PREDICTION OF BULIMIC BEHAVIORS: SOCIAL LEARNING ANALYSIS

by

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(ABSTRACT)

The current study investigated the relationship between principles of social learning theory and binge eating episodes in 31 normal weight bulimic women. Participants were asked to monitor the following: (1) levels of self-efficacy related to resisting the urge to binge and/or purge as well as levels of self-efficacy related to handling stressful events, (2) mood states, (3) enjoyment of daily activities, (4) number of stressful events, and (5) number of binging and purging episodes. Participants were asked to monitor these events four times a day for seven days. Measures of locus of control and enjoyment ratings of binging and purging were also gathered prior to monitoring. Results indicated that components of social learning theory predict number of binging and purging episodes. The best predictors were a combination frequency of binging, lowered levels of self-efficacy to resist the urge to binge, and having a general tendency to not feel in control of one's response-outcomes. However, heterogeneity within the group was apparent in that the predictive models failed to significantly predict binging and purging for all participants. It was also the case that there were differences in predictors of binging and purging on an individual level of analysis. For all individuals, self-efficacy to

resist the urge to binge/purge was the only consistent predictor of these episodes. For four individuals, frequency of prior binging was an important predictor. Post-hoc analyses suggest that for the group as a whole self-efficacy expectancies affect current behavior more than current behavior affects future expectancies. Even here, variability exists at the individual level of analysis. For four participants, behaviors were more strongly related to subsequent expectancies than expectancies were related to subsequent behaviors. These findings increase our understanding of the role of social learning theory in predicting episodes of binge eating and purging, often thought to be a cycle of maladaptive, negatively reinforced behaviors. The results also have important implications for assessment and treatment of bulimia using a cognitive/behavioral model. The presence of individual differences in the applicability of the predictive models and the relationships between expectancies and behaviors over the course of several time periods suggests that a treatment approach emphasizing the relationship between expectancies and behaviors may have more or less meaning for different individuals. Future research should replicate, cross-validate and expand these findings in order to clarify these issues.

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Lastly, I want to dedicate this dissertation to the 31 women who provided me with their private thoughts, feelings, and behaviors; things that they had rarely shared with anyone else. I only hope that this study increases our understanding of bulimia and enhances the treatment we attempt to offer you and others in similar situations.

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INTRODUCTION

Within the past eight to ten years investigation of eating disorders such as anorexia nervosa and bulimia has been reported with increased frequency. This increase can be attributed to several factors. Perhaps the incidence of eating disorders is actually increasing in the general population (Thompson, Schwartz, & Johnson, 1982). On the other hand, people may be simply aware of and willing to report such disorders to clinicians. Regardless, researchers are just now beginning to understand the complexities of these disorders as they occur in industralized nations. The following project intends to investigate the nature of bulimia, an eating disorder described by some to be of epidemic proportions in adolescent and young adult females.

Bulimia is a disorder characterized by episodes of binge eating, the consumption of a large amount of food in a relatively short period of time. Binge episodes are usually inconspicuous and secretive; however, the individual is usually aware that her/his eating pattern is abnormal but feels unable to control the binging. Frequently, binge eating episodes are accompanied by self-disparaging thoughts, such as guilt, depression and disgust. Finally, binge eating may be terminated by self-induced vomiting, laxative abuse, sleep or social interruption. Typically the individual engages in self-induced vomiting, laxative abuse, excessive exercise or periods of fasting as a means of controlling body weight. In addition, DMS-III (1979) stipulates that bulimia is not due to anorexia nervosa or any physiological disorder, thus limiting bulimia to normal weight or overweight individuals.

There has been considerable confusion in the literature over the use of the term "bulimia" to describe both a symptom (binge eating) and a syndrome of behaviors and affective experiences. Bulimia is derived from the Greek and translates as "ox hunger" yet the binge eating pattern of bulimics has rarely been found to be the result of excessive appetite (Mitchell & Pyle, 1982). Inclusion of other behavioral and affective concommitants such as purging, feelings of shame, guilt, low self-esteem, and fear of becoming fat suggests that bulimia is a syndrome of behavioral and psychological factors. To add to the confusion, different authors have employed a number of terms to describe what appears to be bulimia. Stunkard (1958) first described "binge eating" as a distinct eating disturbance in obese persons. Since then bulimia has been found in normal weight as well as severely underweight persons. Other terms such as "compulsive overeating" (Green & Rau, 1974), bulimia nervosa (Russell, 1979), bulimarexia (Boskind-Lodhal, 1977), and the "dietary chaos syndrome" (Palmer, 1979) have all been used to describe binge-eating episodes which are accompanied by negative affective states, purging or fasting, preoccupations with food and weight, and which produce sufficient distress to induce individuals to seek treatment. For purposes of clarity in this research, binge eating describes the behavior of excessive over-eating and bulimia denotes the syndrome composed of binge eating as well as other behavioral and psychological factors surrounding the binge eating behavior. Following is a discussion of bulimia in obese, anorexic, and normal weight individuals.

Bulimia in the Obese

Very little has been reported in the literature on bulimia in obese persons. However, limited studies suggest that the prevalence of binge eating is between 23% (Gormally, Black, & Radin, 1981; Jackson & Ornstein, 1977, cited in Loro & Orleans, 1982) and 28% (Loro & Orleans, 1982) in overweight persons. Frequency of binge-eating in these obese persons ranged from once per week to seven times a week, a frequency also reported in normal weight females and bulimic anorexics (Johnson, Stuckey, Lewis & Schwartz, 1982; Casper et al., 1981). However, the authors do not provide information on whether binge eating in the obese was a function of the bulimic syndrome or just excessive overeating. The lack of data available on bulimia in the obese may be due to several factors. Obese persons who regularly engage in binge eating are reported to be very poor candidates for behavioral weight control programs. They may never enter a weight loss program or be early drop-outs making investigation difficult. Further, binge-eating is thought to be related to broader and more complicated psychological and behavioral difficulties and is not considered in traditional behavioral weight loss literature (Loro & Orleans, 1982). As noted by Wilson (1976, cited in Loro & Orleans, 1982) unassertiveness, negative feelings, low self-esteem and deficiencies in coping and problem-solving skills are typicaly found in obese binge-eaters. These factors are usually not addressed in standard behavioral weight loss programs.

In an attempt to understand binge eating in obese persons and enhance treatment effectiveness, Loro and Orleans (1982) recently

published an excellent article on the functional analysis and treatment of binge eating in the obese. The data support clinical findings that binge eating is frequently accompanied by deficits in interpersonal relationships, self-esteem, and stress management skills. Treatment recommendations are based on a functional analysis of binging. Some of the antecedents of binge episodes in their obese clients were: stress-related precipitants (pressure from school or work), discriminant cues (sensory stimuli), setting factors (secretive and isolated settings), cognitive and emotional cues (frustration and disappointment, boredom, conflicts in interpersonal relationships), physiological cues (hypoglycemia), and restrictive dieting (self-denial, obsession with food and weight loss). Further, Loro and Orleans (1982) report several consequences of binge-eating episodes such as pleasant sensory experiences of the taste and smell of food and negative reinforcements such as relief from angry feelings following conflict in interpersonal relationships, reduction of stress, and relief from negative feelings associated with restrictive dieting. The antecedents and consequences outlined by Loro and Orleans (1982) have also been documented in normal weight bulimics and anorexics who engage in binge eating (Beaumont, 1976; Fairburn, 1981; Garfinkel, Moldofsky & Garner, 1980; Johnson & Larson, 1982; Johnson et al., 1982, Halmi et al., 1980; Mitchell & Pyle, 1982; Pyle, Mitchell & Elke, 1981; Strober, 1981).

Several limitations are found in the literature on bulimia in obese persons. First, the confusion of binge eating as the symptom with bulimia the syndrome makes it difficult to assess if obese individuals are truly a clinical population of bulimics. Further, differences

between obese bingers who restrict intake and those who engage in vomiting and/laxative abuse have not been discussed in the literature. Future research should address these issues to increase our understanding of bulimia as it occurs similarly or differently in persons of different weight categories.

Bulimia in Anorexia Nervosa

DSM-III (1979) states that bulimia cannot be a function of a previous history of anorexia nervosa. Yet current estimates state that 40 to 50% of all anorexics will develop bulimic behaviors (Hsu, 1979; Garfinkel, Moldofsky & Garner, 1979). For the purpose of this research proposal, anorexics who engage in bulimic behaviors and appear identical to normal weight bulimics (especially anorexics who have regained their weight due to binging), will be classified as bulimic anorexics.

Several attempts have been made to differentiate subtypes of persons with anorexia nervosa. Dally (1969) classified three subtypes: an obsessional group (O), a hysterical group (H), and a mixed group (M). Anorexics in group O exhibited a specific profile of clinical characteristics not found in the other subtypes such as binge eating, vomiting, interest in eating, and labile mood. A similar classificatory system was outlined by Beaumont (1977) using method of weight loss as the discriminating feature. The "dieter" lost weight through strict caloric restriction and the "purge-vomiter" relied on vomiting and laxative use to control body weight. Several differences between "dieters" and "purge-vomiters" have been found. The dieting or restricting anorexics are introverted, socially withdrawn, internal, preoccupied with food, weight

and eating, and they report that dieting began in conjunction with some stressful event. In contrast, the "purge-vomiters" are more extroverted, have a history of obesity, and exhibit a number of impulsive behaviors (Casper et al., 1980; Garfinkel et al., 1980). In addition, Casper et al. (1980) found higher levels of anxiety, depression, interpersonal sensitivity, and somatic complaints in anorexic purge/vomiters. In their sample, bulimic anorexics reported binge episodes relieved distressing emotions such as frustration, tension, boredom and perceived emptiness. The binge eating behaviors were reportedly engaged in with forethought that vomiting would relieve negative effects of excessive food consumption, suggesting that vomiting may perpetuate the binge/purge cycle. Bulimia in anorexia has been associated with chronicity and evidence suggests that restrictive dieting may precipitate binge eating (Bennett & Gurin, 1982; Polivy, Herman, Jazwenski, & Olmstead, 1982). This also sugggests that pro-longed starvation in the anorexic may precipitate the development of bulimic behaviors. However, the research supporting this hypothesis has failed to equate for duration of illness in subjects, confounding the results.

Garfinkel and his colleagues (Garfinkel et al., 1980) are exceptions in that they controlled for duration of illness using two groups of bulimic and restricting anorexics. They found differentiating premorbid behavioral, psychological and prognostic factors. Bulimic anorexics had a personal and family history of obesity, used purging techniques of vomiting and laxative abuse, were more sexually active, extroverted, and reported labile moods and impulsive behaviors such as alcohol and drug abuse, stealing, suicide attempts and self-mutilation.

Given that bulimic and restricting anorexics may differ in ways other than chronicity, Strober (1981) undertook the task of assessing clinical symptomotology, premorbid factors, family relationships, life stress and parent medical and psychiatric histories in groups of juvenile anorexics matched for duration of illness. One group exhibited bulimic behaviors, including purging, and the other group did not. He found that parents of bulimic anorexics had higher levels of marital discord, were rated as more emotionally distant from their daughter, had a family history of an affective disorder and at least one parent sustained a serious physical illness. Further, the family environment of bulimic anorexics were reportedly less supportive and organized and had less clarity of structure, rules and division of responsibility. Prior to onset of anorexia, a larger proportion of bulimic anorexics reported increased alienation from parents and parental and/or personal injury. Finally, bulimic anorexics were more often described as unhappy (41% exhibited symptoms of major depresssion) and exhibited affective instability. These results suggest psychosocial stress occurring prior to onset of problem behaviors may have required readjustment beyond the individual's coping skills. Strober (1981) suggests that the high incidence of depressive symptoms coupled with a family history of affective disorders may reflect a lower threshold for depression and affective reactivity. Consumption of food and alcohol may alleviate dysphoric states, thus binge eating and alcohol use acquires positive reinforcing value. If bulimia is used as a mood stabilizer, and reasearch with normal weight bulimics suggests this to be the case

(Johnson et al., 1982), these behaviors could develop as the primary means of coping with stressful situations and aversive affective states. Repeated use of these maladaptive behaviors when faced with stress-inducing situations may result in short-term positive reinforcement but preclude developing more adaptive coping strategies. Following Strober's findings, additional research should investigate factors which predict development of subtypes of anorexia nervosa. Particular attention should be paid to the commonalities between normal weight bulimics, bulimic anorexics who purge following binging, and obese bulimics.

Bulimia in Normal Weight Women

The prevalence of bulimia in normal weight women has ranged from 2.1% (Mitchell & Pyle, 1981) to 19% (Halmi et al., 1982). Hawkins and Clement (1981) report that out of a sample of undergraduates, two-thirds of the women and one-half of the men reported binge eating weekly. However, only eight, all women, reported vomiting to control their weight. This study illustrates the confusion arising when the definition of bulimia is not consistent and classified across studies. It is unknown if two-thirds of the sample were severe enough to be considered a clinical population or if the same proportion of the general population would report binge eating on as frequent a basis. For example, a recent survey of a female high school population (n = 1264) found that eight percent (N = 105) met DMS-III inclusion criteria for bulimia. Five percent (n = 62) met the criteria and also were binge eating at least once a week. Finally, one percent (n = 11) met the DSM-III criteria and were binge eating and purging (vomiting, laxative use) at least once a week. The major differences

between those who met DSM-III criteria for bulimia and were binge eating at least once a week and those who did not fulfill these criteria were that binge eaters perceived themselves as overweight even though they were not and that they had a long history of chronic, multiple attempts at dieting (Johnson, Lewis, Love, Lewis & Stuckey, 1984).

These epidemiological studies have several other confounding factors that may account for the discrepant results. For example, Stangler and Prince (1980) report that of 500 students seen consecutively at a university clinic, 3.8% presented problems with bulimia. No information is given on the season during which sampling was conducted. Based on clinical experience, incidence of clinical cases increases in the spring and summer months as dieting in females becomes more intense (Tessnear, Personal Communication, 1981). Another factor affecting prevalence estimates is location of sampling. Halmi et al. (1981) reported that 19% of the female population attending summer school at a large metropolitan college engaged in all behaviors characteristic of DSM-III bulimia. In contrast, Pyle and his colleagues (Pyle, Mitchell, Eckert, Halverson, Neuman & Goff, 1980) report only a 4.5% of the female population at a midwestern university met DSM-III criteria for bulimia. As the authors indicated, this estimate could have been affected by location of universities, and/or differences in students' curriculum major. Other research suggest that persons involved in the arts (i.e., dancing, as Halmi's et al (1981) were) score within the pathological range for eating disorders (Garner & Garfinkel, 1978). Finally, Love and Ollendick (1982) found that method of assessing the incidence of eating disorders in a

college population affects reported behavior. Administering a questionnaire in a large, impersonal, and anonymous setting engendered a purportedly higher frequency of problems with eating than administering the same questions within a personal interview situation.

Assessment of the incidence of bulimia in normal weight women has been limited to college populations largely for pragmatic reasons (they are of easy access like rats and introductory psychology students). Still, they may be a crucial population to target given the emphasis placed on thinness for women (Schwartz, Thompson, & Johnson, 1982). Garner and his colleagues have documented how the ideal body types of today's women have become increasingly thin while the actual weights have increased. Women may be attempting to keep their body weight below an appropriate level, following restrictive diets, and perhaps setting themselves up to develop frequent binge eating episodes followed by self-deprecating thoughts. Indeed, the high school survey suggests that this may be the case (Johnson et al., 1984). There is little disagreement among experts in the field that bulimia should be considered of serious concern for researchers and clinicians because of its reported high incidence and serious psychological and physiological consequences. However, additional research should assess the prevalence of problematic behaviors and attitudes towards one's body, food, and weight in high school and post-college age women. Another neglected area of research is bulimia in males. The higher proportion of females may be due to socio-cultural factors but it is intriguing to hear of cases of bulimic males who are binging and purging for comsetic or athletic reasons.

For example, male wrestlers reportedly engage in binge/vomiting but do not continue with the behaviors upon discontinuing the sport. Factors that account for the differences between males and females shoud be empirically tested.

Binge Eating and Related Behaviors

Several parameters of binge eating behavior have been investigated such as frequency, duration, types of food, situational variables, characteristics of those who binge/purge and those who do not, and affective states associated with stages of the binge/purge cycle. Frequency of binge eating behavior reportedly ranges from several times a week to more than once a day (Johnson et al., 1982; Mitchell et al., 1981; Pyle, Mitchell & Eckert, 1981; Russell, 1979). Further, duration of binge episodes range from 15 minutes to an hour and often can be two to eight hours long (Loro & Orleans, 1982; Stunkard, 1957: Johnson et al., 1982).

Russell (1979) was one of the first to report an in-depth analysis of binge eating and related behaviors in normal weight females. His sample consisted of 30 normal weight women, of whom all but seven had histories of weight loss. He classifies his samples as normal weight bulimics because they had regained their weight. It is interesting to note that even though many of his sample had a history of low weight many of his findings were supported in the literature on overweight and normal weight bulimics with no such history. In summarizing Russell's findings, he found the critical aspects of bulimia to be (1) pre-occupations with food, (2) eating filled an emotional need (i.e., they

ate when angry, lonely, frustrated, under stress), (3) feelings of shame and guilt followed binge episodes, (4) binges usually occurred following consumption of small amounts of "fattening" or "non-diet" foods such as carbohydrates, food they denied themselves when dieting, (5) binges increased when perceptions of being fat were intense, (6) binges usually took place in solitary, secretive settings, especially during the early evening and night hours, and (7) when plans for a binge were interrupted (i.e., social interruption) clients reported feeling angry at the disruption in plans. Purging techniques such as vomiting or laxative abuse frequently accompanied binge eating espisodes in normal weight bulimics to control body weight.

Other studies indicate normal weight bulimics are likely to use purging to rid themselves of the negative consequences (weight gain) of binging. Mitchell et al. (1981) found that 85.9% of a sample of 85 normal weight bulimics used vomiting to purge themselves of food, 41.2% used laxatives, 15% used diuretics, and 7.1% used enemas. Likewise, Johnson et al. (1982) found similar results. In the mail survey at the Eating Disorders Project at Michael Reese Hospital and Medical Center, 316 women were classified according to DSM-III criteria as normal weight bulimics. Of this sample, 81% reported using self-induced vomiting, 63% used laxatives, and 26% used both vomiting and laxatives as method of purging. Further, frequency of vomiting has been reported from once every two weeks for someone trying to stop to several times a day (Russell, 1979). Again Mitchell et al. (1981) and Johnson et al. (1982) concur with 47.1% and 58.9% reporting self-induced vomiting several

times a day. Further, 24.5% of the mail survey reported using laxatives as often (Johnson et al., 1982).

Demographic Variables

The profile of the normal weight bulimic individual is that she/he is primarily female; 95% are females and 5% are males (Halmi et al., 1981), with a mean age of 24 and at least two years of college education (Johnson et al., 1982). The mean age of onset is 18 years and duration of illness, prior to consultation, is five years suggesting that these women deal with binging and purging for at least four to five years before presenting themselves for treatment. These data support clinical findings that these women feel so guilty and ashamed of their behavior that they will not tell anyone, even medical personnel who are treating them for physical problems related to the bulimic behaviors (Aholo, 1982). In addition, normal weight women are more likely to be slightly overweight prior to the onset of binging and report having had a series of unsuccessful attempts at dieting (Herman & Mack, 1982). Polivy and her colleagues (Polivy et al., 1982) have postulated that repeated restrictive dieting may set the stage for developing bulimia in certain individuals who also encounter stressful events in their lives with which they feel unable to cope. This counter-regulatory theory will be discussed in greater detail later.

Social Adjustment

There are controversial findings in the literature on the social adjustment of normal weight bulimics. Boskind-Lodhal (1978) reported

that most of her sample had few satisfactory love relationships while Russell (1979) indicated his sample appeared sexually adjusted. Several researchers feel the prevalence of bulimia is underestimated because these women report functioning in their job or at school, maintaining an appearance of normalcy, yet distressed and having difficulty coping when not busy with work (Johnson, personal communication; Wooley & Wooley, personal communication, 1982). One test of these clinical findings used a paging device to sample daily experiences in bulimic women and found that normal weight bulimic women experienced more dysphoria and fluctuating mood states, more feelings of inadequacy, and spent more time alone and in food-related behaviors than a normal comparison group (Johnson & Larson, 1982).

Stuckey (1980) investigated the depressive experiences of normal weight bulimics who either purged or restricted intake, and compared them to a group of college females who reported normal eating patterns. She found both groups of bulimic women reported more severe and frequent depressive feelings than the normal eaters. Further, binge/purgers evidenced more self-criticism, irritability and feelings of helplessness than bulimic restrictors. Boskind-Lodahl (1977) reported finding similar experiences of low self-esteem and a sense of ineffectiveness in her college sample of binge/purgers. Finally Johnson and Berndt (1983) found that "bulimic" women surveyed by mail reported significantly more difficulty with social adjustment than a normal community sample as measured on the Social Adjustment Scale (Weissman, Prusoff, & Thompson, 1978).

Medical Complications

Even with the little information available on bulimia, the evidence of serious medical complications of binging and purging renders it of serious concern for the medical and psychological communities. Pyle et al. (1982) report that 51.8% of the 85 bulimic patients they studied had abnormal balances of electolytes. Common abnormalities were metabolic alkalosis, hypochloremia (low blood levels of chlorine), and hypokalemia (low blood levels of potassium). The depletion of chlorine and potassium is associated with fatigue, muscle weakness, constipation, and dysphoria, all of which mimic depression. Also reported are edema and possible kidney dysfunction, and a predisposition to cardiac arrythmias. Gastric dilitation has been reported in two case studies (Saul, Dekker, & Watson, 1982; Mitchell, Pyle, & Miner, 1982), with one case resulting in death due to rupturing of the intestines. Other associated medical problems are parotid enlargement from vomiting and poor diet (Ahola, 1982; Hasler, 1982), and dental caries and enamel errosion from frequent exposure to hydrochloric acid from vomiting (Gallo & Randel, 1981).

Concluding Remarks

As one can see from the literature, most of the research has been conducted within the last five years. Much remains to be done in investigating premorbid factors of bulimia, similar to Strober's (1981) work with juvenile anorexics. There have been no long-term studies to date investigating social adjustment and prognostic indicators. Finally, the lack of empirical data on effective treatments reflects the

lack of understanding that we have of this disorder. Lastly, a comprehensive theoretical framework within which to view bulimia in normal weight persons has not been developed and empirically tested. Several explanations are offered in the literature, ranging from the psychodynamic view to an integrated socio-cultural view. These explanations will be described in the following sections. In addition, an alternative view, social learning theory, will be presented as one conceptualization of the development and maintenance of binge eating in normal weight women.

Theoretical Perspectives

Three theoretical explanations, the psychodynamic, the socio-cultural and the counter-regulatory have been proposed to explain bulimia. As in other areas of psychology, useful theories should make predictions concerning etiology, prognosis, and/or effective treatments, and the predictions should withstand empirical test. Each of the three theories will be described below with their accompanying empirical data.

Psychodynamic Theories

The early psychodynamic explanation of anorexia nervosa hypothesized that food refusal, as in binge/vomiting and restrictive dieting, was a symbol of an overwhelming fear of sexuality and oral impregnation. This was particularly the case with binge/vomiting behavior because regurgitation of food meant a rejection of the mother and all that meant being female (Bruch, 1973). While fear of oral impregnation has not received empirical support in the eating disorders literature, and has

for the most part been discarded as a viable explanation, other aspects of psychodynamic theory, such as objective relations theory and the early mother-infant relationship, have been offered as explanations for the development of bulimia.

Object relations theory postulates that the "body has become a transitional object, a vehicle for the representation of the maternal object and then the repudiation of her" (Sugarman & Kurash, 1982, p. 57). Sugarman and Kurash (1982) hypothesize that the developmental process of separating from mother and developing a sense of self external from mother has not progressed in a normal fashion. The bulimic female is said to lack the cognitive capacity to symbolize the maternal figure as external from herself, allowing her to give up the use of her body as a transitional object. Because of her preoperational nature of thinking, she experiences her body as her mother. Coupled with her repudiation of mother, to feed herself would then be to experience being as one with mother. Thus, starving or vomiting food functions as a means of maintaining her self-other boundary. The body as a transitional object in bulimia is the central focus of object-relations theory.

A second psychodynamic explanation hypothesizes that eating disorders are a function of the early mother-infant feeding relationship. This theory states that the early feeding relationship between mother and infant may affect the success of mother-infant interactions and is perhaps a percursor to the later development of an eating disorder (Charone, 1982). Charone (1982) offers a framework within which both psychodynamic

constructs and behavioral measures are used to evaluate the quality of the mother-infant feeding relationship. The empirical support for the psychodynamic approach relies on case reports described in psychodynamic terms with little objective validation. Further consideration of its usefulness awaits empirical investigation.

Socio-cultural Theory

Armed with sociological data suggesting an increasing positive valence placed on thinness in women by the American public, Garner et al. (1983) have developed an integrative sociocultural explanation for the increasing prevalence of eating disorders. They speculate that as each decade has its "illness," the 70's was the "era of depression," the 80's is the "era of eating disorders." They hypothesize that the media contributes to the perpetuation of the excessive pursuit of thinness as the ideal shape for women. Indeed, the cover story of Time magazine (August, 1982) featured "The new ideal of beauty" as thin, sinewy, and muscular, and noted that while the shape of women is becoming more muscular, it also has a minimum of fat tissue. Another example was the February, 1982 issue of Life on which the cover picture and story was of a thin, shapely, Christy Brinkley, an example of the body shape to be achieved. The article immediately preceding it was of a female anorexic starving herself in an attempt to reach the "ideal, thin body shape." The integrative socio-cultural model hypothesizes that within a society which idealizes thinness in women, certain females may be more susceptible to developing an eating disorder than others. They propose that risk factors such as an impaired maternal environment, disturbed

family interaction patterns, and complex female roles (changing from the passive and dependent ideal to an active, independent woman), plus a positive valence on thinness, set the stage for developing an eating disorder. The authors explain the different eating disorders as the final common pathway which may be reached from several routes. The three major forces involved in the development of anorexia and/or bulimia are a biological predisposition, early life trauma, and present day stress. While this theory appears to encompass a variety of factors related to bulimia and provides a model for viewing the interaction of these various components in the development of bulimia, it too awaits empirical test.

Counter-regulatory Theory

Polivy and her colleagues (Polivy et al., 1982) have developed the counter-regulatory model of binge eating behavior. Based on research of regulation of food intake and body weight in animals and humans, the counter-regulatory model combines physiological and cognitive factors to explain binge eating episodes. Within this model, dietary restraints, emotional distress, and disinhibiting factors are said to interact and set the stage for binge eating.

The empricial research of this theory has found differences between restrained and unrestrained eaters in eating behaviors. Restrained eaters are persons who report frequently dieting, may categorize food into "good" and "bad" categories, are preoccupied with thoughts of food and weight, and are very similar to Bruch's (1973) "thin-fat people." Laboratory research suggests restrained eaters are more likely to consume an excess amount of food under a variety of situations. For

example, they will eat more than unrestrained eaters after eating a small amount of "bad' food, such as a milkshake, if they believe they have eaten beyond their internal standards or caloric intake (even if they have not), if they experience emotional distress prior to eating and if they consume an alcoholic beverage before eating.

According to Polivy, dieting is cognitively determined (deciding not to eat) therefore cognitive factors may affect the consistency of restraint. In addition, dieting is said to perpetually keep the body in a state of "hunger" because it attempts to keep body weight below the set point (Bennett & Gurin, 1982). Although Polivy and her colleagues do not specifically make the connection between the counter-regulatory theory and the Abstinence Violation Effect (AVE) (Marlatt & Gordon, 1980), they do seem similar. Breaking of one's abstinence from "bad" foods while on a diet leads to cognitive dissonance of which the resolution is that one must not have the self-control necessary to maintain a diet, one cannot do what it takes to maintain the "extreme" ideal of thinness, therefore one may as well "go all the way, and eat the whole bag of cookies." According to the counter-regulatory theory, alcohol and emotional distress act as disinhibitors of one's self-control and increase the likelihood that one will violate those rigid set of dieting standards. One of the weaknesses of Polivy's model is that it has not been developed to explain nor tested with a clinical population of bulimics. It would be interesting to expand the counter-regulatory theory to incorporate notions of social learning theory (specifically the AVE) and test if it explains dieting and binge eating behaviors in apparently well-adjusted

individuals as well as bulimicbehaviors in a clinic sample. This latter conceptualization of the applicability of the AVE to bulimia will be more fully developed in the section on social learning theory.

An advantage to the counter-regulatory theory not seen in previous explanations is that it makes several useful treatment recommendations in addition to hypotheses concerning the etiology of bulimia. The primary recommendations are to stop dieting, reduce one's restraint on eating and accept oneself regardless of one's weight. It is crucial that the individual no longer define her/himself in terms of body size or numbers on a scale. Also, teaching and enhancing the individual's coping skills helps deal with emotional stress and decreases the need for binging when she/he perceives an aversive situation. Other strategies are providing proper information on the role of restraint, body weight, and counter-regulation in binge-eating, perceiving binging as not abnormal but as the individual's way of reacting to severe restriction, modifying attitudes about body weight, removing categorization of food and introducing previously labelled "bad" foods on a regular basis into the diet, and increasing energy expenditure.

The counter-regulatory theory appears the best explanation thus far with its incorporation of etiology and maintenance of bulimia in addition to treatment recommendations. It has received some empirical support with "restrained" eaters in laboratory situations yet remains to be tested outside the laboratory with a clinic population of bulimics. Further, the recommendations for treatment should be empirically tested and refined for individual differences.

As is the case with any explanation of human behavior, no theory provides all the answers. It is more likely the case that a combination of several viewpoints such as the socio-cultural view, counter-regulatory explanation, and perhaps social learning theory will provide the most comprehensive view of the situation. This remains to be seen with additional research and theory development. The last theory to be discussed is social learning theory. It too is a cognitive explanation that includes expectancies of performance and response consequences and the role of an individual's learning history.

Social Learning Theory

Principles of SLT will be described as one way of viewing the development and maintenance of bulimic behaviors in normal weight women. It has yet to be fully developed as an explanatory and predictive model of bulimic behaviors, yet an initial exploratory analysis might test if SLT variables predict certain bulimic behaviors. In addition to the original SLT constructs outlined by Rotter and Phares (1977), Bandura's (1977) notion of self-efficacy will be utilized to provide a more comprehensive theoretical framework. It should be noted that this is the first attempt to apply and test SLT to bulimia although SLT has been used to explain addictive behaviors and relapse in alcoholics and smokers. The test of its "truth" value awaits empirical investigation.

Social learning theory (SLT) is an attempt to explain and predict behavior that occurs within a social context. It utilizes both an expectancy construct and the empirical law of effect. Expectancy is defined in terms of one's expectancy that an outcome will follow a

particular response. SLT considers most behaviors to be learned so that behavior that has been reinforced in the past is likely to occur in the future. These two components, expectancy and the law of effect, allow for incorporation of cognitive events as meaningful determinants of behavior which interact with the individual's present situation and learning history. As in all theories, SLT has a range of convenience and the test of its hypotheses lies in its purported ability to accurately predict behavior.

Principles of SLT. In SLT, the interaction between the individual and his/her meaningful environment are the units of investigation. Individuals do not exist in a vacuum, nor are they pawns of environmental forces. A second postulate in SLT is that behaviors are goal-directed and the directional aspect is inferred from the effect of reinforcing conditions. This hypothesis is based on the empirical law of effect and states that any stimulus complex has reinforcing properties to the extent that it influences movement toward or away from a goal (Phares, 1972). The environmental conditions (external to the individual) that determine the direction of behavior are goals and reinforcements. It is also the case that individual person variables may determine the direction of behavior. In this instance, one is speaking of needs as the determining factor. Both needs and goals are inferred from the interaction of the person with his meaningful environment. Finally:

> The occurrence of a particular behavior is determined not only by the value or importance of goals or reinforcements but also by the persons' anticipation or expectancy that these goals will occur. Such expectancies are determined by previous experience and can be quantified. (Rotter & Phares, 1977, p. 20).

This relationship of behaviors, reinforcement value and expectancies can be summarized in the following equation: $B(p) = f(R(v) * E)$, that is, the potential for the occurrence of a given behavior is a function of the reinforcing value of the response/outcome and the expectancy that the outcomes will follow upon the response.

The early formulation of expectancy in SLT was defined as a generalized response/outcome expectancy and measured as one's perception that one had control over the outcomes of one's behavior, otherwise termed locus of control (Rotter, 1977). Bandura (1977) has expanded more fully the expectancy notion in SLT to include an individual's expectancy that she/he has the ability to perform the behaviors required to attain certain outcomes.

> Outcome and efficacy expectancies are differentiated because individuals can believe a particular course of action will produce certain outcomes, but if they entertain serious doubts about whether they can perform the necessary activities, such information does not influence their behavior. Expectancies of personal mastery affect both the initiation and persistence of coping behavior. Individuals attempt activities that they believe they can engage in successfully and they persist and expend more energy coping with situations when faced with obstacles and aversive experiences. However, expectancies alone will not produce performance if the necessary skills and/or incentives are lacking. (Bandura, 1977, p. 193).

According to Bandura, the combination of effective skills, activities, reinforcing values, and efficacy expectations determine people's choice of activities, how much effort they will expend and how long they will sustain effort in dealing with stressful situations.

Self-efficacy expectations vary in magnitude, generality, and strength. An adequate expectancy analysis should assess the level of difficulty of the task (magnitude), the different situations (generality)

and the strength of the expectancy that one believes oneself able to perform the appropriate behavior to achieve an outcome. There are four sources for the development of efficacy expectations; performance accomplishments, vicarious experiences, verbal persuasion and physiological states. An advantage to postulating a common mechanism of operation (self-efficacy) in these four sources is that it provides a conceptual framework within which to study behavioral change achieved by different modes of treatment (Bandura, 1982). According to Bandura (1977), performance attainments or authentic experiences are the best sources of efficacy expectancies. Successful experiences increase levels of self-efficacy while failure decreases efficacy expectancies. Empirical support for self-efficacy as a determinant of behavior has come from work with snake phobics (Bandura, 1982), social behavior (Kazdin, 1979), physical stamina (Weinberg et al., 1979), achievement striving (Bandura & Schunk, 1981), career choice and development (Betz & Hackett, 1981) and self-regulation of addictive behaviors (Condiotte & Lichenstein, 1981).

Multi-dimensional Perspective: In understanding the development of bulimia as a syndrome composed of affective, behavioral and interpersonal components it is important to consider the many determinants that might affect whether an individual will develop the disorder. It is not the intent of the current study to test a multi-dimensional model for the development of bulimia. The literature has been reviewed by others and requires numerous studies to adequately test its usefulness (Johnson et al., 1984; Mizes, 1983). However, it is important to place the development of this particular deviant behavior within its proper context.

Without a doubt, today's societal norms of attractiveness for women emphasize dieting as a means of achieving the thin body ideal. This finding has been documented by others and there is little question that women are facing strong pressures to achieve a body ideal that may not be appropriate for them (Garner et al., 1983; Thompson et al., 1982; Garfinkel & Garner, 1983; Polivy & Herman, 1983). The impact of this pressure may be to foster a feeling of dissatisfaction for one's body if attempts at dieting fail to shape the body into one that conforms to these external standards. Indeed, a recent study by the Wooleys (Wooley & Wooley, 1983) found that out of 33,000 survey respondents approximately 50% felt moderately to highly dissatisfied with their bodies. Over 90 percent of them had engaged in dieting in an attempt to reduce their weight.

In addition to these pressures, women today are also experiencing a change in the criteria for success. Not only must they maintain their position as housewife and mother, but they must also prove themselves in the job market. Therefore, women are faced with having to maintain traditional behaviors while adopting standards of success found in the male-dominated business world. These demands, if unmet (and what woman can be a "24 hour woman") can lead to feelings of failure, low-esteem and depression, as well as a sense that one cannot maintain control over one's life. If a woman also chronically diets to change her body shape, she may be setting herself up to develop binge eating due to psychological and physical deprivation. Further, binge eating is reported to be an effective coping mechanism for handling negative feeling states such as low self-esteem, depression, anxiety, and failure.

This conceptualization considers the psycho-social context within which these women develop a sense of identity and autonomy. Furthermore, binge eating also appears to be a logical behavior to engage in when considering SLT's explanation of deviant behavior. Deviant behavior is one which has developed to achieve gratification or minimize punishments, just as any adaptive behavior develops from the Law of Effect (Phares, 1977). Maladjusted behavior is typically seen as behavior used to avoid aversive experiences resulting from punishments or failure to receive highly valued rewards. If one reward is to remove aversive experiences such as uncomfortable feelings then it makes sense for these women to develop the syndrome. Clinical reports repeatedly show that bulimic persons binge in response to depression, loneliness, boredom, frustration, stressful situations, conflict with interpersonal situations and hunger, among other events. The affective states described are unpleasant for anyone to experience. Food may be the coping strategy which the individual has found to relieve the aversive experiences. This behavior then becomes the typical behavior in reaction to these situations. In addition, the individual's sense of inadequacy is reaffirmed with each occurrence of maladaptive behavior. A most insidious aspect is added when the bulimic woman finds vomiting to be relatively easy. Vomiting after binging removes the negative consequences of binge eating (weight gain), increasing the likelihood that binging will continue as a coping mechanism.

Use of self-efficacy as the basic component to predict binge episodes has not been developed in the literature, in fact no one has

examined the possibility of predicting binge eating episodes. However, if bulimia, especially the binge/purge cycle, can be considered as having addictive characteristics, the alcohol and smoking literature sheds some information on the role of self-efficacy in predicting binge occurrences.

The notion of self-efficacy has been developed in the addictive literature as a critical component of relapse training and maintenance of not engaging in addictive behaviors. Research in smoking cessation has found that measurement of self-efficacy immediately following treatment of smoking can be related to whom and in what situation a relapse will occur (Condiotte & Lichenstein, 1981). These researchers found that perceived efficacy ratings increased during treatment for smoking as duration of abstinence increased. Also, the higher an individual's level of self-efficacy at completion of treatment, the greater the probability that he/she would remain abstinent through treatment and follow-up. Further, using Bandura's (1977) microanalysis approach, they found a high correspondence between situations in which subjects experienced a low degree of self-efficacy and those situations in which they relapsed. Finally, subjects who smoked at least one cigarette after terminating treatments but did not completely relapse had greater post-treatment ratings of self-efficacy and were more similar to non-relapsers than those who completely relapsed. The authors conclude that careful measurement of the post-treatment self-efficacy states revealed a remarkably high correspondence between duration of abstinence, situation of relapse and differentiation of those who might completely relapse with one "slip" versus those who can "get back on the track."

Hypotheses of the Present Study

The current study attempts to expand upon the theoretical understanding of the capacity of SLT to predict behaviors, in this instance, binge eating and purging behaviors in a clinical population of bulimic women. Drawing upon the work of Condiotte and Lichenstein (1981) measurements of self-efficacy in addition to other SLT components are used as predictors of binge eating behaviors. An appropriate explanation within this framework should include the original components of the theory (reinforcement value of outcomes and expectancy that outcomes will follow upon a response) and the expectancies associated with self-efficacy. More specifically with respect to bulimic behaviors, one needs information on binge episodes, reinforcement value of a variety of activities, locus of control, and perceived self-efficacy to handle general and specific stressful situations and efficacy to resist the urge to binge. Also, based upon previous research, additional information concerning affective states and the occurrence of "high risk," stressful situations, should be assessed. The hypotheses to be tested are:

1. Frequency of binge eating episodes can be predicted adequately by SLT variables. More specifically, the possible predictors are a measure of reinforcement value of binging and purging (RVB, RVP), locus of control (LOC), self-efficacy specific to binging (SE) and self-efficacy to handle stressful situations (GE).

2. There is congruence between initial ratings of one's perceived ability to resist the urge to binge in certain situations and the situations in which binge eating episodes occur at a later date.

METHOD

Subjects

Participants were 31 Caucasian women experiencing problems with binging and purging at least three times per week. Participants were between the ages of 17 and 36 (mean = 25.8, s.d. = 5.8) and were screened according to the following criteria:

Binge/purge Bulimics

Bulimic participants were persons who contacted the Eating Disorders Project at Michael Reese Hospital in Chicago, Illinois for consultation and referral for treatment. Four participants were referred to the project by the clinical director of the Eating Disorders Clinic at Michael Reese Hospital. Ninety-eight percent (n = 29) had been exposed to some form of treatment, ranging from self-help to individual or group psychotherapy while the remaining seven percent (n = 2) had not. However, only twenty-nine percent (n = 9) were receiving treatment for bulimia at the time of the project: 4 were in individual treatment and 5 participated in the monitoring as part of their first week of a 12-week short-term group intervention conducted by two consulting psychologists. The high proportion of participants having some contact with psychological help is not unusual considering that the Eating Disorders Project was typically the last resort for professional help for these women. Criteria to define bulimia followed DSM-III (1979).

a. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time, usually

less than two hours)--defined as binging at least three times per week, assessed by the Eating Problems Questionnaire (Stuckey, Lewis, Jacobs, Johnson, & Schwartz, 1980) or in consultation.

b. At least three of the following:

i) Consumption of high-caloric, easily ingested food during a binge,

- measured by responses on A3 of the EPQ or in consultation.

ii) Inconspicuous eating during a binge,

- assessed in a consultation interview.

iii) Termination of such eating episodes by abdominal pain, sleep, social interruption, vomiting and/or laxative abuse,

- measured by responses on B1 and B10 on the EPQ or in consultation.

iv) Weight within appropriate range for height and age. (Metropolitan Life, 1979)

Screening Measures

The EPQ (Stuckey et al., 1980) is a 55 item questionnaire developed by the Eating Disorders Project at Michael Reese Hospital and Medical Center, Chicago, Illinois. Several of the items are pertinent to the proposed research such as history of bulimia and anorexia nervosa, purging via vomiting and laxative abuse, and affective experiences associated with the binge/purge cycle. Currently over 1,000 persons have responded to the EPQ via a mail survey as well as clients who contact the project for consultations and referral. The primary purpose of the

EPQ was for screening individuals. Information on the EPQ was obtained on 25 of the 31 participants.

The Eating Disorders Inventory (EDI) (Garner, Polivy, & Olmsted, 1982) was used as a measure of eating attitudes and behaviors. It has been found to differentiate normal weight bulimics from anorexics and normal weigh controls and has been demonstrated to have sufficient convergent, criterion-related and discriminant validity. The eight subscales are bulimia, drive-for-thinness, ineffectiveness, interpersonal distrust, alexithymia (difficulty recognizing and accurately identifying emotions and sensations of hunger and fullness), perfectionism, body dissatisfaction, and maturity fears. The subscale intercorrelations are no higher than .60 and item-total correlations for each subscale average approximately .70. The EDI was used as an assessment tool to gather further information on the severity of the eating problem and to provide a manipulation check on the selection criteria outlined in the above section. Information on the EDI was available for 30 of the participants.

Pretest Measures

Several pretest measures were administered prior to the daily monitoring task.

Locus of Control: The Rotter (1960) locus of control scale was used as a measure of expectancy of response-outcome contingencies. The locus of control construct is considered a generalized expectancy that is present across a large number of situations and assesses whether or not

an individual perceives control over various outcomes (Lefcourt, 1966). The locus of control construct has been used as a measure of ineffectiveness in bulimic and restricting anorexics (Hood, Moore, & Garner, 1982). The research indicates that older anorexics score more externally than younger anorexics, that externality is associated with dieting due to parental and peer pressure, and that external anorexics are twice as likely to induce vomiting after binging. In addition, bulimia and laxative abuse were found to be approximately 20% higher in external anorexics; further, external anorexics reported a higher frequency of alcohol abuse, depression, emotional lability, self-conflict and restraint in eating. Findings similar to these have been found in the literature investigating the relationship between locus of control and psychopathology in general (Lefcourt, 1966) (See Appendix C). Information on the LOC scale was available for 26 of the individuals.

Reinforcement Value: Perceived reinforcement was defined as the reinforcement value placed on engaging in certain activities and was assessed through self-report ratings by participants in the pretest session. Using a scale from 1 to 9 (1 = not enjoyable and 9 = very enjoyable), the subjects rated 13 activities, two of which were binging and purging. These latter two activities were then used as direct measures of the perceived reinforcement value of the behaviors of interest. In addition to the standard activities provided by the examiner, participants were allowed to generate activities of their own which were absent from the list but which were reinforcing to them (see Appendix A).

Information on reinforcement value of activities was available on 30 of the 31 individuals.

Pre-Test Self-Efficacy: Specific self-efficacy was defined in the following way. Participants were asked to rate their confidence that they could resist the urge to binge/purge (1 = not at all confident, 9 = very confident) in 31 situations, encompassing four major areas: interpersonal, intrapersonal, food and activity-related. The situations were based on clinical experience, input from the EPQ responses and the addictive literature (Condiotte & Lichenstein, 1981). The standard set of situations were adopted from the list provided by Condiotte and Lichenstein (1981) which they used with smokers. Also, participants were allowed to generate activities of their own which were absent from the list and which were stressful or nonstressful for them (see Appendix B). Information on pretest self-efficacy ratings was available on 30 of the 31 participants.

Daily Monitoring: All subjects were asked to monitor four times per day for seven days the following items: level of self-efficacy to cope adaptively with daily stresses, levels of self-efficacy to resist the urge to binge, mood ratings, episodes of binge eating and the situations which precipitated it, daily activities and a reinforcement value rating of each, and stressful events. The monitoring times were 8 a.m., 12 noon, 4 p.m., and 8 p.m. (see Appendix E).

Procedures - Consultation

Twenty-two bulimic participants were screened after an initial consultation with the Eating Disorders Project at Michael Reese Hospital and Medical Center in Chicago, Illinois. After the consultation (approximately ninety minutes) the principal investigator introduced the project as an effective method for beginning the process of understanding the nature of the disorder for the individual. If they agreed to participate, they were asked to complete a consent form and fill out the pretest measures. The EPQ, a standard form for consultation at Michael Reese, was completed prior to the appointment. Following completion of these measures, the daily monitoring sheets were explained and subjects were asked if they had any questions. The importance of complete and accurate information recorded at the specified intervals was stressed. Participants were called approximately two to three times during the week to prompt them to record and to answer any questions or problems they might have. Finally, daily monitoring forms were gathered at the end of the seven day period, accompanied by an in-depth review of responses. At that time, appropriate recommendations for improving their situations were suggested and referral for treatment was made.

Procedures - Non-consultation

Four participants were recommend by their individual therapist, Dr. Marilyn Stuckey, director of the Eating Disorders Clinic at MRH. Dr. Stuckey administered the pretest scales and explained the monitoring procedures in a similar manner as that described above. Five

additional participants were recruited from a short-term group conducted from January 1983 to March 1983 by Dr. Stuckey and Dr. Mary Connors. Pretests and monitoring forms were administered in the first week of group treatment by the group leaders. These nine participants were also called at least twice a week by the project director to answer questions and prompt them to monitor.

Debriefing

All subjects were extensively debriefed and provided the rationale for the project. Individual monitoring forms were discussed at length to investigate specific daily events that affected predictor variables and binging behavior. The monitoring forms were used to help the bulimic individual better understand the specific antecedents and consequences of her behavior within a SLT framework and information was provided to help alleviate her distress. Individuals were referred for treatment if warranted.

Dependent Measures and Statistical Analyses

The primary method of analysis was a stepwise multiple regression to test if the SLT variables of reinforcement value, locus of control, self-efficacy, and general efficacy significantly predicted frequency of binging and purging behaviors. In addition, the other behavioral and situational variables such as frequency of past binge/purge episodes, moods, number of stressful events, and activity ratings were included to test if they, along with the SLT variables, significantly predicted bulimic behaviors. Also, the congruency between individuals

self-efficacy ratings to resist the urge to binge and/or purge in specific situations (measured during pre-test) and situations in which they felt the urge to binge and/or purge later in the monitoring phase was tested with Goodenough's goodness-of-fit chi-square analysis.

RESULTS

Binge Eating and Other Sample Characteristics

Participants reported a mean of 1.9 binge eating and purging episodes daily, the majority of which occurred between 4 p.m. and 8 p.m. This finding has also been reported in other studies, suggesting these women are similar to those presenting at other clinics for treatment. Situations within which they felt least confident to resist the urge to binge (1 = not at all confident, 9 = very confident; measured at pre-monitoring) involved feeling uncomfortable feelings such as frustration (mean = 2.2, s.d. = 1.35), upset (mean = 2.50, s.d. = 1.50) and tension (mean = 2.80, s.d. = 1.66). In contrast to this, participants felt more confident to resist the urge to binge eat or purge when feeling excited (mean = 5.90, s.d. = 1.97), when offered something "non-fattening" to eat (mean = 5.40, s.d. = 2.45), and when they had lost 2 pounds (mean = 5.50, s.d. = 2.27). In general, participants reported that they had difficulty resisting the urge to binge across a variety of situations. The strongest confidence rating was 5.90.

In addition, prior to monitoring, participants rated the degree of enjoyment derived from a variety of activities (1 = not at all, 9 = very much) such as binging, vomiting and being with other people. As seen in Table 6, participants only moderately enjoyed binge eating and enjoyed vomiting even less (means = 4.17 and 2.23, respectively). Other activities they reported to derive pleasure from were being with friends, going to a movie, eating in a restaurant and exercising, most of which are non-food related. These data indicate there is little

enjoyment derived from binge eating and purging, suggesting that the reinforcing value of these behaviors is a function of other properties. For example, given that they feel less confident to resist the urge to binge when feeling negative states, binging and purging may allow them to escape from these aversive feeling states. In effect, this escape may be negatively reinforcing. The monitoring data provides some support for this notion. That is, participants reported experiencing negative feelings such as loneliness, boredom, anger and frustration 83.7% of the time when they felt the urge to binge and/or purge. Additional information indicated that when they felt the urge to binge and/or purge they were alone (20% of the time), with family (12.9% of the time), and with others such as co-workers, female or male friends (15.1% of the time). The most frequent place within which they felt the urge to binge was at home (63.2%). Further, they reported watching T.V. (20.0%), eating (not binging) (12%), cooking (6.2%) and doing paper work such as homework (6.2%) when they felt the urge to binge or purge. Lastly, participants reported they were more likely to be thinking negative self-statements (e.g., "I blew it again," "I can't do anything right") 23% of the time, negative thoughts about their activities (e.g., "That test was awful") 10% of the time, thoughts of eating (e.g., "I want to eat") 8% of the time and thoughts of binging (e.g., "I want to binge") 6% of the time when they felt the urge to binge. These experiential data suggests that when participants felt the urge to binge eat or purge they were most likely to be at home alone, engaging in passive and/or food-related activities, experiencing

aversive feelings and thinking negative thoughts about themselves or their activities. These qualitative data provide valuable information on the context in which these women experienced an urge to binge eat and/or purge. It does not provide much information on what factors determined if they would or would not act upon that urge, however.

Prediction of Binge/Purge Behaviors (Group)

None of the participants provided 100% of the monitoring records, therefore missing data on different persons at different monitoring periods resulted in varying amounts of total observations for the separate analyses. Fifteen participants provided 75% to 99% completed records, six provided 50% to 74%, three gave 25% to 49% and another two participants completed less than 25% of the records. Two additional participants had at least one value missing on each of their recordings, eliminating them from the analysis.

A stepwise multiple regression procedure tested the ability of SLT components to predict binge and purge episodes (B/P). The following variables were used: specific self-efficacy to resist the urge to binge measured prior to the B/P episode (self-efficacy at time 1, abbreviated as SE/t), specific self-efficacy measured the previous day at the same time period as SE/t (SE/pd), general self-efficacy to handle stressful situations measured prior to the B/P episode (GE/t), general self-efficacy measured the previous day at the same time period as GE/t (GE/pd), locus of control, enjoyment of binging (RV/B) and enjoyment of purging (RV/P), and frequency of binges and purges during the previous time period (B/t-1, and P/t-1) and during the previous day in the same

time period as the current B/P episode (B/pd, P/pd). The frequencies of binge eating and purging episodes were included only in a second stepwise regression analysis for the group. These variables include measures of specific and general self-efficacy, perceived control over one's response-outcomes, reinforcement value of the behaviors, and past history of the frequency of these behaviors. Following is an example of measurements and times of assessment used to predict binges and purges between 4 p.m. and 8 p.m. on a specific day, Tuesday.

1. SE/t = SE measured at 4 p.m. on Tuesday
2. GE/t = GE measured at 4 p.m. on Tuesday
3. Se/pd = SE measured at 4 p.m. on Monday
4. GE/pd = GE measured at 4 p.m. on Monday
5. B/t-1 = number of binges between 12 p.m. and 4 p.m. on Tuesday
6. P/t-1 = number of purges between 12 p.m. and 4 p.m. on Tuesday
7. B/pd = number of binges between 4 p.m. and 8 p.m. on Monday
8. P/pd = number of purges between 4 p.m. and 8 p.m. on Monday
9. LOC, RV/B and RV/P = locus of control, reinforcement value of binging and purging measured pre-monitoring.

A total of 7 variables were used in testing the first prediction equation, including all of the above variables except frequency of binge eating and purging episodes. Results of the regression analysis revealed that SE/t, GE/pd and LOC best predicted frequency of binges and purges at a given time period (R-square = .27 for binging and purging) (see Table 8). That is, binging and purging were best predicted by a lowered self-efficacy rating measured at the beginning of the specific period of

interest (e.g., Tuesday at 4 p.m.), a lowered efficacy rating to handle stressful events measured the previous day at the time of day comparable to SE/t (e.g., Monday at 4 p.m.) and a general tendency not to feel in control of one's response-outcomes. This analysis used a total of 26 participants and 407 observation points measured over a period of five days (possible total of 20 observations per participant). It comes as little surprise that the same variables predict both binging and purging given the high correlation between these two behaviors ($r = .96$, $p < .0001$). Also, the participants were selected on the basis of the presence of a high frequency of purging behavior. This analysis confirms the hypothesis that components of SLT are predictive of binge eating and purging behaviors. The most important predictor was the individual's sense of efficacy specifically related to the binging behaviors. Of secondary importance was the individuals' perceived confidence to handle general stressful events the previous day. Finally, having a general tendency to feel in control of the consequences of one's responses, coupled with the efficacy ratings, best predicted binge/purge behaviors.

There is some suggestion in the literature that binging and purging behaviors occur at predictable times during the day (Johnson et al., 1983; Pyle et al., 1983). In order to test this hypothesis and to further explore the capacity of SLT to predict binging and purging, a second stepwise regression analysis was conducted which included the previous 7 variables plus frequency of binging and purging behaviors (B/t-1, P/t-1, B/pd and P/pd). Results of this analysis found that, indeed, the amount of variance accounted for in the dependent variables

was almost doubled when previous binging behaviors were included in the regression analyses (see Table 9). The combination of a high frequency of past binging, lowered self-efficacy measured prior to the binge episode, and a general tendency to not feel in control of one's response-outcomes predicts binge eating (R-square = .46) and purging (R-square = .47). This suggests that if one binges in the past, one is more likely to do so in the future. This does not appear to be an outstanding finding, except that given its relative weight in the prediction equation, this result has implications for targeting symptom reduction as an important treatment goal. Further, a cyclical patterns appears to occur over time such that binging can be expected to occur within a certain time period on a given day. If one can identify the vulnerable time periods for individuals, strategies for preventing a binge occurrence not only would facilitate breaking the cycle of binging but also foster an increased sense of self-efficacy that in fact one is capable of resisting that urge to binge when feeling most vulnerable. Bandura's research indicates that efficacy and behaviors co-vary such that as new behaviors are attempted, previously low ratings of self-efficacy increase. The current study has provided additional information to support this hypothesis in that self-efficacy predicts a behavioral event.

Additional regression analyses tested if including other behavioral and situational variables such as mood ratings, number of stressful events prior to a binge, and enjoyment of activities engaged in within the previous four hour period would increase the predictability of

binging and purging. These variables failed to significantly increase the amount of variance accounted for over and above the original SLT and frequency of binge episode variables (R-square = .49 and .51, respectively).

In summary, components of SLT are useful in predicting binging and purging episodes for the overall group. However, the reinforcement value of binging and purging obtained at pre-testing failed to significantly increase predictability. Methodological and conceptual issues that may explain this latter finding will be discussed further. However, the predictive models developed from the group of participants may not adequately describe and predict the behaviors of any one individual. Indeed, current psychological research is facing the task of accounting for individual differences in performance and treatment response when one would expect them to behave in a certain manner given findings of research using group data. In order to further investigate the possible presence of individual differences, the two group models for predicting binging and purging episodes were tested at an individual level of analysis.

Prediction of Binge/Purge Behaviors (Individual)

To further explore the utility of the SLT model of binging and purging (SE/t, GE/pd and LOC), it was applied individually to each of the 31 participants used in the group analysis. Participants were retained in this analysis if they had at least 12 observations. Three participants had less than the necessary 12 observations and an additional two participants had at least one missing value for each of

the observations, thus leaving 26 possible equations. LOC was not included in the individual analyses because it was measured only once for each indiviual, therefore it did not have any variance over time. The predictive ability of this model varied across the 26 participants, R-square ranging from .01 to .84. In addition to the variability in the usefulness of the model to predict behavior at an individual level, there were also differences in the relative importance of self- and general-efficacy in predicting behaviors across participants. As seen in Table 10, self-efficacy to resist the urge to binge and/or purge was more important than general-efficacy to handle stressful situations for 19 of the 26 participants. For the other 7 participants, the opposite was the case. While this suggests sources of heterogeneity in this population, it also supports the hypothesis that one's self-efficacy in performing a behavior is in fact important in the prediction process. These data, as one will recall, are repeated over time on the same individuals and do not meet the criteria for using a time series analysis as a method of statistically controlling for the effects of repeated measures on the same observation. Therefore, there are methodological difficulties in using the p value as a valid criterion for accepting or rejecting the statistical significance of any of the equations. However, in order to assess the meaningfulness of the 26 equations (one would surely agree that an R-square = .01 is not predicting much), a median split on the 26 equations was done such that those falling at or above the median were considered to be useful prediction equations (Fit group) and those below the median were not

considered useful predictors (Nofit group). Therefore, 13 subjects fell into each category with a range of R-square = .86 to .31 for the Fit group and R-square = .23 to .01 for the Nofit group. The equations for the Fit group are the only ones found in Table 10.

Next, the second regression model that predicted binging and purging which included B/t-1, B/pd, SE/t, and LOC was applied to the 26 participants to further investigate possible individual differences and to identify sources of heterogeneity. Again, LOC was not included at this level of analysis for the same rationale as presented above. Only 22 participants were used in this analysis due to missing data (n = 5) or the number of observations for a participants were less than 12 (n = 4). Again, a median split procedure divided the group into two groups, Fit and Nofit, with the regression analyses of group Fit described in Table 11. However, when discussing differences between the two groups, reference is made only to the two groups derived from testing the first group model (SE/t, GE/pd, and LOC). As seen in Table 11, lowered self-efficacy to resist the urge to binge was the only consistent predictor of binging and purging behavior. Past binging was important in the prediction process for four of the individuals, but even then SE/t was necessary, in combination with binging, to best predict behavior and was always the most important of the predictor variables. Therefore, both the group and individual data suggest SLT variables are useful predictors of binging and purging. While the relative importance of these variables varies across individuals, the impact of lowered self-efficacy to resist the urge to binge and/or purge at any point in time is the important predictor of what one may do in the future.

In order to investigate possible sources for what might account for the wide range of variability in the usefulness of the group models to predict behavior for each individual, the two groups, Fit and Nofit, were compared on a number of indices using t-tests and chi-square analyses. There were virtually no differences on variables such as self-efficacy, frequency of binging and purging, general-efficacy and locus of control. Examining differences on demographic variables such as weight, age, duration of the eating problem, living situation and work situation, revealed that the only significant difference was that the Fit group felt that their eating problem interfered more with their work than did the Nofit group (1 = not al all, 4 = very much) (means = 1.75 and 1.22, respectively), $t\ (1.15) = 2.41$, $p < .05$. This study was not developed to address these questions. Indeed, while the findings of individual differences in the degree of fit of a prediction model are not unexpected, the consistency and robustness of the individual differences was somewhat of a surprise. Therefore, additional research will need to concern itself with answering the questions raised by the current study. Post-hoc analyses (reported below) using a cross-lag panel analysis to address the issue of causality, may shed some light on sources of individual differences in this population.

Relationship Between Pre-monitoring Self-efficacy and Situations of Binge/Purge Episodes

Another major question of this study was the possible relationship between pre-monitoring self-efficacy ratings to resist the urge to binge and/or purge in a number of situations and whether individuals felt the

urge to binge/purge in similar situations during the monitoring period. Situations on the pre-monitoring questionnaire were placed into four categories: interpersonal, intrapersonal, food and activity related. Participants were asked to monitor what they were doing and thinking when they felt the urge to binge and/or purge. These were then categorized into the four categories previously described. Frequency counts were then made of the number of times they felt the urge to binge when in situations related to these four catgories. A Goodenough goodness-of-fit chi-square analysis found no relationship between pre-monitoring self-efficacy ratings and frequency of situations within which they felt the urge to binge and purge. This was the case when the four categories were tested separately for activities and thoughts and when they were collapsed across activities and thoughts. The discrepancy between these data and the results for Condiotte and Lichenstein (1981) will be discussed later.

Post-hoc Analyses

One of the advantages of these data is the capacity to explore the question of causality. Using cross-lag panel analyses, causality between two variables, self-efficacy and binging, was assessed by testing for significant differences between self-efficacy measured at a specified time (SE/t) and binging within the next four hours (B/t+1), compared to the relationship between B/t and SE/t+1. The first correlation between self-efficacy and binging will be designated as SE_B and the second correlation will be designated as B_SE, indicating the direction of "causality." The analysis across subjects found a stronger relationship

between SE_B than B_SE ($r = .39$, $r = .17$, respectively, $p < .05$). This indicated for the group as a whole, expectancies of behavior affect subsequent behaviors more than behavior affects subsequent expectancies.

However, individual variability exists in these relationships just as it did with the SLT regression models. Of the 21 subjects who had at least one significant correlation between SE_B and B_SE only 10 showed a statistically significant difference between the two correlations; for six of the participants the SE_B correlation was greater than the B_SE correlation and for four the opposite was the case. (See Table 12 for individual correlations.)

These data suggest another source of variation in this sample is that for some individuals cognitions affect subsequent behaviors while for others the opposite is true. The SLT theoretical model postulates a feedback loop from expectancies to behaviors to subsequent expectancies such that adjustments are made in expectancies and behaviors based on information feeding back into this loop. These data suggest that for some participants portions of the feedback loop are more important than others. This may have implications for the fit of a predictive model when the direction of prediction is from expectancies to behavior. Indeed, if it is the case that this directional relationship is not important for some individuals and may even be important only in the opposite direction (behaviors to expectancies), then the predictive models for these individuals would not be useful. These findings, while tentative at best, are provocative in that they suggest causation between expectancies and behaviors may differ in directionality depending on the

individual. However, it is unclear at this time what, if any, factors may have helped shape the directionality.

In summary, results of the current study indicate that components of SLT predict binging and purging behaviors for this group of women who engage in repeated binging and purging. However, heterogeneity in this sample is apparent in that the predictive models failed to significantly predict binging and purging for all participants. Further, variability is also present within the group of participants for whom the model predicts behaviors. These data suggest that self-efficacy ratings given during a consultation may not be related to situations in which the participants feel the urge to binge and purge at a later data. This may be due to difficulties in methodological and questionnaire development. Finally, post-hoc analyses suggest that for the group as a whole self-efficacy expectancies affect current behavior more than current behavior affects future expectancies. Even here, variability exists to the extent that the complete feedback loop was not applicable to each individual. Future research should replicate, cross-validate and expand these findings in order to clarify some of the issues raised by the current study.

DISCUSSION

Social learning theory states that behavior is a function of the following factors: (1) the perceived valence of response-outcomes, (2) expectancy that outcomes will follow upon certain responses and (3) the expectancy that one can perform the behaviors required to bring about the expected outcomes. The results of the current study indicate that two of these three components of SLT, plus frequency of past behaviors, best predict future behavior. More specifically, binging and purging behaviors by women presenting at a clinic for difficulties with bulimia can be predicted on a period to period basis provided one has information on past binging behavior, self-efficacy levels and locus of control. The combination of predictor variables indicate that (1) binging within the past four hours and also at the same time on the previous day, (2) feeling a lowered confidence to resist the urge to binge within the next four hours and (3) having a generalized expectancy that response/outcomes are due more to luck or fate than one's ability or effort are predictive of binge and purge episodes. Because binging and purging were highly correlated and identical predictors accounted for both criteria, binging behavior will be used as the behavioral referent for the remainder of the discussion.

These data suggest that individuals themselves can predict when they might binge in the near future. In doing so, they utilize information about past behavior. This is just as Bandura would predict. Furthermore, the women who have a generalized expectancy that they do not effect the occurrence of response-outcomes, at least with their

ability and/or effort, may place a heavier emphasis on their past behaviors in similar situations when making judgments about future behavior. Perhaps the effective components of cognitive/behavioral treatments with these women is the combined encouragement of reduction of binge eating and vomiting accompanied by a change in attribution of who is in control of their behavior change. Perhaps, if they see via monitoring, a change in binge eating and attribute it to their own ability and effort, then treatment may be more successful. Current treatment studies have not conceptualized treatment from a social learning and self-efficacy perspective, although they do discuss behavior change and relapse training, and challenge assumptions related to eating, body image and self-esteem (Connors, Johnson, & Stuckey, 1984; Fairburn, 1982). It is this author's belief that future research should develop strategies and explain results within a theoretical perspective and in doing so, facilitate consistent operational definitions of constructs, hypotheses testing and replication of research.

The role of reinforcement value or valence of the response-outcome is unclear at this point. Neither reinforcement value of binging nor reinforcement value of purging were predictive of these behaviors. However, in the current study valence was defined as enjoyment of binging and enjoyment of purging both measured prior to monitoring. This definition was probably not an adequate measure of the reinforcing components of the behaviors. This hypothesis is supported by the low ratings given "enjoyment" of binging and purging (4.17 and 2.23, respectively) when measured in the pre-monitoring period. Binging was

rated between "a little" and "somewhat enjoyable" and purging was rated between "not at all" to "a little enjoyable," suggesting that this operational definition of reinforcement value was certainly failing to measure other sources of reinforcement that the behaviors hold for the individual. Phares (1977) conceptualizes maladaptive behaviors in SLT as avoidant that is, when an individual places a high value on a particular need area (e.g., need not to feel frustrated, fat and/or lonely) but has a low expectancy that more desirable behavior will lead to the need satisfaction (e.g., expressing oneself, taking a warm bath, contacting a friend), then he/she will engage in avoidant behaviors (e.g., binging, purging). The descriptive qualitative data which assessed conditions under which participants felt the urge to binge, lend support to this explanation. When the women felt the urge to binge and/or purge, they were likely to be thinking negative thoughts about themselves and their daily activities, were alone and engaged in some type of passive task (e.g., watching television). Participants' need not to experience negative feelings about themselves was met by binging and purging. They did not have more adaptive coping skills to deal with their aversive feelings. It will be the task of future research to quantify the positive valence of negatively reinforced behaviors such as binge eating and purging.

Bandura (1977) also incorporates the context within which behaviors occur when attempting to predict any behavior. The current study attempted to quantify that context by including measures of stressful events, mood levels, and an overall enjoyment level of daily activities.

While this information increased the capacity to predict binging, it was not a statistically significant increase. For the purpose of prediction at a group level of analyses, it may not be necessary to know this information. However, this study was also a clinical one in nature and, in that respect, examining and discussing with each participant the events surrounding a binge and their meanings for each person was a tremendous help in understanding each individual's environmental, cognitive, and social context.

The monitoring booklets provided information on individual differences in cognitions, environmental and social interactions. This individual variability was also tested using the group-derived SLT predictor models described above. That is, previous binging behaviors, self-efficacy ratings and locus of control as predictors of binging and purging were applied at an individual level of analysis, yielding 26 possible prediction equations. The heterogeneity was apparent at two levels of analysis: (1) the degree to which the models predicted binging and purging for each individual and (2) with those for whom the models were useful, the heterogeneity in the relative weight of the predictors. However, given this heterogeneity, self-efficacy to resist the urge to binge and purge was the only consistent predictor at the individual level of analysis. This suggests that treatments targeting the increase of self-efficacy and emphasizing the cognitive/behavioral feedback loop would be helpful, for at least some of these persons. However, the results also suggests that the direction of "causation" may not always be from cognitions to behaviors. Individual differences

in these areas should be considered in the process of assessment and treatment.

Bandura (1982) alludes to the presence of individual differences when he states that self-efficacy ratings are not always an isomorphic reflection of past performance and describes for one subject how efficacy ratings did not change even as performance mastery increased. However, he then notes that an additional success produced maximal self-efficacy, as if assuming that there is in fact always a causal connection between the two. Further, social learning theory posits a feedback loop from behavior to expectancy to behavior. The ideal condition could be one in which the interaction between behaviors and cognitions occurring in an environmental and social context provides information for the individual such that future behavior and expectancies could be modified based on past experiences. This is seen in the simple learning of a child who sees and touches a red hot stove and feels pain. On subsequent encounters with a red hot burner the child expects that if he/she touches it he/she will feel pain. The research on self-efficacy appears to make a basic assumption that this feedback loop is "intact" for all participants. The current study suggests that this may not always be the case, at least for bulimic women who repeatedly binge and vomit. This study found for 31% of the participants, efficacy ratings were related to subsequent behaviors, while for another 27%, behavior affected subsequent efficacy ratings. For these 58% of the participants, there seemed to be a lack of feedback to complete the loop (to later efficacy ratings and behaviors, respectively). Only 7% indicated

relationships between expectancies and behaviors that suggested a completed feedback loop and there was no relationship for 35% of the participants. This finding suggests several additional questions such as: (1) what differentiates these groups with respect to their bulimia? (2) Are there differences in prognosis? (3) Are different treatment approaches warranted? and (4) Do these differences extend to other expecancy/behavioral contexts aside from bulimia?

Research in bulimia appears to be moving away from the psychodynamic and toward a cognitive/behavioral perspective in which self-efficacy plays a major role. Such a trend has already begun in the area of relapse training for bulimics in short-term behavioral groups. Drop-outs and treatment "failures" in these groups may in part be because the relationship between expectancies and behaviors have either a less and/or a different meaning for some of the clients.

One alternative theoretical explanation that utilizes cognitive constructs of expectancy to explain binge eating behavior is that of the counter-regulatory theory. Developed by Polivy and her colleagues and drawing upon research with obese persons and Schacter's and Rodin's work with externality in the obese, the theory states that binge eating is a response to the disinhibiting effect of a stressor such as emotional distress, eating a "forbidden" food and/or consuming an alcoholic beverage. It assumes that the dietary restraint and caloric deprivation bulimic women experience sets them up for binging if something occurs to upset the state of equilibrium. The theory was developed from

research with obese persons and tested in the laboratory with college students (Herman, Polivy, & Walsch, 1980; Herman & Polivy, 1980; Rodin, 1978). Since the early work additional evidence has accumulated on the effects of starvation on the physiological and psychological aspects of eating and weight gain/loss. The current study was not designed to test the counter-regulatory theory but it does provide information that fails to support it. Participants were asked to monitor moods and number of stressful events every four hours. It would be expected that lowered moods and/or higher number of stressful events would predict a binge and/or purge episode. The data did not statistically substantiate this hypothesis. The relationship between mood ratings and binging ($r = -.30$) and number of stressful events and binging ($r = .26$), while significant, were insufficient to add to the prediction of binging above and beyond the SLT variables. However, the descriptive information gathered on the monitoring forms concerning feelings, thoughts, activities and setting present when the urge to binge was experienced supports, in some ways, the counter-regulatory hypothesis that feelings of anxiety and/or pain may act as disinhibitors and facilitate a binge episode. Future research should more carfully measure these precursors because their ineffectiveness in the prediction equation may be an artifact of the measurement and statistical process. In addition, having participants monitor food intake along with other behavioral and cognitive variables would test even futher the counter-regulatory theory. Unfortunately, the current project did not include such information.

The counter-regulatory theory focuses attention on the physiological limitations described by set-point theory and the effects of dieting, and suggests strategies to reduce binging. This approach complements SLT which focuses on more general expectancies and behaviors. Women who repeatedly binge and vomit frequently present clinically as having difficulties with cognitive distortions, feelings of ineffectiveness and low self-esteem, and interpersonal relationships; problems that extend beyond dieting and binge eating. These two perspectives, one that includes physiological and psychological effects of restrained eating and one that includes expectancies and behaviors in a social and environmental context potentially offer a comprehensive explanation of bulimic behavior. Both theories have also been supported by research data. Additional research along these lines which attempts to incorporate useful principles from both theoretical perspectives will be needed in the future to expand the existing body of knowledge of bulimia.

There are several considerations that should be kept in mind when interpreting these data. This study was designed to be exploratory given that self-efficacy has not been investigated with bulimics heretofore. Nor has a sequential analysis of cognitions and binging behavior been pursued in previous research. Because the data are intra-individual in nature the measures are correlated, rendering interpretation of the rejection values risky, at best. Therefore, the size of the correlations and amount of variance accounted for by the predictor variables is more important. In addition, the data are self-report and subject to all

difficulties of such data; reactivity with possibly an exacerbation or reduction of behaviors, fulfillment of the experimenter's expectancy, unreliability, and misrepresentation of data in order to please the interviewer/experimenter. The issue of reliability is an especially sensitive one with research on binge eating. It is a secretive behavior and one the women are ashamed to discuss. It ws believed that using an independent assessment of reliabiity may have disrupted the assessment process. Therefore, the experimenter must accept their report of binging and purging as representative. During debriefing, participants who reported that monitoring either increased or decreased their behaviors, also reported that the reactive effects had subsided by the second or third day.

If the frequency of binging was affected by the monitoring process, it is possible that the cognitive and behavioral feedback patterns were also atypical. However, these possibilities are always the case with self-report data, because self-report requires the person to become aware of his/her thoughts, feelings, and behaviors. The potential difficulties are inherent in the methodology and should be considered when interpreting the data.

In addition to methodological considerations given self-report data, the current study may have failed to design the appropriate measures and assessment process to investigate the relationship between pre-monitoring self-efficacy ratings and vulnerable situations in which participants later felt the urge to binge and purge. Two difficulties seem apparent. First, the situation-specific questionnaire was not readministered during

monitoring thereby reducing the likelihood of a high correlation. Further, the four categories (interpersonal, intrapersonal, food and activity) were general groupings made by the investigator and may have had different meanings for the participants during the two assessment stages. Finally, the pre-monitoring questions asked participants to rate their degree of confidence to resist the urge to binge/purge in specific situations. In constrast, information gathered in the monitoring phase tabulated the frequency of situations within which they felt the urge (not resisted the urge) to binge/purge. The difference in wording may have contributed to the measurement error and obscured a relationship. In replicating the study, the specific-situation quesionnaire should be readministered in the monitoring phase with participants endorsing those situations within which they binged. This would also more closely replicate the methodology of Condiotte and Lichenstein (1981) who found a relationship between ratings of self-efficacy to resist smoking and later situations within which a relapse of smoking occurred.

In summary, the current study has accomplished far more than it originally planned. It has empirically demonstrated that components of social learning theory are in fact predictive of bulimic behaviors. Past behavior as well as expectancies of future behavior are useful predictors of what one may do. In addition, the heterogeneity of these bulimic women had been documented. For example, individuals may differ in the meaningfulness of the expectancy/behavior/expectancy feedback loop. This has implications for the understanding and treatment of

eating disorders and perhaps other behavioral difficulties as well. Perhaps individuals persistently engage in physically and psychologically harmful behaviors because for some persons the consequences of the behaviors do not impact upon their expectancies of future behaviors. For other individuals, what they expect to do is independent of how they actually behave. If the feedback loop of expectancies and behaviors is important in the process of behavior change, then the current findings suggesting that for some individuls the components of this loop are independent, may explain why behavior change for some persons is a long and difficult process at best.

Given this, treatment approaches should tailor themselves to the needs of the client. For example, a cognitive/behavioral approach emphasizing the interactive role of expectancies and behaviors would have little meaning for those for whom there is no relationship between expectancies and behaviors. Perhaps initial stages of treatment should assess individual differences in this regard and assist the individual in realizing and acting upon the interactive relationship of expectancies and behaviors. In addition, it would be interesting to assess if those individuals who benefit the most and more quickly from a cognitive/behavioral/expectancy treatment program are those for whom there is a functional expectancy/behavioral/expectancy feedback loop. Or perhaps for these persons the lack of a feedback loop is limited to binge eating and is functional in other areas of their lives such as work, interpersonal relationships and feelings about themselves. These are speculative hypotheses at this point and await further empirical investigtion.

Additional research should undertake as its task to explore and enhance the current body of knowledge of social learning theory and avoidant behaviors such as binging and vomiting.

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APPENDIX A

ACTIVITIES

Please rate the following activities using the scale provided to indicate how much you enjoy engaging in them.

Being at work 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Expressing your feelings 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Being at school 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Binge eating 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Being with friends 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Exercising 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Being alone 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Vomiting 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Being with family 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Eating in a restaurant 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

Going to a movie

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

Please list any other activities you find particularly enjoyable or unenjoyable which are not on the above list. Rate them according to scale.

_____

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

_____

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

_____

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

APPENDIX B

SPECIFIC SITUATIONS

Using the scale below please indicate for each situation, how confident you feel you can resist the urge to binge in or after encountering the situation.

When you feel impatient

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you feel restless

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you want to relax

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you see others eating fattening foods

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you want to concentrate

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you feel excited

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you feel frustrated

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you are worried

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you feel upset

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all — A little — Somewhat — Quite a lot — Very much

When you feel tense

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you feel angry

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you want something in your mouth

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you have not eaten breakfast

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you feel "something" yet cannot tell what it is

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you have not eaten lunch

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you feel anxious

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you want to reward yourself

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you want to keep yourself busy

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When someone offers you something "fattening" to eat

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you feel embarassed or uncomfortable around others

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you feel "fat"

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When someone offers you something "non-fattening" to eat

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you have had an argument with your family

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you are at your parents' home

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

After you step on the scales and you have gained 2 lbs.

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

After you step on the scales and you have lost 2 lbs.

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

When you have had an argument with a friend

1.....2.....3.....4.....5.....6.....7.....8.....9

Not at all | A little | Somewhat | Quite a lot | Very much

Indicate other situations that you feel applicable to how confident you feel you can resist the urge to binge in or after encountering the situation.

_____ 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

_____ 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

_____ 1.....2.....3.....4.....5.....6.....7.....8.....9
Not at all A little Somewhat Quite a lot Very much

APPENDIX C

L-O-C QUESTIONNAIRE

Instructions

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of sentences lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as your are concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. We are interested in your own personal belief, so answer these items carefully but do not spend too much time on any one item. For each item circle the letter or the statement which you believe to be most true. In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you are concerned. Also try to answer each item independently when you are making your choices: do not be influenced by your previous choices. BE SURE TO ANSWER ALL OF THE ITEMS.

1. a. Children get into trouble because their parents punish them too much.

   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.

   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons we have wars is because people don't take enough interest in politics.

   b. There will always be wars no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.

   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair is nonsense.

   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.

   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don't like you.

   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.

   b. It is one's experience in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.

   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.

    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

    b. Getting a good job depends mainly of being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.

    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain I can make them work.

    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad luck anyhow.

14. a. There are certain people who are just no good.

    b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.

    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who get to be the boss often depends on who was lucky enough to be in the right place first.

    b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.

    b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    b. There is really so such thing as "luck."

19. a. One should always be willing to admit mistakes.

    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.

    b. How may friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.

    b. Most misfortunes are the result of a lack of ability, ignorance, laziness or all three.

22. a. With enough effort we can wipe out political corruption.

    b. It is difficult for people to have such control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.

    b. There is a direct connection between how hard I studied and the grades I got.

24. a. A good leader expects people to decide for themselves what they should to.

    b. A good leader makes clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.

    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.

    b. There's not much use in trying to hard to please people; if they like you, they like you.

27. a. There is not too much emphasis on athletics in high school.

    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.

    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.

    b. In the long run people are responsible for bad government on a national as well as local level.

APPENDIX D

EDI

The Easting Disorders Inventory is copywritten by Dr. David Garner and can be obtained from him by corresponding with him at the Toronto General Hospital, Department of Psychiatry, Toronto, Canada.

APPENDIX E

MONITORING FORM

ID# _____ Date _____

8-9 a.m. 12-1 p.m. 4-5 p.m. 8-9 p.m. (CIRCLE)

Rate how confident you are that you can:

Handle any stressful situation within the next four hours:

1.....2.....3.....4.....5.....6.....7.....8.....9				
Not at all confident	A little confident	Somewhat confident	Quite Confident	Very Confident

Resist the urge to binge within the next four hours.

1.....2.....3.....4.....5.....6.....7.....8.....9				
Not at all confident	A little confident	Somewhat confident	Quite Confident	Very Confident

Rate your feelings on each dimension below as you feel right now.

Alert	00	0	o	.	-	.	o	0	00	Drowsy
Not Angry	00	0	o	.	-	.	o	0	00	Angry
Adequate	00	0	o	.	-	.	o	0	00	Inadequate
Not Guilty	00	0	o	.	-	.	o	0	00	Guilty
Not Stressed	00	0	o	.	-	.	o	0	00	Stressed
In Control	00	0	o	.	-	.	o	0	00	Not in Control

Number of binge and/or purge episodes since last report:

Binge _____ Purge _____

Time of day of binge and/or purge episode since the last report: (first if more than one)

Binge _____ Purge _____

Duration of binge and/or purge episode since last report: (first if more than one)

Binge: hrs _____ min _____ Purge: hrs _____ Min _____

When you felt the urge to binge and/or purge: (check all that apply)

Who were you with:

Friend(s) Male(s) _____ Female(s) _____

Boyfriend _____ family member(s) _____

co-worker(s) _____ alone _____

Where were you? _____

What were you doing? _____

What were you feeling? _____

What were you thinking? _____

What were the 2 major activities you engaged in since the last report and rate how enjoyable they were.

_____ 1.....2.....3.....4.....5.....6.....7.....8.....9

Not enjoyable	A little enjoyable	Somewhat enjoyable	Quite enjoyable	Very enjoyable

_____ 1.....2.....3.....4.....5.....6.....7.....8.....9

Not enjoyable	A little enjoyable	Somewhat enjoyable	Quite enjoyable	Very enjoyable

List the stressful events occurring since the last report.

_____

_____

_____

TABLE 1

Principles of Social Learning Theory

1. Reinforcement Value (Law of Effect)--behavior that has been reinforced in the past is likely to occur in the future.

2. Expectancy--the expectancy that an outcome will follow a particular response.

3. Self-efficacy--the expectancy that one has the ability to perform the behaviors that will result in the outcome.

$B(p) = f(R(v) + \text{Expectancy} + \text{Self-efficacy})$

Note: Not necessarily an additive model--used as only an illustration.

TABLE 2

Independent Variables

1. Reinforcement Value -

   Binge eating--Rate how much you enjoy engaging in binge eating.

   Vomiting--Rate how much you enjoy engaging in vomiting.

   1 = not at all
   3 = a little
   5 = somewhat
   7 = quite a lot
   9 = very much

2. Expectancy--Rotter's Locus of Control Scale--scored in the External direction.

3a. Self-efficacy--Rate how confident you are that you can resist the urge to binge/purge within the next four hours.

3b. General-efficacy--Rate how confident you are that you can handle any stressful situation within the next four hours

   1 = not at all confident
   3 = a little confident
   5 = somewhat confident
   7 = quite confident
   9 = very confident

4. Contextual Factors

   a. number of stressful events occurring in the previous four hours

   b. composite mood score--composed of adequate/inadequate, not angry/angry, alert/drowsy, in control/not in control. Scaled on a nine point scale in the direction of positive mood states.

   c. Enjoyment level of the two major activities engaged in within the previous four hours. Scaled on a nine-point scale in the direction of enjoyment.

TABLE 3

Sample Demographics

	Mean	(n)	SD
Description			
Age	25.8	(31)	5.8
Height	64.7	(29)	2.6
Current Weight	121.2	(28)	20.7
Lowest Weight	100.4	(29)	16.2
Highest Weight	141.6	(28)	29.9
		%	(n)
Education			
College/Grad. School		40.0	(10)
Some College		44.0	(11)
High School		8.0	(2)
Some High School		8.0	(2)
Religion			
Jewish		16.0	(4)
Catholic		48.0	(12)
Protestant		32.0	(6)
None		4.0	(1)
Living Situation			
Alone		22.6	(7)
Parents		35.4	(11)
Husband		25.8	(8)
Other		9.7	(3)
Dorm		6.5	(2)

TABLE 4

Family Demographics

	Mean	(n)	SD
Description			
Mom's Age	56.0	(20)	(6.9)
Dad's Age	59.1	(18)	(7.8)
# Siblings	2.5	(23)	(1.6)
		%	(n)
Education			
Mom			
College/Grad. School		50.0	(10)
Some College		20.0	(4)
High School		25.0	(5)
Some High School		5.0	(1)
Dad			
College/Grad. School		65.0	(13)
Some College		20.0	(4)
High School		5.0	(1)
Some High School		10.0	(2)
History of Psychological Difficulties			
Alcoholism			
Mom		15.4	(4)
Dad		34.6	(9)
Other		19.2	(5)
Depression			
Mom		15.4	(4)
Dad		15.4	(4)
Other		11.5	(3)
Weight/Food Problems			
Mom		29.6	(8)
Dad		18.5	(5)

TABLE 5

Binge Eating and Purging Behaviors

	%	(n)
Frequency Binge Eating		
More than daily	35.5	(11)
Daily	29.0	(9)
Three/times/week	35.5	(11)
Frequency Vomiting		
More than daily	35.5	(11)
Daily	22.6	(7)
Three times/week	41.9	(13)
Frequent Laxative Use		
More than daily	3.2	(1)
Daily	3.2	(1)
Three times/week	0.0	(0)
Weekly	0.0	(0)
Monthly	9.7	(3)
Rarely/Never	83.9	(26)
Consumption of High Caloric Food	100.0	(31)
Feeling Out of Control		
Always	64.5	(20)
Often	22.6	(7)
Sometimes	12.9	(4)
Eating Very Rapidly		
Always	32.3	(10)
Often	45.1	(14)
Sometimes	22.6	(7)
Eats Large Amounts		
Always	45.1	(14)
Often	41.9	(13)
Sometimes	13.0	(4)
Precipitant		
Dieting	41.7	(10)
Friend's Advice	8.3	(2)
Anorexic Episode	20.8	(5)
As an Escape	16.7	(4)
Keep Weight Down	12.5	(3)

TABLE 6

Means and Standard Deviations of Reinforcement Value--Pre-test

	Mean	SD
Being at work	5.83	2.76
Expressing your Feelings	6.07	1.98
Being at School	5.43	2.67
Binge Eating	4.17	2.89
Being with Friends	7.37	1.61
Exercising	6.83	1.95
Being Alone	5.70	2.12
Vomiting	2.23	1.89
Being with Family	5.77	2.50
Eating in a Restaurant	6.50	2.23
Going to a Movie	7.47	1.28

TABLE 7

Means and Standard Deviations of Self-efficacy to Resist the Urge to Binge in Specific Situations--Pre-test

	Mean	SD
When you feel impatient	3.73	1.74
When you feel restless	3.37	1.87
When you want to relax	4.77	2.49
When you see others eating "fattening" foods	4.70	2.08
When you want to concentrate	5.00	2.69
When you feel excited	5.90	1.97
When you feel frustrated	2.20	1.35
When you are worried	3.00	1.96
When you feel upset	2.50	1.50
When you feel tense	2.80	1.66
When you feel angry	3.10	2.00
When you want something in your mouth	3.17	2.23
When you have not eaten breakfast	4.77	2.61
When you fell "something" yet cannot tell what it is	3.47	2.29
When you have not eaten lunch	4.43	2.50
When you feel anxious	3.27	2.03
When you want to reward yourself	4.80	2.52
When you want to keep yourself busy	4.70	2.09
When someone offers you something "fattening" to eat	4.77	2.05

TABLE 7 (Continued)

	Mean	SD
When you feel embarassed or uncomfortable around others	5.00	2.49
When you feel "fat"	3.60	2.51
When someone offers you something "non-fattening to eat	5.40	2.45
When you have had an argument with your family	3.10	2.00
When you are at your parents' home	3.67	2.62
After you step on the scales and you have gained 2 lbs.	3.30	2.12
After you step on the scales and you have lost 2 lbs.	5.50	2.27
When you have had an argument with a friend	3.60	1.73

TABLE 8

Prediction of Binging/Purging Using SLT Variables--Across all Subjects

Criterion	R-Squared	Predictors	Beta
Binge eating	.15	SE/t	-.35
	.25	Locus of Control	.30
	.27	GE/pd	-.13
Purging	.13	SE/t	-.33
	.25	Locus of Control	.34
	.27	Ge/pd	-.12

TABLE 9

Prediction of Binging/Purging Using SLT Variables--Across all Subjects
Binge/Purge Behavior Included

Criterion	R-Squared	Predictors	Beta
Binge eating	.35	Binge/pd	.42
	.43	Binge/t-1	.21
	.45	SE/t	-.20
	.46	Locus of Control	.11
Purging	.35	Binge/pd	.42
	.43	Binge/t-1	.22
	.45	Locus of Control	.14
	.47	SE/t	-.17

NOTE: (t, t-1) = measured previous time period.
(/pd) = measured previous day at the same time period.

TABLE 10

Prediction of Binge Eating/Purging Using SLT--Within Subject

Sub #	Criterion	R-Square	Predictors	Beta
03)	Binge and Purge			
		.44	SE/t	-.66
		.52	GE/pd	-.28
05)	Binge and Purge			
		.23	GE/pd	.50
		.37	SE/t	-.37
09)	Binge and Purge			
		.64	SE/t	-.68
		.76	GE/pd	-.37
10)	Binge and Purge			
		.57	SE/t	-.81
		.65	GE/pd	.28
12)	Binge and Purge			
		.24	GE/pd	-.42
		.38	SE/t	-.38
16)	Binge			
		.16	SE/t	-.45
		.33	GE/pd	-.32
16)	Purge			
		.25	SE/t	-.54
		.35	GE/pd	-.32
18)	Binge			
		.30	GE/pd	.55
		.32	SE/t	-.13
18)	Purge			
		.21	GE/pd	-.38
		.35	SE/t	-.37
19)	Binge			
		.34	SE/t	-.57
19)	Purge			
		.18	SE/t	-.42
		.31	GE/pd	

TABLE 10 (Continued)

Sub #	Criterion	R-Square	Predictors	Beta
25)	Binge			
		.84	SE/t	-.93
		.86	GE/pd	.13
25)	Purge			
		.64	SE/t	-.81
26)	Binge			
		.29	SE/t	-.54
		.31	GE/pd	-.16
26)	Purge			
		.18	SE/t	-.44
		.23	GE/pd	-.23
27)	Binge and Purge			
		.33	SE/t	.64
		.37	GE/pd	-.22
29)	Binge			
		.69	SE/t	-.87
		.70	GE/pd	.11
29)	Purge			
		.75	SE/t	-.90
		.76	GE/pd	.10
30)	Binge and Purge			
		.41	SE/t	-.62
		.47	GE/pd	.25

TABLE 11

Prediction of Binge Eating/Purging Using SLT--Within Subject and Binge/Purge Behaviors Included

Sub #	Criterion	R-Square	Predictors	Beta
03)	Purge			
		.35	SE/t	-.63
08)	Binge			
		.17	SE/t	-.41
09)	Binge			
		.53	SE/t	-.97
		.64	Binge/t-1	-.35
09)	Purge			
		.64	SE/t	-.97
		.73	Binge/t-1	-.35
13)	Binge and Purge			
		.20	SE/t	-.85
		.47	Binge/pd	-.65
15)	Binge and Purge			
		.21	SE/t	-.46
16)	Binge			
		.16	SE/t	-.40
16)	Purge			
		.25	SE/t	-.50
25)	Binge			
		.84	SE/t	-.92
25)	Purge			
		.64	SE/t	-.80
26)	Binge			
		.28	SE/t	-.53
26)	Purge			
		.21	Binge/pd	-.20
27)	Purge			
		.33	SE/t	.39

TABLE 11 (Continued)

Sub #	Criterion	R-Square	Predictors	Beta
29)	Binge			
		.69	SE/t	-.83
29)	Purge			
		.75	SE/t	-.86
30)	Binge and Purge			
		.42	SE/t	-.53
		.55	Binge/t-1	-.38

TABLE 12

Comparison of Correlations between Self-efficacy Ratings and Binge Eating Episodes

Self-efficacy/t	r	Binge/t+1	Binge/t	r	Self-efficacy/t+1	
All		-.39**		-.17		
Sub #						
01)		.19		-.51*		(Nofit)
03)		-.61*		-.02		(Fit)
05)		-.38		.09		(Nofit)
06)		-.39		-.51*		(Nofit)
09)		.01		-.06**		(Fit)
10)		-.70*		-.02		
11)		-.55		-.24		
12)		-.37		-.48		
13)		-.37		.01		(Fit)
14)		-.23		-.66		(Nofit)
15)		-.43		-.60		(Fit)
16)		-.45		-.43		(Fit)
17)		-.10		-.42		
19)		-.58*		.17		
20)		-.24		-.88**		(Nofit)
24)		-.21		-.51		
25)		-.90**		-.40		(Fit)
26)		-.54		-.27		(Fit)
28)		-.39		-.52		(Nofit)
29)		-.81**		.23		(Fit)
30)		-.68**		.26		(Fit)

*$p < .05$

**$p < .01$

Fit--Subject belongs to the group for whom the group model predicts binge episodes.

Nofit--Subject belongs to the group for whom the group model does not predict binge episodes.

TABLE 13

Correlation of SLT and Binge/Purge Variables

	SE	SE/t	SE/pd	GE	GE/t	GE/pd
SE/t	.404 .0001 (517)					
SE/pd	.473 .0001 (507)	.327 .0001 (512)				
GE	.735 .0001 (54)	.424 .0001 (518)	.410 .0001 (509)			
GE/t	.394 .0001 (519)	.741 .0001 (544)	.320 .0001 (514)	.542 .0001 (522)		
GE/pd	.402 .0001 (540)	.367 .0001 (514)	.745 .0001 (553)	.524 .0001 (511)	.435 .0001 (516)	
Binge	-.296 .0001 (539)	-.377 .0001 (527)	-.225 .0001 (581)	-.293 .0001 (541)	-.271 .0001 (529)	-.210 .0001 (520)
Binge/t-1	-.169 .0001 (527)	-.295 .0001 (543)	-.184 .0001 (522)	-.184 .0001 (529)	-.294 .0001 (545)	-.162 .0001 (524)
Binge/pd	-.214 .0001 (527)	-.271 .0001 (521)	-.310 .0001 (553)	-.183 .0001 (519)	-.225 .0001 (523)	-.286 .0001 (524)
Purge	-.256 .0001 (537)	-.359 .0001 (525)	-.213 .0001 (516)	-.245 .0001 (539)	-.247 .0001 (527)	-.174 .0001 (518)
Purge/t	-.133 .002 (525)	-.255 .0001 (541)	-.254 .0001 (541)	-.140 .001 (527)	-.246 .0001 (543)	-.110 .0001 (522)
Purge/pd	-.184 .0001 (516)	-.256 .0001 (520)	-.268 .0001 (552)	-.156 .0004 (518)	-.199 .0001 (522)	-.235 .0001 (533)

TABLE 13 (Continued)

	SE	SE/t	SE/pd	GE	GE/t	GE/pd
LOC	.080 .08 (466)	.079 .08 (469)	.041 .38 (475)	.091 .05 (468)	.085 .07 (471)	.060 .19 (477)
RV/B	-.107 .02 (503)	-.104 .02 (507)	.092 .04 (516)	.091 .04 (505)	.078 .08 (509)	.074 .09 (518)
RV/P	-.086 .05 (520)	-.083 .06 (524)	-.090 .03 (533)	-.187 .0001 (522)	-.179 .0001 (526)	-.164 .0001 (535)
Acts/t	.132 .002 (525)	.170 .0001 (534)	.095 .03 (526)	.165 .0001 (527)	.276 .0001 (536)	.117 .0001 (528)
Stress/t	-.117 .007 (525)	-.204 .0001 (534)	-.105 .01 (526)	-.221 .0001 (527)	-.247 .0001 (536)	-.158 .0001 (528)
Moods/t	.352 .0001 (496)	.564 .0001 (496)	.317 .0001 (496)	.416 .0001 (496)	.644 .0001 (496)	.374 .0001 (496)

	Binge	Binge/t-1	Binge/pd	Purge	Purge/t
Binge/t-1	.478 .0001 (538)				
Binge/pd	.587 .0001 (529)	.498 .0001 (532)			
Purge	.957 .0001 (529)	.498 .0001 (532)	.593 .0001 (527)		
Purge/t	.479 .0001 (536)	.956 .0001 (554)	.511 .0001 (530)	.506 .0001 (534)	
Purge/pd	.572 .0001 (528)	.510 .0001 (534)	.950 .0001 (563)	.592 .0001 (526)	.520 .0001 (529)

TABLE 13 (Continued)

	Binge	Binge/t-1	Binge/pd	Purge	Purge/t-1	Purge/pd
LOC	.282 .0001 (474)	.285 .0001 (477)	.291 .0001 (483)	.320 .0001 (472)	.323 .0001 (475)	.320 .0001 (482)
RV/B	.222 .0001 (516)	.227 .0001 (520)	.215 .0001 (518)	.277 .0001 (514)	.231 .0001 (518)	.235 .0001 (526)
RV/P	.055 .21 (532)	.053 .22 (534)	.030 .467 (544)	.059 .17 (530)	.058 .18 (534)	.042 .327 (543)
Acts/t	-.088 .04 (542)	-.099 .02 (537)	-.023 .59 (532)	-.071 .10 (540)	-.069 .11 (535)	-.014 .75 (531)
Stress/t	.208 .0001 (536)	.256 .0001 (546)	.081 .06 (537)	.216 .0001 (534)	.255 .0001 (544)	.106 .01 (536)
Moods/t	-.232 .0001 (505)	-.296 .0001 (520)	-.213 .0001 (502)	-.186 .0001 (503)	-.242 .0001 (518)	-.177 .0001 (501)

	LOC	RV/B	RV/P	Acts/t	Stress/t
RV/B	-.100 .65 (24)				
RV/P	.280 .18 (25)	.004 .98 (29)			
Acts/t	.048 .29 (488)	.144 .0008 (538)	-.087 .04 (556)		
Stress/t	.120 .008 (488)	.016 .71 (538)	.216 .0001 (556)	-.020 .64 (540)	
Moods/t	.091 .06 (45)	-.070 .122 (486)	-.169 .001 (501)	-.122 .006 (501)	-.228 .0001 (509)

TABLE 14

Means and Standard Deviations of SLT and Binge/Purge Variables

	Mean	SD	n
SE	5.21	2.64	540
GE	5.62	2.32	542
Binge	.482 (1.9/day)	1.04 (4.2/day)	552
Purge	.451 (1.8/day)	1.05 (4.2/day)	550
LOC	11.85	1.86	26
RV/B	4.17	2.84	29
RV/P	2.23	1.86	30

TABLE 15

Means and Standard Deviation of EDI Scores

Scale	Mean	SD	n
Body Dissatisfaction	13.7	7.4	29
Ineffectiveness	10.7	6.3	29
Interpersonal Distrust	4.6	3.8	29
Bulimia	11.5	4.0	30
Drive-for-Thinness	13.9	5.2	29
Perfectionism	8.9	4.8	29
Alexithymia	12.0	5.2	28
Maturity Fears	3.5	3.3	29

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