eat when you binge that leads you to purge? Please give examples and estimate the total number of calories in a typical "binge".

d) Are there typical times of the day that you binge? If yes, describe.

e) Where do you usually binge? (list several common settings)

f) Are you usually alone? or with people you know? with "anonymous" others?

g) How long after you eat do you usually purge?

h) What methods do you use to get rid of the food and/or weight? (Circle those that apply): Forced vomiting, over-the-counter or prescribed medicines, fasting, etc. (Please describe in detail):

i) Where do you usually purge? (list common settings)

j) How do you usually feel just before a binge? Imagine yourself feeling like you're headed towards a binge. Put yourself vividly in that situation until you can clearly imagine or experience your thoughts and feelings.
What are you usually feeling?

k) What is your frame of mind during and after a binge?
- during and immediately after?

- later afterwards?

l) How do you usually feel just before you purge? Imagine that you have binged and are now planning a purge. Put yourself vividly in that situation.
- usual feelings?

- usual thoughts?

m) What is your frame of mind immediately and then later after your purge?
- immediately afterwards?

- later afterwards?

n) At what times of the day do you usually eat?
breakfast
lunch
dinner
snacks

o) What do you eat when your meals and snacks do not lead to bingeing? In other words, what is an acceptable meal or snack? (Please give examples and calorie estimates.)

5. Who knows of your bingeing/purging or eating/purging behaviour and how have these persons reacted to the problem?

6. When did you first seek help for bingeing/purging, or a related eating problem?

7. Describe previous help you have sought for this problem (therapy, friends, physician, parents, pastor, nutritionist, etc...)

8. How would you rate your current motivation to kick this habit?

I Don't Care — I Definitely Want to Quit

0 1 2 3 4 5 6 7

9. How confident are you that you will succeed in quitting with this treatment?

No Chance I'll succeed — I will definitely succeed

0 1 2 3 4 5 6 7

10. What is the longest period time in the past that you have been able to refrain from bingeing/purging?

11. When you "relapsed" after stopping for awhile, what were the usual circumstances? (Please check all those that apply and then circle the 2 most common circumstances).

a) negative emotional states (e.g.)
b) positive emotional states (e.g.)
c) netative physical states (e.g.)
(including weight gain)
d) testing personal control
e) urges and temptations
f) interpersonal conflict
g) upsetting or stressful life events (e.g.)
h) social pressures (e.g.)
i) a new social environment (e.g.)
j) other (please describe)

Appendix N

Dietary Diary

Name: _____

Problem:

Solutions:

1.

2.

3.

4.

5.

6.

7.

8.

Appendix N con't

DATE:	DATE:

BINGES _____ _____

VOMITING EPISODES _____ _____

LAXATIVES/DIURETICS _____ _____

Appendix O

Introduction to the Problem-Solving Procedures: Group Treatment Condition

I would like now to introduce you to the problem-solving procedure which we will participate in each week of the therapy program. One of the major concerns that has brought all of you to treatment is that of bingeing. The problem-solving procedure is designed to assist you in avoiding and eventually abstaining from bingeing.

Our daily lives are full of situational problems which we must solve in order to maintain an adequate level of effective functioning. How many of us have experienced situations where we encounter car trouble just when we have to go somewhere, when the unavailability of certain library books interferes with our ability to complete a written assignment, or where we have to make a decision about whether or not to accept an invitation to a social function. In many instances, the inability to arrive at an adequate solution may not only upset us, but may also have some pretty negative consequences that will only create further problems in the future.

Consider the following problem. Imagine yourself alone at home. You begin to shake and you feel goose bumps on your arms. What is your problem? (Solicit suggestions from group members). OK, this is the first step in the problem-solving procedure--PROBLEM DEFINITION AND FORMULATION (write this on the board). The problem seems to be that you are cold. Now what are all the possible things that you could do to solve your problem of being cold? (write them on the board). We have just gone through the second step in problem-solving by generating Alternative solutions (write Generation of Alternatives on the board). Now the next step in the process is called DECISION MAKING (write this on the board). Here you have to decide which alternative solution (s) you can successfully carry out so that the problem of being cold will be solved (put an asterisk on best solutions on the board).

Finally you must VERIFY (write this on the board) the extent to which your chosen alternative is a good one. This requires that you act on your decision and then evaluate the extent to which the problem is solved. If you chose to turn the heat up, then you would verify that this alternative solution did in fact stop you from shaking and feeling cold. But if it didn't, then you would go back to another alternative solution (perhaps putting on a sweater) and verifying that this resolved the problem of being cold.

Now I think it is safe to say that all of us would go through each of these four steps to solve this cold problem quite automatically, and we would be successful in solving the problem. However, for a whole host of other problems which we face in our daily lives, we would not be successful in solving the problem facing us because we get bogged down at one or more stages in the problem-solving process. Over the course of the next 10 weeks you are going to be involved in problem-solving training so that eventually you will be able to successfully resolve even the more difficult problems which you currently face in a more or less automatic fashion; just as you now do in the simple problem of being cold. Remember, the general goal of problem-solving training is not to offer you specific solutions to specific problems, but rather to provide a general coping skill so that you may be in a better position to deal more effectively with a wide variety of situational problems which you face.

The concern which we will focus on throughout treatment is bingeing. Keep in mind that this is not your problem, but rather an unfortunate and personally upsetting consequence of the problems which you face. The problems will not be the same for each one of you, but the consequence of bingeing is certainly the same.

Let's begin the first step in the problem-solving procedure. Let's discover what are your particular problems

which lead you to binge. (pass around each patient's Self-Monitoring Scales). For the next ½ hour or so you will define and formulate your own problems. I would like you to go over each page in each of your Self-Monitoring Scales and observe all of the problems which coincide with a binge episode(pass around the summary sheets). When you come across a binge episode in your Self-Monitoring Scale I would like you to personally fill out each column in the summary sheet.

1. Date of the binge.
2. Time of the binge (in which hour did it occur).
3. List the type and quantity of foods consumed.
4. Where were you when you binged?
5. Who were you with when you binged?
6. The number of hours since you last ate a nutritious meal prior to bingeing (by nutritious, I mean a meal that you would consider nutritious with enough calories if a close friend or family member were to eat it).
7. Hunger in last hours (here, go back over 4-5 hours prior to the binge and determine if you had been getting more or less hungry just prior to bingeing--write down in the space provided such comments as "getting more hungry", "had been veryhungry for a long time", "not at all hungry" etc.)
8. Evaluate your mood in the same way that you evaluate your hunger--making such comments in the space provided as "mood getting worse", "mood has been bad for a number of hours", "average mood", "good mood which had been getting better".
9. Write down in the "experiences prior to bingeing" column those experiences you encountered in the day prior to bingeing. You will find the information on the questionnaires attached to the back of each Self-Monitoring Scale.
10. Do the same for "experiences after bingeing".
11. Finally write down the number of times you vomited for that particular binge if you in fact vomited.

Also, I want you to make mental notes of the following:

1. What happens to your mood and hunger after you have binged?
2. What foods, moods, situations, and time of day do not lead to a binge?
3. What factors coincide with your best moods?

Once you have gone through all of your Self-Monitoring Scales and evaluated each binge, I would like you to spend a few minutes formulating your particular problems. For example, look down the column labelled "Time of Binge" and see if there is a pattern such as "always or usually binge in the early evening". If you can identify such a pattern, then turn the summary sheet over and write beside Problem 1 "I seem to binge in the early evening". Go through this same evaluative procedure for each column on the summary sheet, and if you identify a particular problem in any of the columns, write that problem down on the reverse side of the summary sheet. "I seem to binge when...". Remember, it is crucial for you to define each problem in as specific and detailed a way as possible.

Let me say that the process of self-monitoring which you went through sometimes has the effect of reducing or even stopping your bingeing activity. Therefore, some of you may have fewer or even no binge episodes on your Self-Monitoring Scales. That is OK. In that event, look over each Self-Monitoring slip anyway and try to identify the circumstances under which you would normally binge but for some reason you didn't that week. Then write these problems on the reverse side of the summary sheet.

ANY QUESTIONS ABOUT WHAT YOU ARE GOING TO DO?

(groups splits into smaller groups of three and each therapist starts off by going through one self-monitoring scale of a volunteer patient and helps her to complete the summary sheet while the others watch. Then the three members engage in problem definition and formulation by themselves while the therapist supervises, giving help and advice when needed).

(After ½ hour of this procedure, the group reassembles and we engage in step 2 of the procedure).

OK, now that you have defined the problems which lead to your bingeing, we will go on to step two of the problem-solving procedure--GENERATION OF ALTERNATIVES. Who would like

to go first? (get a volunteer). OK, we are going to "brainstorm" and come up with as many alternative solutions to XXX's problem. XXX, choose one problem on your summary sheet which you would like to solve, and one that you will agree to work on between now and our next group session. (she nominates a problem). OK, what suggestions do you have for XXX--things that she could do to solve this problem instead of bingeing? (solicit alternatives from members, encouraging each to participate). (give XXX the Diary). Remember, XXX will welcome as many unique and diverse solutions which you may have to offer. No one will criticize your solutions so feel free to beinnovative in your suggestions to help XXX solve this problem (tell XXX to write the problem on the top of the Diary and every solution tendered by all members. Therapists will only offer solutions as a last resort--it is much better if the group members do this).

OK, XXX I want you to read over the alternative solutions and put as X beside one or more solutions that (1) you can personally do and (2) those which you feel will be effective in solving your problem (X declares to the group which solutions she will try over the next 7 days). OK, XXX the final step is to carry out these alternative solutions. The verification of their effectiveness in avoiding binges will be determined next week by the number of binges that you engage in between now and then. Remember, if one solution does not seem to work, choose another on your list and give it a try. (Collect self-monitoring scales from XXX and proceed through all group members in the same fashion).

Table P-1

Comparisons Between Treatment Conditions at Pretreatment

Variable	Treatment Condition: Individual (n = 12)	Treatment Condition: Group (n = 12)	t(22)
Weekly bingeing frequency			
M	5.17	5.50	-0.21 (NS)
SD	3.33	4.44	
Weekly vomiting frequency			
M	6.75	8.08	-0.47 (NS)
SD	6.59	7.17	
Illness duration (years)			
M	6.33	5.58	0.59 (NS)
SD	3.50	2.71	
Motivation to change			
M	6.58	6.83	-1.12 (NS)
SD	0.67	0.39	
Therapeutic expectancy			
M	5.25	5.92	-1.19 (NS)
SD	1.55	1.17	

Note: NS means nonsignificant at the .05 level of alpha.

Table P-2

Comparisons Between Treatment Completers Versus Dropouts at Pretreatment

Variable	Completers (n = 16)	Dropouts (n = 8)	t(22)
Weekly bingeing frequency			
M	5.50	5.00	0.29 (NS)
SD	4.13	3.42	
Weekly vomiting frequency			
M	5.25	11.75	-1.94 (NS)
SD	4.14	9.04	
Illness Duration (years)			
M	6.19	5.50	0.51 (NS)
SD	2.99	3.42	
Motivation to change			
M	6.63	6.88	-1.05 (NS)
SD	0.62	0.35	
Therapeutic expectancy			
M	5.75	5.25	0.83 (NS)
SD	1.48	1.17	

Note: NS means nonsignificant at the .05 level of alpha.

Table P-3

Changes in Specific and Associated Psychopathology in the 16 Treatment Completers from Pretreatment to Posttreatment and at Three Month Follow-up

	Pretreatment	Posttreatment	Follow-up	t(15)	
Variable	A	B	C	A vs. B	B vs. C
Weekly bingeing frequency					
M	5.50	0.94	1.63	4.08*	-0.87
SD	4.13	1.12	3.59		
Weekly vomiting frequency					
M	5.25	1.31	1.88	4.23*	-0.85
SD	4.14	1.66	3.69		
Weight (kg)					
M	59.83	59.55	59.94	0.76	-0.87
SD	4.43	5.01	5.33		
EDI: Drive for Thinness					
M	14.25	8.44	7.88	4.31*	0.50
SD	5.36	7.10	7.55		
EDI: Interoceptive Awareness					
M	8.63	5.25	3.88	2.86	0.50
SD	5.55	5.98	3.63		
EDI: Bulimia					
M	7.81	4.13	3.38	4.39*	0.95
SD	4.58	5.45	4.73		

Table P-3 cont'd.

Table P-3 cont'd.

Variable	Pretreatment A	Posttreatment B	Follow-up C	t(15) A vs. B	t(15) B vs. C
EDI: Body Dissatisfaction					
M	15.31	12.56	10.00	3.02	2.32
SD	7.57	7.06	8.16		
EDI: Ineffectiveness					
M	7.63	3.69	3.50	3.02	0.17
SD	4.44	5.59	2.56		
EDI: Maturity Fears					
M	2.31	1.50	0.94	1.54	1.25
SD	1.70	1.83	1.29		
EDI: Perfectionism					
M	7.25	6.56	5.50	0.86	1.32
SD	4.64	4.63	3.06		
EDI: Interpersonal Distrust					
M	3.88	2.31	2.00	3.30*	0.52
SD	3.07	2.12	2.50		
Beck Depression					
M	18.69	6.38	8.19	5.46*	-1.33
SD	8.97	6.67	3.92		
MAACL: Dysphoria					
M	12.88	4.56	7.25	5.74*	-2.25
SD	7.97	5.00	6.57		

Table P-3 cont'd.

Table P-3 cont'd.

Variable	Pretreatment A	Posttreatment B	Follow-up C	t(15) A vs. B	t(15) B vs. C
Social Adjustment					
M	2.20	1.77	1.83	2.82	-0.55
SD	0.45	0.43	0.31		

Note: $p < .05$ familywise alpha using the Bonferroni multistage procedure.

Table P-4

Weekly Number of Binges Over the Course of Treatment as a Function of Treatment Condition

Time	Treatment Condition	
	Individual (n = 10)	Group (n = 6)
Pretreatment		
M	5.50	6.00
SD	3.47	5.29
Week 1		
M	3.20	4.00
SD	3.46	2.10
Posttreatment		
M	0.90	1.00
SD	0.88	1.55

Table P-5

Weekly Number of Vomiting Episodes Over the Course of Treatment as a Function of Treatment Condition

Time	Treatment Condition	
	Individual (*n* = 10)	Group (*n* = 6)
Pretreatment		
M	5.50	5.33
SD	3.47	5.35
Week 1		
M	2.80	3.50
SD	3.39	3.02
Posttreatment		
M	1.00	1.83
SD	1.41	2.04

Table P-6

Weekly Dysphoria Ratings Over the Course of Treatment as a Function of Treatment Condition

Time	Treatment Condition	
	Individual (n = 10)	Group (n = 6)
Pretreatment		
M	14.00	11.00
SD	8.46	7.40
Week 1		
M	7.90	9.00
SD	5.69	6.63
Posttreatment		
M	4.10	1.50
SD	4.77	1.38

Table P-7

MANOVA for Changes in Dysphoria and Bingeing and Vomiting Frequency Over the Course of Treatment as a Function of Treatment Condition

WITHIN EFFECT: OBS: WITHIN CASE MEAN

EFFECT	VARIATE	STATISTIC		F	DF		P
OVALL: GRAND MEAN							
	-ALL----						
		TSQ=	326.723	93.35	3,	12	0.0000
	BINGES						
		SS=	530.450				
		MS=	530.450	53.25	1,	14	0.0000
	VOMITS						
		SS=	498.335				
		MS=	498.335	30.27	1,	14	0.0001
	DYSPHORI						
		SS=	2820.31				
		MS=	2820.31	55.47	1,	14	0.0000
T: TREATTYP							
	-ALL----						
		TSQ=	0.599952	0.17	3,	12	0.9136
	BINGES						
		SS=	2.45000				
		MS=	2.45000	0.25	1,	14	0.6276
	VOMITS						
		SS=	2.33472				
		MS=	2.33472	0.14	1,	14	0.7121
	DYSPHORI						
		SS=	25.3125				
		MS=	25.3125	0.50	1,	14	0.4920
ERROR							
	BINGES						
		SS=	139.46667				
		MS=	9.9619048				
	VOMITS						
		SS=	230.47778				
		MS=	16.462698				
	DYSPHORI						
		SS=	711.83333				
		MS=	50.845238				

WITHIN EFFECT: A: TIME

EFFECT	VARIATE	STATISTIC		F	DF		P
A							
	-ALL----						
		TSQ=	105.067	11.26	6,	9	0.0010
	WCP	LRATIO=	0.301308	7.12	6,	52.00	0.0000
	WCP	TRACE=	2.15982				
	WCP	TZSQ=	58.3151				
		CHISQ =	3.36			19.481	0.0000
	WCP	MXROOT=	0.675691				0.0102
	BINGES						
		TSQ=	22.4650	10.43	2,	13	0.0020
	WCP	SS=	173.425				
	WCP	MS=	86.7125	9.43	2,	28	0.0007
		GREENHOUSE-GEISSER ADJ. DF		9.43	1.63,	22.81	0.0018
		HUYNH-FELDT ADJUSTED DF		9.43	2.00,	28.00	0.0007
	VOMITS						
		TSQ=	17.9862	8.35	2,	13	0.0047
	WCP	SS=	120.711				
	WCP	MS=	60.3556	8.07	2,	28	0.0017
		GREENHOUSE-GEISSER ADJ. DF		8.07	1.79,	25.04	0.0026
		HUYNH-FELDT ADJUSTED DF		8.07	2.00,	28.00	0.0017
	DYSPHORI						
		TSQ=	19.0280	8.83	2,	13	0.0038
	WCP	SS=	712.075				
	WCP	MS=	356.037	10.70	2,	28	0.0004
		GREENHOUSE-GEISSER ADJ. DF		10.70	1.95,	27.35	0.0004
		HUYNH-FELDT ADJUSTED DF		10.70	2.00,	28.00	0.0004
(A) X (T: TREATTYP)							
	-ALL----						
		TSQ=	6.28380	0.67	6,	9	0.6753
	WCP	LRATIO=	0.850650	0.73	6,	52.00	0.6275
	WCP	TRACE=	0.169331				
	WCP	TZSQ=	4.57193				
		CHISQ =	21.26			19.481	0.6492
	WCP	MXROOT=	0.103226				0.6980

Table P-7 cont'd.

Table P-7 cont'd.

BINGES						
TSQ=	0.192120	0.09	2.	13	0.9152	
WCP SS=	0.925000					
WCP MS=	0.462500	0.05	2.	28	0.9510	
GREENHOUSE-GEISSER ADJ. DF		0.05	1.63.	22.81	0.9229	
HUYNH-FELDT ADJUSTED DF		0.05	2.00.	28.00	0.9510	
VOMITS						
TSQ=	0.261207	0.12	2.	13	0.8868	
WCP SS=	2.21111					
WCP MS=	1.10556	0.15	2.	28	0.8632	
GREENHOUSE-GEISSER ADJ. DF		0.15	1.79.	25.04	0.8408	
HUYNH-FELDT ADJUSTED DF		0.15	2.00.	28.00	0.8632	
DYSPHORI						
TSQ=	1.33738	0.62	2.	13	0.5527	
WCP SS=	38.3250					
WCP MS=	19.1625	0.58	2.	28	0.5686	
GREENHOUSE-GEISSER ADJ. DF		0.58	1.95.	27.35	0.5649	
HUYNH-FELDT ADJUSTED DF		0.58	2.00.	28.00	0.5686	

ERROR		
BINGES		
WCP SS=	257.53333	
WCP MS=	9.1976190	
GGI EPSILON=	0.81467	
H-F EPSILON=	1.00000	
VOMITS		
WCP SS=	209.28889	
WCP MS=	7.4746032	
GGI EPSILON=	0.89427	
H-F EPSILON=	1.00000	
DYSPHORI		
WCP SS=	931.46667	
WCP MS=	33.266667	
GGI EPSILON=	0.97674	
H-F EPSILON=	1.00000	

Table P-8

MANOVA for Changes from Pretreatment to Week 1 in Dysphoria and Bingeing and Vomiting Frequency as a Function of Treatment Condition

WITHIN EFFECT: OBS: WITHIN CASE MEAN

EFFECT	VARIATE	STATISTIC		F	DF		P
OVALL: GRAND MEAN							
	-ALL-	TSQ=	294.349	84.10	3,	12	0.0000
	BINGES	SS=	655.669				
		MS=	655.669	44.33	1,	14	0.0000
	VOMITS	SS=	550.408				
		MS=	550.408	29.25	1,	14	0.0001
	DYSPHORI	SS=	3291.77				
		MS=	3291.77	47.24	1,	14	0.0000
T: TREATTYP							
	-ALL-	TSQ=	0.453321	0.13	3,	12	0.9407
	BINGES	SS=	3.16875				
		MS=	3.16875	0.21	1,	14	0.6506
	VOMITS	SS=	0.533333				
		MS=	0.533333	0.03	1,	14	0.8687
	DYSPHORI	SS=	6.76875				
		MS=	6.76875	0.10	1,	14	0.7599
ERROR							
	BINGES	SS=	207.05000				
		MS=	14.789286				
	VOMITS	SS=	263.46667				
		MS=	18.819048				
	DYSPHORI	SS=	975.45000				
		MS=	69.675000				

WITHIN EFFECT: A: TIME

EFFECT	VARIATE	STATISTIC		F	DF		P
A							
	-ALL-	TSQ=	9.18611	2.62	3,	12	0.0984
	BINGES	SS=	34.6687				
		MS=	34.6687	2.84	1,	14	0.1142
	VOMITS	SS=	38.5333				
		MS=	38.5333	3.92	1,	14	0.0676
	DYSPHORI	SS=	123.019				
		MS=	123.019	3.80	1,	14	0.0716
(A) X (T: TREATTYP)							
	-ALL-	TSQ=	1.61393	0.46	3,	12	0.7146
	BINGES	SS=	0.168750				
		MS=	0.168750	0.01	1,	14	0.9081
	VOMITS	SS=	1.40833				
		MS=	1.40833	0.14	1,	14	0.7106
	DYSPHORI	SS=	31.5187				
		MS=	31.5187	0.97	1,	14	0.3406
ERROR							
	BINGES	SS=	171.05000				
		MS=	12.217857				
	VOMITS	SS=	137.46667				
		MS=	9.8190476				
	DYSPHORI	SS=	453.45000				
		MS=	32.389286				

Table P-9

MANOVA for Changes from Week 1 to Posttreatment in Dysphoria and Bingeing and Vomiting Frequency as a Function of Treatment Condition

WITHIN EFFECT: OBS: WITHIN CASE MEAN

EFFECT	VARIATE	STATISTIC		F	DF		P
OVALL: GRAND MEAN							
	-ALL-	TSQ=	109.389	31.25	3,	12	0.0000
	BINGES	SS=	155.269				
		MS=	155.269	27.36	1,	14	0.0001
	VOMITS	SS=	156.408				
		MS=	156.408	19.47	1,	14	0.0006
	DYSPHORI	SS=	949.219				
		MS=	949.219	42.22	1,	14	0.0000
T: TREATTYP							
	-ALL-	TSQ=	0.574283	0.16	3,	12	0.9185
	BINGES	SS=	1.51875				
		MS=	1.51875	0.27	1,	14	0.6130
	VOMITS	SS=	4.40833				
		MS=	4.40833	0.55	1,	14	0.4711
	DYSPHORI	SS=	4.21875				
		MS=	4.21875	0.19	1,	14	0.6715
ERROR							
	BINGES	SS=	79.450000				
		MS=	5.6750000				
	VOMITS	SS=	112.46667				
		MS=	8.0333333				
	DYSPHORI	SS=	314.75000				
		MS=	22.482143				

WITHIN EFFECT: A: TIME

EFFECT	VARIATE	STATISTIC		F	DF		P
A							
	-ALL-	TSQ=	55.1289	15.75	3,	12	0.0002
	BINGES	SS=	52.6687				
		MS=	52.6687	10.68	1,	14	0.0056
	VOMITS	SS=	22.5333				
		MS=	22.5333	4.18	1,	14	0.0602
	DYSPHORI	SS=	239.419				
		MS=	239.419	8.16	1,	14	0.0127
(A) X (T: TREATTYP)							
	-ALL-	TSQ=	4.41278	1.26	3,	12	0.3317
	BINGES	SS=	0.918750				
		MS=	0.918750	0.19	1,	14	0.6726
	VOMITS	SS=	0.333333E-01				
		MS=	0.333333E-01	0.01	1,	14	0.9384
	DYSPHORI	SS=	25.6688				
		MS=	25.6688	0.88	1,	14	0.3653
ERROR							
	BINGES	SS=	69.050000				
		MS=	4.9321429				
	VOMITS	SS=	75.466667				
		MS=	5.3904762				
	DYSPHORI	SS=	410.55000				
		MS=	29.325000				

Table P-10

Anxiety Ratings Over the Course of Treatment as a Function of Outcome

	Outcome			
	Good		Moderate-to-poor	
Time	M	(SD)	M	(SD)
Week 1	8.2	(5.2)	9.8	(3.9)
2	5.0	(2.3)	10.9	(3.0)
3	7.4	(4.9)	11.0	(3.5)
4	6.4	(6.3)	10.3	(3.7)
5	8.8	(6.4)	10.1	(3.7)
6	8.8	(5.1)	9.8	(3.4)
7	6.0	(4.5)	9.8	(3.8)
8	7.0	(6.0)	9.6	(4.3)
9	5.6	(5.3)	9.5	(2.6)
10	5.8	(6.4)	7.8	(4.1)

Note: Five subjects achieved a good outcome while eleven had a moderate-to-poor outcome.

Table P-11

ANOVA for Changes in Anxiety Over the Course of Treatment as a Function of Outcome

Source	df	MS	F	p
Outcome (O)	1	301.92	3.10	NS
S/O	14	97.39		
Time (T)	9	10.19	1.15	NS
O x T	9	7.95	0.90	NS
T x S/O	126	8.87		

Note: NS means nonsignificant at the .05 level of alpha.

Table P-12

Depression Ratings Over the Course of Treatment as a Function of Outcome

	Outcome			
	Good		Moderate-to-poor	
Time	M	(SD)	M	(SD)
Week 1	15.6	(8.9)	19.0	(6.7)
2	13.0	(5.5)	21.5	(4.6)
3	16.0	(7.7)	19.7	(4.5)
4	14.6	(12.8)	18.8	(6.0)
5	18.0	(11.7)	17.9	(6.0)
6	14.2	(8.5)	19.4	(5.2)
7	12.0	(7.0)	17.7	(6.0)
8	10.4	(5.3)	18.4	(6.8)
9	10.2	(7.2)	15.8	(5.6)
10	8.0	(9.5)	16.3	(5.7)

Note: Five subjects achieved a good outcome while eleven had a moderate-to-poor outcome.

Table P-13

ANOVA for Changes in Depression Over the Course of Treatment as a Function of Outcome

Source	df	MS	F	p
Outcome (O)	1	949.10	4.12	NS
S/O	14	230.42		
Time (T)	9	59.89	2.40	.02
O x T	9	24.09	0.96	NS
T x S/O	126	25.00		

Note: NS means nonsignificant at the .05 level of alpha.

Table P-14

Hostility Ratings Over the Course of Treatment as a Function of Outcome

		Outcome			
		Good		Moderate-to-poor	
Time		M	(SD)	M	(SD)
Week	1	9.6	(4.0)	10.5	(4.6)
	2	5.6	(1.8)	13.6	(2.5)
	3	9.4	(3.6)	12.4	(2.5)
	4	10.4	(9.1)	12.3	(3.4)
	5	11.6	(5.6)	10.2	(3.3)
	6	8.0	(4.3)	9.8	(3.0)
	7	6.2	(2.8)	10.6	(4.4)
	8	7.0	(2.5)	11.4	(3.4)
	9	7.0	(4.8)	11.3	(3.9)
	10	6.2	(5.7)	10.0	(3.3)

Note: Five subjects had a good outcome while eleven had a moderate-to-poor outcome.

Table P-15

ANOVA for Changes in Hostility Over the Course of Treatment as a Function of Outcome

Source	df	MS	F	p
Outcome (O)	1	332.28	4.62	.05
S/O	14	71.92		
Time (T)	9	16.74	1.84	NS
O x T	9	22.33	2.46	.02
T x S/O	126	9.09		

Note: NS means nonsignificant at the .05 level of alpha.

Table P-16

Comparisons Between Good and Moderate-to-Poor Outcome Patients in Change Scores for Associated Psychopathology

	Good (n = 5)		Moderate-to-poor (n = 11)		
Measure	M	SD	M	SD	t(14)
EDI:					
Drive for Thinness	11.2	5.3	3.4	3.4	3.63*
Bulimia	6.6	1.8	2.4	3.1	2.85
Body Dissatisfaction	4.6	3.7	1.9	3.5	1.42
Interoceptive Awareness	4.8	3.1	2.7	5.3	0.81
Ineffectiveness	7.6	5.4	2.3	4.4	2.11
Maturity Fears	0.2	1.9	1.1	2.2	-0.77
Perfectionism	2.2	1.8	0.0	3.5	1.30
Interpersonal Distrust	1.6	1.3	1.5	2.2	0.06
Beck Depression	15.6	7.2	9.9	8.8	1.25
MAACL: Dysphoria	8.2	5.5	8.4	6.2	-0.05
Social Adjustment	0.8	0.8	0.2	0.4	2.14

*$p < .05$ familywise alpha using the Bonferroni multistage procedure.