PSYCHOSOCIAL INFLUENCES ON BULIMIC SYMPTOMS:
INVESTIGATION OF AN EMPIRICAL MODEL

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Amy Owen-Nieberding, M.S.
Denton, Texas
August, 1996
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The emerging consensus among investigators seems to be that bulimia is a multidetermined disorder with a number of contributing factors, including biological components, sociocultural factor, personality, and family characteristics (Garfinkel & Garner, 1982). An etiological model was examined in this study integrating two important theoretical perspectives in the bulimia literature: the stress-coping perspective (Cattanach & Rodin, 1988) and the family systems perspective (Minuchin et al., 1978). Five latent variables: Family Characteristics, Coping Resources, Psychological Disturbance, Environmental Stressors, and Bulimia were represented by twelve measured variables. Structural Equation Modeling analysis allowed for the simultaneous examination of the hypothesized inter-relationships between model variables. Findings confirmed a direct impact of psychological disturbances on bulimic symptoms. Hypothesized indirect relationships of family characteristics, coping resources and environmental stressors to bulimia were confirmed. Treatment implications as well as directions for future research were discussed.
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CHAPTER I
INTRODUCTION

Definition and prevalence. Although there has been a slight decline recently, the incidence of bulimia nervosa and anorexia nervosa has increased dramatically during the past 50 years (Hoek, 1993). The corresponding increase in eating disorder research has provided valuable information on certain aspects of the eating disorder syndrome; unfortunately the current literature in this area remains poorly organized. A primary weakness of the eating disorder literature is poor differentiation of the precipitating and maintenance factors in the disease process and the general lack of clarity in how these factors interact to result in anorexia nervosa or bulimia nervosa.

It was not until 1980 that bulimia nervosa was recognized as a psychological syndrome distinct from anorexia nervosa (DSM III, 1980). The main clinical distinction between anorexia nervosa and bulimia nervosa is that in the former, starvation is the most prominent symptom, whereas in the latter there are recurrent episodes of excessive food intake (i.e., bingeing). Current definitions (DSM-IV, 1994) characterize bulimia nervosa as consisting of recurrent episodes of binge eating (rapid
consumption of a large amount of food in a discrete period of time); a feeling of lack of control over eating behavior during the eating binges; self-induced vomiting, use of laxatives or diuretics, strict dieting or fasting, or vigorous exercise in order to prevent weight gain; and persistent overconcern with body shape and weight. In order to qualify for the diagnosis, the person must have had, on average, a minimum of two binge eating episodes a week for at least three months.

The BULIT is a self-report measure of bulimia based upon DSM-III diagnostic criteria for bulimia. Using this measure, Thelen, Mann, Pruitt, and Smith (1987) assessed the prevalence of bulimia in three samples of college females. Findings indicated that from 2.0 to 3.8% of these women met the DSM diagnostic criteria for bulimia. A problem exists when comparing prevalence rates across studies in that the DSM diagnostic criteria are not consistently applied. For example, in a more recent study (Pyle, Neuman, & Halvorson, 1991) 1836 college freshman completed a questionnaire on the prevalence and frequency of weight-control behaviors and attitudes about weight and food. Various subgroups of bulimia were described in their study. Findings indicated that the prevalence of bulimia, bulimia nervosa, and bulimia with weekly binge-purging behavior was 4, 2, and 1%, respectively.
Another difficulty in determining prevalence of bulimia nervosa is the secretive nature of the disorder, often family and even close friends are unaware of the illness. A recent study (Beglin & Fairburn, 1992) examined characteristics of 39 women who chose not to participate in surveys on eating disorders. Their medical records revealed a high rate of eating problems (4 met criteria for anorexia, 5 had subclinical bulimia nervosa, and 6 were overweight). Their research suggests that the estimates of prevalence of eating disorders are likely to be underestimates.

Although the research reported above indicates that bulimia nervosa is a relatively rare syndrome, the occurrence of disordered eating symptoms (subclinical bingeing and purging) is much more common (Mintz & Betz, 1988). Unfortunately, the high incidence of disordered eating symptoms generally is not reflected in the literature because much of the past research does not take into account the continuous nature of eating problems, that is, operationalize eating disorders on a continuum (Rodin, Silberstein, & Striegel-Moore, 1985; cited in Mintz & Betz, 1988). Representing an increase in severity, six groups along the continuum of eating disorders have been suggested (Mintz & Betz, 1988), including: normals, restrictors, bingers, purgers, subthreshold, and bulimics. Mintz and Betz (1988) reported that 64% of the college women surveyed fell midway between normal and bulimic, thus placing a large
proportion of the college population at risk for developing a diagnosable eating disorder. These findings suggest the need for a better understanding of the processes that led to the development of such disorders.

Etiology. Early theoretical work focusing on anorexia nervosa was descriptive and individualistic, primarily consisting of case studies documenting characteristics that seemed consistent across eating disordered individuals (Bruch, 1962). Later efforts to validate aspects of these models focused on correlating specific aspects of personality (implicated in case studies) such as locus of control, body image, and assertiveness with anorexia (Wilson, 1976). Soon afterwards, the theoretical focus moved from the individual to the family (Minuchin, 1978). This early work primarily consisted of case studies emphasizing the significance of particular characteristics in families with an eating disordered child. Correlational studies have confirmed some of these relationships: conflictual interactions and a restrictive environment high in parental control correlate with anorexic symptoms (Scalf-McIver & Thompson, 1989).

More recent research considers the societal influences on the development of eating disorders. For example, an emergent belief that weight control is synonymous with self-control (Bruch, 1978), a shift in the idealized female shape resulting in pressure to diet (Garner, Garfinkel, Schwartz,
& Thompson, 1980), and cultural forces reflecting the changing roles of women (Schwartz, Thompson, & Johnson, 1982). It has been proposed that females who live in a culture where the roles of women are complex and changing are at risk to develop eating disorders (Schwartz et al., 1982).

Hawkins and Clements (1980) proposed a theoretical model concerning the etiology of binge eating that combines a number of working hypotheses that have been explored in the literature. These authors suggested that severity of binge eating was related to depression, and negatively associated with assertiveness and self-perceived competence. In a more recent study, Hawkins and Clements (1984) extended their theorizing to the development of bulimia, identifying several unique factors, including: cultural stereotypes regarding the social desirability of thinness; biological predispositions toward obesity and/or cognitively based disturbance in body image (low self-esteem, preoccupation with food and rigidity about dieting); and major life stresses and "daily hassles." Wolf and Crowther (1983) provided support for an early version of this conceptual model. They found that dissatisfaction with body image, preoccupation with food and a fear of loss of control over eating and poor self-image were predictors of binge eating.

The emerging consensus among investigators seems to be that bulimia is a multidetermined disorder with a number of
contributing factors, including biological components, sociocultural factors, personality, and family characteristics (Garfinkel & Garner, 1982). A primary concern, however, is the lack of a generally accepted organizing mechanism to link these vast bodies of literature (sociocultural, personality, and family factors) and thus better organize the underlying processes involved in the development of bulimia (Cattanach & Rodin, 1988). Recently, however, a few researchers have begun to address the processes underlying the development of bulimia. For example, Cattanach and Rodin (1988) suggest that the application of a stress model may have heuristic value in the study of bulimia. Along these lines, Shatford and Evans (1986) sought to determine the role of the stress process, personality factors, and depression in the etiology and maintenance of bulimia. This study will extend Shatford and Evan’s (1986) research by considering the ways in which family and personality characteristics combine with the stress process in the development of bulimia. This approach could eventually provide a clearly articulated model that facilitates the organization of a currently confusing literature.

Family characteristics. The importance of family influences in the development of eating disorders was highlighted over a hundred years ago. Laseque (1873) stated that it is wrong to confine ourselves to the examination of
the anorexic patient alone and recommended that therapists attempt to understand the ways in which the family exacerbated the illness.

Minuchin et al. (1978) formulated one of the earliest and most well-developed family systems theories focusing on the etiological and treatment aspects of anorexia. Minuchin et al. identified four primary patterns of impaired interaction that underlie psychosomatic pathologies. These included: enmeshment (structural characteristic referring to the boundaries within the family, the lack of differentiation of subsystems), overprotectiveness (a high degree of concern about the welfare of other family members, especially physical well-being), rigidity (the degree of adaptability of the family interaction or its ability to adjust to different situations), lack of conflict resolution (absence of negotiation of conflicts in the family or to a total absence of divergences of opinion).

Minuchin et al. (1978) hypothesized that the anorexic’s psychologically and physically regressive state insures a harmony within the family, at great personal cost, by diverting attention away from other family difficulties. Minuchin et al. (1978) conceptualized the anorexic as caught in a family system in which the boundaries that keep family members over-involved with each other and separated from the world are typically well-defined.
More recently, Strober and Humphrey (1987) discussed the importance of the family system in relationship to bulimia. These authors suggested that the binge-purge cycle itself provides a metaphor for chronically recurring family-wide deficits and excesses. Just as the bulimic periodically craves food during a binge, she and her family repeatedly crave and attempt to solicit nurturance, soothing, and empathy from one another. Similarly, family members are thought to purge themselves by expelling their aggression and frustration toward one another without structure, focus, or resolution.

Empirical support for a direct relationship between the family system and the development of anorexia or bulimia has been inconsistent (Steiger, Leung, Puentes-Neuman & Gottheil, 1992), although some findings do corroborate "hostile-interdependency" among families of bulimics (Steiger et al., 1992). If established, it remains to be determined whether family disturbances represent causal factors, or secondary effects of the disorder. To better understand a confusing literature on the nature of the relationship between family systems and eating disorders, it is helpful to consider Humphrey's (1989) summarization of the empirical literature. In her review, three levels of research questions were identified. The first level of inquiry asks whether families of bulimics and anorexics are disturbed. Humphrey (1989) noted that the bulk of published
studies pertaining to family influences upon eating disorders have been conducted at this level. The second level of inquiry asks whether these disturbances are specific to bulimia and anorexia nervosa. The third level of inquiry asks whether the specific, disturbed family processes contribute substantially to the development of an eating disorder.

Studies that fall in Humphrey's (1989) first level of investigation, comparing family perceptions of eating disordered groups (anorexic and bulimic) with non-eating disordered groups have found group differences on various family characteristics. Stern, Dixon, Jones, Lake, Nemzer, and Sansone (1989) compared 20 restricting anorexics, 13 bulimic anorexics, 24 normal weight bulimics, and 57 age matched controls on the Family Environment scale. They found differences between the eating disordered groups (e.g., restricting anorexics, bulimic anorexics, and normal weight bulimics) and controls on cohesion, expressiveness, conflict, achievement orientation, and active recreational orientation. The only statistically significant differences among the three eating disorder groups occurred on achievement orientation, where bulimic patients rated their families higher than patients with bulimic anorexia. Similarly, families with bulimia scored higher than families with restricting anorexia.
Shisslak, McKeon, and Crago (1990) compared family perceptions of 24 normal weight anorexic, 13 bulimic anorexic and 41 control subjects on the Family Environment Scale and the Family Dynamic Survey. The two anorexic groups perceived their families as more dysfunctional than the control group on dimensions of cohesiveness, expressiveness, conflict, recreational orientation, emotional support and communication, and need for counseling.

Although the findings of these two studies appear fairly clear, when level two and three research (Humphrey, 1989) is considered the contradictory findings become more evident. For example, Scalf-McIver and Thompson (1989) expanded the dependent variable (bulimia) by including measures of associated pathology (depression and cognitive distortion). They examined the relationship between psychological/behavioral characteristics associated with bulimia (e.g., bingeing, purging, depression, body distortion, and cognitive distortion) and family pathology (e.g., cohesion, conflict, control, mother inconsistency, and father inconsistency). Correlations provided evidence of significant relationships between family pathology and psychological/behavioral characteristics associated with bulimia. Bingeing and purging was related positively to parental inconsistency, for both mother and father, and was correlated negatively with family cohesion.
The relationship between bingeing/purging and family characteristics (e.g., parental inconsistency and family cohesion) suggested by Scalf-McIver et al.'s (1989) research is not evident in other studies. Other research indicates a direct correlational relationship between perception of family dysfunction and pathology (e.g., depression, low self-esteem), suggesting that family dysfunction may result in pathology which then develops into a problem with disordered eating. Kent and Clopton (1988) investigated the relationship of bulimic behavior (measured by the BULIT), associated psychopathology (using the Hopkins Symptom Checklist) and family characteristics. Findings indicated that bulimic behavior was associated with psychological maladjustment (e.g., anxiety, depression, somatization, and interpersonal sensitivity) (Kent et al., 1988). Despite the self-report of increased psychological distress, however, bulimics did not differ from controls in their description of family dynamics.

In another study (Head & Williamson, 1990), the relationship between these variables (i.e., eating disordered symptoms, psychopathology, and family characteristics) was somewhat different. Perceived family pathology was associated with psychological maladjustment, but not bulimic behavior. Specifically, there was a positive relationship between a conflictual/restrictive family environment and neuroticism but an inverse
relationship with bulimic/anorexic behaviors and cognitions. These findings suggest that the secondary psychopathology rather than the bulimic symptoms, per se, are associated with dysfunctional family environment. Dysfunctional family environment may be associated with general neurotic characteristics and personality disturbance, but other factors may precipitate the eating disorder syndrome more directly.

In an attempt to better understand the relationship between family functioning and bulimia, several other studies have examined the role of associated pathology in relation to family dysfunction and eating disorder symptoms. Blouin, Zuro, and Blouin (1989) investigated family environment (assessed by the Family Environment Scale) in 99 women meeting DSM-III criteria for Bulimia and 37 age- and sex-matched normal control subjects. Bulimic women were divided into depressed and nondepressed subgroups. Overall, bulimic women perceived their families as being less cohesive, less independent, more oriented toward achievement, less expressive, and less involved in recreational pursuits than did controls. These differences, however, were specific to the depressed subgroups of bulimic women. Nondepressed bulimic women did not perceive their families differently than controls, with the one exception of finding their families to be more achievement-oriented.
Steiger, Liquornik, Chapman, and Hussain (1991) examined 67 women with eating disorders (anorexic restricters, anorexic bingers, and bulimics with or without a prior history of anorexia nervosa) and 25 non-eating disordered women. Personality disturbance was measured by the Personality Diagnostic Questionnaire-Revised and family disturbances by the Family Assessment Device. The findings of the study brought into question the degree to which personality problems in eating disordered patients may be a consequences of eating disturbances, since severity of personality disorder, while related to reported family dysfunction, was unrelated to severity of eating symptoms.

In summary, there exists a clear theoretical basis for examining the relationship of family variables and bulimia nervosa. Theoretical accounts from family systems (Minuchin et al., 1978) emphasize the difficulties the eating disordered child has separating from the family and consolidating a separate identity. Stern et al. (1989) found group differences between eating disordered clients and controls on perceived family pathology; however, it is less clear as to whether these differences are specific to bulimia and anorexia. Humphrey (1989) pointed out the need for clarifying the relationship between disturbed family processes and the development of eating disorders.

Many of the studies attempting to clarify this relationship also examine the influence of a third factor,
associated psychopathology. Some research indicates a
direct correlational relationship between perception of
family dysfunction and general pathology (Kent & Clopton,
1990; Head & Williamson, 1990; Blouin et al., 1990; Steiger
et al., 1992), suggesting that family dysfunction may result
in pathology which then develops into a problem with
disordered eating. Other research has not demonstrated such
a relationship (Kent et al., 1989), suggesting that bulimic
behavior is associated directly with family dysfunction.

One explanation for these contradictory findings is
that differences could be due to another, unmeasured factor.
Unfortunately, research examining family factors has tended
to be conducted in the absence of other important
precipitating factors. Thus, it will be important to
consider family influences in conjunction with other factors
in future research on the etiology of bulimia.

Psychological Characteristics

Application of psychoanalytic theory (Bruch, 1978)
provides an understanding of how personality characteristics
(i.e., low self-esteem, external locus of control, and body
dissatisfaction) may precipitate the onset of anorexia.
Psychoanalytic theory has emphasized the importance of
separation-individuation in the development of anorexia
(Bruch, 1978). Within these perspectives, Krueger (1988)
has pointed out numerous developmental similarities between
bulimia and anorexia. Consequently, psychoanalytic
theoretical accounts of anorexia will be assumed to have implications for an understanding of bulimia.

Separation-individuation is the normal developmental sequence of achieving a sense of separate individual identity (Edward, Ruskin, & Turrini, 1981). Problems with separation-individuation are postulated to occur due to an arrest at the earliest stage of transitional object development in which there is a failure to adequately separate physically and cognitively from the maternal object (Sugarman & Kurash, 1982). This thesis is based on the tenet that the infant's body is the first transitional object on the path to separation-individuation.

Problems develop when the mother is incapable of accurate, consistent mirroring of the child's affect and behaviors. Winnicott (1971) has speculated that the mother's face serves as a mirror for her baby. The sensitive mother is attuned to the feelings emanating from the infant and is able to reflect them in her own expression. The less successful mother recognizes only her own and not her baby's feelings. With these mothers, it is as though these children's emotions and their bodies are not seen by the parents as separate entities. The mother is unable to perceive the child as an independent person with a distinct body, feelings, and initiative.

If the infant's sensations, movements, and affects are not regularly and accurately acknowledged or if they are
supplanted by the mother's own needs and her internal state is projected on the baby, the baby's sense of self will be affected. Freud (1923, cited in Krueger, 1988) and later, Bruch (1978) described the impact of disturbed object relations on body image.

Freud (1923, cited in Krueger, 1988) emphasized the importance of bodily experiences in the development of the ego. The ego develops out of a range of kinesthetic experiences that include both internal and external aspects; physical interactions with the maternal object (e.g., touch) and interior physical functioning (e.g., hunger). This notion of a dynamic interaction between self and others is further developed in Freud's definition of body image (1923, cited in Krueger, 1988): the aggregate of internalized images which encompasses the self-representation and internalized representations of love objects.

Bruch (1962) defined distortion of body image as "the absence of concern about emaciation, even when advanced, and the vigor and stubbornness with which the often gruesome appearance is defended as normal and right" (p. 189). Freud's definition of body image seems to relate to the process by which a person comes to feel about their body (the separation-individuation process resulting in clear self-other-representations), while Bruch's definition
seems to refer to the cognitive-behavioral manifestation of these feelings.

The current definition of body image has changed since Freud’s usage of the word and seems to expand on Bruch’s definition. Garner and Garfinkel (1981), in their review on body image and anorexia nervosa, specified two basic ways body image disturbance can be clinically manifested in anorexia nervosa. The first type is a "perceptual" disturbance in which the anorexic may appear unable to assess her size accurately. The second type of disturbance is more of a cognitive and affective (or attitudinal) nature without a "disturbed size awareness." In this type, the patients assess their physical dimensions accurately but they react to their bodies with extreme forms of disparagement. The first type of disturbance is often referred to as body size distortion, whereas the latter is referred to as body dissatisfaction.

The association between bulimia and body dissatisfaction has been documented across numerous empirical studies and is often regarded as a cardinal feature of anorexia and bulimia (Garner & Garfinkel, 1981). In addition, body dissatisfaction has been linked with other psychological correlates of bulimia, including self-esteem and depression (Cooper & Fairburn, 1993; Laessle, Kittl, Fichter, & Pirke, 1988; Cooper & Taylor, 1988).
Bruch (1973) first described the crucial role of body image in the development of eating disorders. She also clarified cognitive and behavioral manifestations of disturbances in object relations in the eating disordered patient, stressing the importance of interoceptive awareness and personal ineffectiveness.

Interoceptive disturbances refers to the ways in which body image affects accuracy, perception, and interpretation of stimuli from within the body (Bruch, 1973). Other theorists have described this as problems with internal regulation (Krueger, 1988). These problems involve the inability to recognize basic body sensations such as hunger, the patients are estranged from their own body.

Personal ineffectiveness in the eating disordered patient refers to the dreaded feeling that her body and self-organization is easily invaded and influenced by some external force because of blurred body boundaries. These people experience no internal center of initiative (Krueger, 1988).

Difficulties with internal initiative has received limited attention in the empirical literature on eating disorders. In this research, bulimics are predicted to report an external locus of control. Unfortunately, data supporting these assertions are either anecdotal (Bruch, 1978) or lack appropriate controls (Humphrey, 1986). In a recent study supporting this hypothesis, Shisslak, McKeon,
and Crago (1990) compared scores on Rotter's Internal-External Locus of Control scale across subgroups of eating disordered groups (underweight bulimics, normal-weight bulimic, overweight bulimic, restrictor anorexics, and a control group). Bulimic women in all three weight categories exhibited more external locus of control than controls. The highest scores on the locus of control scale were found among the underweight bulimic women.

As is suggested by the discussion above, the bulimic patient experiences a lack of internal initiative and may feel as though she is being controlled by some external source. This feeling of personal ineffectiveness has been so closely associated with bulimia that it is included in an instrument used for the diagnosis of eating disorders (e.g., the Eating Disorder Inventory (EDI) by Garner, Olmsted, and Polivy, 1983).

According to psychoanalytic theory, individuals who lack internal initiative also will have problems with self-esteem (Bruch, 1978). Lacking internal images of self, bulimics rely on external feedback such as the reactions of others to their appearance and actions. These women may struggle for their entire lives to be perfect in the eyes of others, or to please others, in order to reconstitute themselves and to gain some sense of recognition, identity, effectiveness, and control (Krueger, 1988).
A poorly defined self-image and low self-esteem are apparent in the bulimic's excessive need for approval and affirmation, as well as in her hypersensitivity to approval and criticism (Krueger, 1988). Their relationships (or lack thereof) also reflect their low self-esteem. Self-criticalness often leads to a compulsion to do things "right" by others' perceptions, rather than one's own.

Self-esteem has been found to be an important correlate of bulimia across various eating disorders subgroups and as a predictor of outcome. In a correlational study, Willmuth et al. (1988) compared 20 normal weight purging bulimics, 20 normal weight non purging bulimics and 20 normal weight controls. The investigators found that self-esteem scores were lower for both bulimic groups. In addition, self-esteem has been an important factor in eating disorder outcome studies. In a longitudinal study, Norring and Sohlberg (1991) investigated whether personality disturbance (i.e., low self-esteem) and stressful life events can help explain why some patients with anorexia nervosa or bulimia nervosa remain ill for several years. In a follow-up of 37 patients, both factors were found to be significantly associated with poorer outcome after a year.

Mintz and Betz (1988) investigated differences in psychological and attitudinal characteristics of 682 college women who were classified into one of several eating disorder groups (normals, bulimics, bingers, purgers,
chronic dieters, and subthreshold bulimics). Three variables were included in their research: self-esteem, body satisfaction, and degree of endorsement of sociocultural mores regarding thinness and attractiveness. The degree of disturbed eating was strongly correlated with lowered self-esteem, more negative body image, and greater endorsement of sociocultural beliefs regarding thinness. Similar findings occurred in a study by Katzman and Wolchik (1984). Bulimics were more depressed and had lower self-esteem, poorer body image, higher self-expectations, higher need for approval, and greater restraint than controls.

Another important segment of the literature investigating psychological correlates of bulimia (Bruch, 1978) is the research addressing associated psychopathology, including: depression, anxiety, and various personality disorders. In a review article, Hinz and Williamson (1987) summarized repeated empirical demonstrations of the pervasive quality of depressive symptomatology characterizing bulimia. This finding has led some researchers to hypothesize that bulimia is an affective disorder variant (Wilson & Lindholm, 1987). Hinz and Williamson, however, reviewed the literature related to the affective variant hypothesis and concluded that this is a premature hypothesis. They proposed the alternative hypothesis that bulimia, like many other chronic disorders is often accompanied by depression.
Consistent with this proposal, Laessle, Kittle, and Fichter (1987) found that of patients with long term anorexia and bulimia, 42% had a simultaneous diagnosis of depression. In the majority of cases, the onset of affective disorder postdated the onset of the eating disorder by at least one year. Those in remission had fewer depressive symptoms. Contrary to these findings, other researchers have been able to establish the development of depression before the onset of the eating disorder. Toner, Garfinkel and Garner, (1988) found that major depression and anxiety disorders developed before 50% and 75%, respectively, of the eating disorder cases.

To summarize, psychoanalytic theory and developmental theory have been extended by Bruch (1978) in an effort to understand and predict some of the cognitive-behavioral manifestations of anorexia. Although validation of this work has been primarily anecdotal (Bruch, 1978), there is some support in the empirical literature. The literature describes relationships between bulimia and self-esteem (Willmuth et al., 1988; Norring & Sohlberg, 1991), locus of control (Shisslak et al., 1990), body dissatisfaction (Mintz & Betz, 1988; Katzmen & Wolchik, 1984) and depression (Hintz & Williamson, 1987; Laessle et al., 1987). These findings indicate the importance of including such variables in any etiological model.
The Stress Process and Bulimia

Historically, the basis for understanding the role of stressful life events in well-being resided as much in the realm of philosophy as it did in medicine or psychology. In the 17th century, Descartes argued that the mind, especially the thoughts and emotions, was separate from the body, while Spinoza contended that a person's thoughts and emotions were integrated with his bodily functions. With the 20th century came experiments that demonstrated the close integration of the body and the mind (Miller, 1988).

The social stress process has been examined extensively in recent literature. The process of social stress can be seen as combining three major conceptual domains: the sources of stress (e.g., life events, daily hassles), the mediators of stress (coping mechanisms), and the manifestations of stress (emotional, behavioral, or physiological expressions) (Pearlin, Menaghan, Lieberman, & Mullan, 1981). Sources of stress include acute stressors, stress-event sequences, and chronic and chronic intermittent stressors (Elliott & Eisdorfer, 1982). Acute stressors encompass time-limited experiences, such as minor traffic accidents. A stress-event sequence is a major life event, with ramifications that reverberate over an extended time period (psychological or social losses). Chronic stressors are characterized by their permanent or extended nature (e.g., a lengthy illness in a family member) and daily
hassles (traffic jams) that recur over time but are not continuous in nature.

Stressors have been categorized along such dimensions as degree of adjustment required, desirability, predictability, and controllability (Dohrenwend & Dohrenwend, 1981). Evidence indicates that undesirable events (such as death of a family member or job loss) are more likely to be associated with impaired functioning than are desired events such as job promotion or marriage (Sarason, Johnson, & Siegel, 1978). Both desirable and undesirable events, however, require adjustment on the part of the individual which can be perceived as stressful.

There is an emerging consensus that frequent exposure to various forms of stressors may be related to psychological and health disturbances (Rodin & Salovey, 1989). For example, life stress has been implicated as a predisposing factor in the development of major affective disorders (Lloyd, 1980) as well as cancer and coronary heart disease (Rodin & Salovey, 1989). Strober (1981) has described an association between increased life stress and bulimia. Strober examined the relation of life event stress to the occurrence of anorexia nervosa and bulimia nervosa in patients. He was able to precisely date illness onset so that an empirical association between bulimia and life stress could be evaluated. A semistructured interview was used to obtain information of 42 life events experienced
during the 18 months preceding illness onset. Results of the study indicated that as a group, bulimics reported approximately twice as many life events as anorexics over the 18 months prior to illness and they experienced the events to be more uncontrollable and undesirable in nature.

As one considers the association between stress and bulimia a logical question follows: why would stress lead to bulimia rather than some other disorder? This question is addressed somewhat in theoretical work by Cattanach and Rodin (1988), in which they summarized a number of possible factors that may explain why stress would lead to disordered eating rather than some other response. First, there have been numerous demonstrations that eating can be elicited by nonspecific stimuli, particularly those with an arousing component. Stress-induced overeating may therefore develop through a learning response in both animals and humans. Second, stress may selectively influence food intake because of biological changes produced by stress. For example, the hormones secreted during stress influence both glucose tolerance and utilization, making it possible that an increased appetite will follow. Third, stress may serve to disinhibit restraint and result in uncontrollable eating especially under circumstances of free floating anxiety. For women who habitually restrict food intake, strong affective experiences could provoke bingeing by disinhibition of cognitive control. Finally, it has been
suggested that overeating is tension reducing. Similarly, purging may serve as a further tension-reduction mechanism.

Much of the literature examining the role of stressors in the development of bulimia acknowledge the multidimensional nature of the disorder by including other variables such as physiological factors, interpersonal factors, and depression. Cattanach, Malley, and Rodin (1988) compared bulimic’s and normal’s physiological reactions to stressors. In their study, psychologically stressful tasks included: an interpersonal conflict vignette, an extemporaneous speech about undesirable characteristics, responding to a rapidly presented slide version of the Stroop Color Word Test, and finally, watching a recorded vignette (depicting conflict with peers). These stressors were effective in producing cardiovascular arousal in the laboratory as measured by blood pressure and pulse rates. Results indicated no reliable differences in cardiovascular responsivity of bulimics and controls. A second major finding of the study (Cattanach et al., 1988) was that bulimics did report a greater desire to binge, relative to controls, especially during stressors involving interpersonal disappointment (i.e., the two vignettes).

Wolf and Crowther (1983) examined personality and eating habit variables as predictors of severity of binge eating and weight. Subjects were 120 female undergraduate students who were enrolled in introductory psychology
courses. Binge or non-binge eaters were determined by subjects's response to the question "do you ever engage in periods of uncontrolled, excessive eating commonly called binge eating?" Body weight deviations were calculated as a deviation percentage from the "desirable" weight for females of a given height with a medium body frame. There were 60 subjects in the normal weight and overweight groups and 30 subjects each in the no, mild, moderate, and high severity binge groups. Results indicated that personality (e.g., dissatisfaction with body image and low self-esteem) and eating habits (e.g., preoccupation with food, concern about dieting, a fear of loss of control over eating) were associated with an increase in the severity of binge eating. The amount of stress experienced in the past year was the only significant demographic/historical predictor of the severity of binge eating.

Greenberg (1986) examined the relationship between depression, dietary restraint, life stress, and binge eating in a group of 20 bulimic female undergraduates. The control group consisted of 114 nonbulimic female undergraduates. The results of the study indicated that dietary restraint and depression were the two characteristics which were most closely associated with binge eating behavior in both bulimic and nonbulimic women (the controls). Life stress experienced during the past month was associated with the bulimic syndrome, however, the amount of life stress
experienced did not independently predict severity of binge eating behavior. Greenberg (1986) suggested that bulimia itself may lead to high levels of stress rather than high levels of stress leading to bulimia.

In conclusion, a solid base of theoretical work (Pearlin et al., 1981) on stress (i.e., delineation of the stress process, identification of sources of stress, and categorization of stressors) has provided a context for examining the relationship between bulimia and stress. Numerous studies (Cattanach, et al., 1988; Lacey, et al., 1986; Greenberg, 1986; Wolf & Crowther, 1983; Strober, 1982) indicate that there is an association between bulimia and stress. Studies examining the relationship between stress and bulimia acknowledge the multidimensional nature of the disorder by including variables such as depression, interpersonal conflict (Cattanach, et al., 1988; Greenberg, 1986). Research in this area, however, could be extended by combining these variables into an etiological model. Among other things such a model would help to clarify the direction of the relationship between bulimia and stress, which is a confusing aspect of the literature (Greenberg, 1986).

Mediators of stress in bulimia. The stress-coping literature indicates that one cannot predict from various stressors the amount of stress that will be experienced by an individual (Pearlin, Liberman, Menaghan, & Mullan, 1981).
Instead, people usually confront stress-provoking situations with a variety of behaviors and cognitions that are often capable of mediating the impact of stress.

Mediator variables are often confused with moderator variables. In general, a moderator is a qualitative (e.g., sex, race, SES) or quantitative (e.g., level of reward) variable that affects the direction and/or strength of the relation between an independent variable and a dependent variable (Baron & Kenny, 1986). A mediating variable, on the other hand, is generated in the encounter, and it changes the relationship between the antecedent and outcome variable (Baron & Kenny, 1986). To demonstrate mediation, one must establish strong relations between (a) the predictor and mediating variable and (b) the mediating variable and the criterion (Folkman & Lazarus, 1988).

Mediators account for why some people react strongly to potential stressors, whereas others experience no apparent consequences. The nature of reactions to potential stressors depends both on internal (e.g., coping abilities, expectations, prior experience) and external mediators (e.g., material resources, social supports, social context) (Cattanach & Rodin, 1988). From the mediators discussed in the literature, this research will focus on two types as they relate to bulimia: social supports and coping abilities.
Social support. One mediator described by Pearlin et al., (1981) in their conceptualization of the stress process, is social support. Social support can be defined as the access to and use of individuals, groups, or organizations in dealing with life's problems. Previous social support research has emphasized the relationship between social support and physical and emotional health. Perceived availability of support is believed to protect individuals from the psychological impact of stressful life events and chronic life strains (Cohen & Hoberman, 1983; Cohen & Wills, 1985; Kessler & McLeod, 1985).

A longitudinal study by Keller, Herzog, Lavori, Bradburn, and Mahoney (1991) illustrated the possible relationship between social support and bulimia. These authors followed 30 women with bulimia over the course of 35-42 months, checking for recovery rates and relapse. They found low rates of recovery and very high rates of chronicity and relapse: almost one third of the subjects remained ill three years after entry into the study and there was a 63% chance of relapse by 78 weeks after recovery. Predictors of recovery included having less disturbed eating behaviors and self/body image at intake and having several good friends.

In a study by Grissett and Norvell (1992) social support was examined along with personality characteristics (i.e., social skills) and quality of relationships in
bulimic women. Subjects were taken from a university setting and included 21 bulimic women and 21 control subjects. Bulimics reported less perceived support from friends and family, more negative interactions and conflict, and less social competence. In addition, bulimics were rated as less socially effective by observers unaware of group membership.

Coping. Those researching stress have sought a finite set of "strategies" to define the various coping responses that people utilize for life problems. In a recent article, Amirkhan (1990) discusses two approaches to identifying coping strategies. One approach is to begin with a set of hypothetical categories, designed to be mutually exclusive and collectively exhaustive of coping options. For example, in one formulation of coping (Lazarus, 1966), three methods of coping included: (1) active-cognitive coping, which involves attempts to manage one's appraisal of the stressfulness of the event; (2) active-behavioral coping, which refers to overt behavioral attempts to deal directly with the problem and its effects; and (3) avoidance coping, which involves attempts to avoid actively confronting the problem. Amirkhan (1990) points out that a deductive taxonomy such as this is appealing in its logic but in most cases, however, is not verified empirically (Amirkhan, 1990).
The other approach (Amirkhan, 1990) begins with documentation of the coping efforts exhibited by a certain population, and then use statistical techniques to reveal clusters of responses that constitute general coping strategies. The problem with these taxonomies is that they do not generalize easily to other populations and give little information about the fundamental nature of coping.

Amirkhan (1990) attempted to find a middle ground between deductive and inductive approaches by allowing naturally occurring clusters of responses to emerge from the data (inductive) and isolate only those clusters common to a wide spectrum of people and events (deductive). The research resulted in the identification of three types of coping strategies; problem solving, seeking support, and avoidance which were incorporated into a scale called the Coping Strategy Indicator (CSI). Strengths of this scale are that it is the closest approximation of orthogonality of other coping measures (Amirkhan, 1990) and its freedom from demographic influences.

Research indicates that bulimics may have coping deficits (Cattanach & Rodin, 1988). Along these lines, if bulimics have difficulty in mediating stress because they lack adequate coping skills, such deficits may arise in one or both of the following ways (Rodin & Salovey, 1989). First, bulimics may actually have an insufficient number of adequate coping skills and thus be unable to respond self-
protectively to stress. For example, Hawkins and Clement (1984) suggested that bulimics may lack a full repertoire of coping responses from which to select. Consequently, bulimics may rely extensively on too limited a number of strategies. Second, they may have adequate coping skills in their repertoire, but lack the personal resources that enable them to utilize their skills effectively.

There seems to be more support for the second hypothesis, that bulimics may have adequate coping skills in their repertoire, but for some reason do not utilize these skills effectively. For example, bulimics have been reported to use food as a coping mechanism to anesthetize themselves, escape difficult issues, alleviate boredom, procrastinate, or punish/reward themselves (Hooker & Convisser, 1983). Katzman and Wolchik (1985) also reported less effective use of coping strategies in bulimics. Although bulimics reported use of more coping strategies than controls, suggesting greater efforts to handle stressful situations and indicating that their coping resources were not impoverished, they concurrently reported less efficacy in their coping with stress.

Another way in which bulimics may not utilize coping resources effectively is to rely excessively on one method of coping. Shatford and Evans (1986) reported that the primary coping mechanism used by bulimic women is avoidance. Undue reliance on escape-avoidance as a coping option can be
hazardous (Billings & Moos, 1981). Over the long term, this approach can interfere with the processes of information seeking, anticipation, and planning that often are necessary for developing an effective response to threat or challenge. With the development of potential steps of positive action disrupted, the sense of instrumentality and interpersonal effectiveness would be diminished, and chronic feelings of pessimism and apathy may develop (Lazarus & Folkman, 1984). Apathy might then contribute to continued reliance on avoidant coping styles rather than active responses to stressors.

To summarize, Amirkhan (1990) provided a useful classification of coping responses that can serve as a framework for examining the coping responses of bulimic women. Research does indicate that bulimic women have coping deficits (Mayhew & Edelman, 1988). Some findings indicate that bulimic women lack a sufficient number of coping responses which makes it difficult to mediate stressors in their life (Hawkins & Clement, 1984). There seems to be even more support for the contention that bulimic women in fact do not lack a full repertoire of coping responses but fail to utilize them effectively (Hooker, & Convisser, 1983; Shatford & Evans, 1986). These women primarily rely on escape avoidance coping responses to deal with the majority of situations when other coping responses would be more effective.
What is not clear in these findings are the factors that impact the utilization or lack thereof of effective coping responses. To clarify this point, it may be useful to go back to Rodin and Salovey's (1989) distinction between coping resources (i.e., personality, attitudinal, and cognitive factors) and coping responses (i.e., problem solving, seeking social support, and avoidance) (Amirkhan, 1990). People draw upon personality characteristics (coping resources) to help them withstand threats posed by events in their environment (Rodin & Salovey, 1989). In order to gain a better understanding of the interaction between personality characteristics and coping in the development of bulimia, both should be included in an etiological model. In such a model, it seems likely that personality characteristics (i.e., self-esteem, depression, body image) will have a strong relationship with coping responses and an indirect to bulimia.

Conclusions/Summary

Three areas in the literature on anorexia and bulimia have been explored. The research findings are somewhat mixed but generally supportive of the importance of family (Scalf-McIver & Thompson, 1989) and personality (Mintz & Betz, 1988) in the development of bulimia. The third area explored was the literature examining the relationship between stress-coping processes and bulimia. This is a relatively recent development but also seems to be an
important aspect of the etiology of bulimia (Cattanach & Rodin, 1988).

The relationships between these correlates of bulimia (i.e., personality characteristics, family characteristics, and stress-coping) has been explored somewhat, for example, the relationship between family characteristics and depression (Kent & Clopton, 1990; Head & Williamson, 1990; Bouin et al., 1990; Steiger et al., 1992). However, the next step in understanding the etiology of bulimia seems to be the organization of these various correlates into a model so that the relationships between the correlates and with bulimia can be understood. The organization of these correlates may move us closer to the final goal of differentiating precipitating from maintaining factors on bulimia.

As was mentioned previously, a small segment of the literature seems to be addressing this need for the organization of the literature on bulimia. In a recent review, Cattanach and Rodin (1988) proposed that a conceptualization of the stress process (Pearlin, et al., 1981) be utilized as a context for understanding the relationship between factors associated with bulimia.

One study (Shatford & Evans, 1986) took this step and applied Pearlin et al.'s (1981) conceptualization of the stress process to the study of bulimia. Shatford and Evan's (1986) model suggested three independent latent variables:
environmental stressors, depression, and psychological status. The latent variable, environmental stressors included the following indicator variables: life events, daily hassles, and severity of hassles. The latent variable, depression, was measured by: Beck’s Depression Inventory and the Dysfunctional Attitudes Scale. Finally, psychological status included: locus of control, assertiveness, self-esteem, and overall mental health. The relationship of these variables to bulimia was thought to be mediated by coping responses, including: avoidance coping, problem-focused coping, and emotion-focused coping.

Findings indicated that the influences of depression and environmental stressors on bulimia were mediated by coping responses. Psychological status, however did not have a direct link to either stress mediators or bulimia. Even so, Shatford and Evans (1986) retained the psychological status variable in their model, because of the significant correlations between psychological status and depression.

The Shatford and Evans (1986) model confirms the possible role of the stress process in the development of bulimia. The model also clarified the nature of the relationship between particular correlates of bulimia. For example, the model suggested that psychological status variables may play a role in the expression of bulimia, but the role may be indirect. Also, depression and
environmental stressors were not linked directly with bulimia, instead there was a direct link with the stress mediators.

The research of Shatford and Evan’s seems to be an important contribution to the literature on bulimia for several reasons. First, it brought together various correlates of bulimia into a conceptual framework which was tested empirically. Second, the choice of psychological and situational correlates of bulimia was consistent with previous research (life change, depression, external locus of control, low self-esteem, and lack of assertiveness). Finally, their research suggested ways in which the variables may combine in a process resulting in bulimia. For example, individuals who have a higher incidence of life events/daily hassles, and who use ineffective stress mediators (coping mechanisms) are more likely to be bulimic. Also, individuals who score higher on depression and employ ineffective stress mediators are more likely to be bulimic.

Expanding the Shatford and Evan’s Model (1986)

Several aspects of the social stress process model (Pearlin et al., 1981) were consistent with Shatford and Evan’s (1986) findings. For example, as predicted by the Pearlin model, there was a relationship between environmental stress and mediators of stress. The results of the Shatford and Evan’s (1986) study, however, provide only partial support for the proposal that a
conceptualization of the stress process (Pearlin et al., 1981) would provide the foundation for the development of a causal model of bulimia. Sources and mediators of stress were shown to influence the occurrence of bulimia, yet, the sources of stress in the their study differed from those proposed by Pearlin et al. (1981). Depression did not function as a manifestation of the stress process as predicted by Pearlin et al. (1981) although it was indirectly related to bulimia. Also self-esteem and mastery did not have a direct link with stress mediators as one would expect based on the stress process model (Pearlin et al., 1981).

Examination of Shatford and Evan's model (1986) as well as other relevant research illuminates some ways in which the model could be elaborated. One alteration would be to not strictly adhere to the Pearlin et al. (1981) stress process formulation as Shatford and Evans (1986) did, which could be important for two reasons. First, as mentioned previously, the Pearlin's et al., (1981) stress model's predictions were not entirely consistent with the findings of Shatford and Evans (1986). Second, by sticking with factors proposed by Pearlin et al. (1981) one is limited in terms of integrating other factors from the bulimia literature that have been found to have an important in the development of bulimia. If one moves away from a strict stress process formulation as proposed by Pearlin et al.

Findings in the literature point to the importance of both family characteristics (Scalf-McIver & Thompson, 1989) and social support (Cohen & Hoberman, 1983; Cohen & Wills, 1985; Kessler & McLeod, 1985). In fact it seems likely that these two correlates may be related. For example, the ability to achieve reliable social support networks is likely to be affected by past relationships, particularly those within the family. As was stated previously bulimic families often have a high level of conflict as well as other disruption detailed above (Kog & Vandereycken, 1989). Individuals coming from such a family may have difficulty separating from the family and consolidating other support networks. The integration of both family characteristics and social support into a stress process model would be consistent with Cattanach et al.'s (1988) suggestion that aspects of the stress process be considered in relation to other variables implicated in the etiology or maintenance of bulimia.

A final limitation of the Shatford and Evan's model is that the measure of bulimia was concurrent with other measures, making it impossible to distinguish between
precipitating and maintaining factors. Therefore, the design did not allow one to identify which variables in the model will be related to higher symptomatology. The lack of distinction between precipitating and maintaining factors is a general weakness in the literature on bulimia (Cattanach & Rodin, 1988) and needs to be addressed in future research by the utilization of a prospective design.

**Hypotheses and specification of the model.** It is hypothesized that an expanded conceptualization of the stress process proposed by Pearlin et al. (1981) will provide the basis for a causal model of bulimia using linear structural relations analysis. Employing a prospective design, the following correlates of bulimia will be incorporated into the model: environmental stressors, psychopathology, psychological characteristics, family characteristics, and stress mediators in the manifestation of bulimia. Study 1 will report the model that best fits the data and Study 1a will be a cross-validation of the model of best fit. (See Figure I for an illustration of the model).

The prospective design will allow the determination of maintenance factors, or correlates of bulimia associated with worsening of symptoms. The second phase of the study will take place approximately four months after initial data collection, during which time the bulimia measure will be readministered to the same sample of subjects. Difference
scores based on data from time 1 and time 2 will be calculated for each subject which will allow the determination of correlates (stress, psychopathology, psychological characteristics, family characteristics, and stress mediators) associated with changes in symptoms.

The model will be tested on a nonclinical sample for two reasons. First, a relatively high prevalence of eating pathology has been reported on college campuses (Mintz & Betz, 1988). Second, researchers often have based their studies on bulimics who are in treatment for their eating disorder. These bulimics, however, may be atypical of the larger population, making these findings harder to generalize. Researchers who use only clinical samples may be assessing bulimics who are significantly more pathological or differ in some other way from those who do not seek treatment. For example, a psychiatric population is more likely than subjects from the normal population to include patients with a dual diagnosis as well as other psychological distress.

Proposed model. One of the challenges facing those doing research in the area of eating disorders is the organization and integration of a fragmented literature (Cattanach & Rodin, 1988). The literature review above has summarized some of the correlates of bulimia into three general areas: environmental stressors, personality characteristics (including psychopathology), and family
characteristics. Applying Pearlin et al.'s (1981) conceptualization of the stress process, coping may serve as a mediator in the etiology of bulimia. An important next step in extending the literature on bulimia is the application of a statistical methodology that allows the examination of directional relationships among correlates of bulimia in an integrated form.

Linear structural relations analysis (LISREL: Joreskog & Sorbom, 1978) allows for the examination of interactional relations among variables in an integrated form. This method allows the use of correlational and nonexperimental data to determine the plausibility of theoretical models in specific populations. Hypothesized in the structural equation model is a specified causal structure among a set of unobservable constructs, each measured by a set of observed indicator variables; this model can then be tested for fit in a particular population.

Figure 1 depicts the hypothesized relationships in the model. The hypothesized relationships are described below.

1. Environmental Stressors are hypothesized to have an indirect effect on Bulimia, mediated by Coping Resources (i.e., problem solving, seeking support, avoidance, and satisfaction with social support).

2. Psychological Disturbances (anxiety and depression) are hypothesized to have an indirect effect on Bulimia, mediated by Coping Resources.
3. Family Characteristics (cohesion, independence, expressiveness, and conflict) are hypothesized to have an indirect effect on bulimia, mediated by Coping Resources.

4. Personality Characteristics (Self Esteem, Locus of Control, and Body Satisfaction) are hypothesized to have an indirect effect on bulimia mediated by Coping Resources.

5. Coping Resources are hypothesized to have a direct effect on bulimia.

Figure 2 illustrates the second model that will be tested in this research. The path from Family Characteristics to Coping Resources has been removed and a path from Family Characteristics to Psychological Disturbance is added. The final hypothesis follows:

6. Family Characteristics are hypothesized to have an indirect effect on Coping Resources and a direct effect on Psychological Disturbances.
Figure 1. Model 1A: Hypothesized Structural Bulimia Model
Figure 2. Model 1B: Alternative Structural Bulimia Model
CHAPTER II

METHOD

Participants

Participants were solicited from undergraduate psychology classes at a large, southwestern university. During the second week of the Fall Semester, a sample of 379 females was collected. A questionnaire measuring disordered eating patterns (BULIT-R) was administered to a matched follow-up sample of 230 (60% of original sample) during the last week of the Fall Semester. The students ranged in age from 16 to 34 years and received extra-credit points in their psychology class for participating in the study. Questionnaire packets from five participants were omitted from analyses because the number of missing values for a particular instrument was in excess of 10% of the overall item total. Five other packets were omitted because the participants were significantly older than the rest of the sample and statistical tests showed them to be outliers. Finally, 148 questionnaires were omitted because there was no follow-up data. A total of 228 participants remained. These subjects constitute the final sample on which all prospective analyses were based. A one-way analysis of variance was conducted to determine if there were any
differences between the group of subjects that had complete data \((N = 228)\) and the group with incomplete data \((N = 140)\) on the observed variables. No significant differences between these two groups were found (see Table 2).

**Measures**

**Demographic questionnaire.** A demographic and weight questionnaire was developed to obtain information regarding age, year in school, grade point average, marital status, family size, racial/ethnic group, and present/ideal weight and height (see Appendix A).

**Bulimic symptomatology.** The 36-item Bulimia Test Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith 1991) is a self-report questionnaire measure of bulimic symptoms that is based on DSM-III-R (APA, 1987) criteria. Sample items include: "I am satisfied with my eating patterns," and 'Would you presently call yourself a "binge eater"?' For each item, individuals indicate the degree to which the item applies to them on a five-point Likert-type scale. Individuals' responses are scored by giving up to five points for items answered in the extreme "bulimic" direction, down to one point for items answered in the extreme "normal" direction. For several items, the most symptomatic response is presented last rather than first, to prevent a response bias based on order of presentation (scoring is reversed for these items).Although all items
Table 1

Demographic Characteristics

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# Table 2

**One-way Analysis of Variance: Complete and Incomplete Groups**

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<th>Observed Variable</th>
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<td>(c) Expressiveness</td>
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<td>(d) Conflict</td>
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<td>(a) Problem Solving</td>
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<td><strong>Perceived Social Support Scale-Family (PSS-Fa)</strong></td>
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<td><strong>Social Desirability Scale</strong></td>
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<td>.691</td>
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</table>
are given, only 28 are used in computing the total score which is obtained by summing across all items and can range from 28 to 140. The recommended cut-off for the BULIT-R is 104.

Thelen et al. (1991) have provided data concerning the validity and reliability of the BULIT-R. Test-retest reliability over a period of two months was found to be .95. In addition, correlations between the BULIT-R and the Hawkins and Clement Binge Scale (Hawkins & Clements, 1980) was .85. The Cronbach alpha calculated on the current sample demonstrated excellent internal consistency ($r = .95$ at both time one and time two). In cross-validation studies, BULIT-R scores correctly identified sixteen of the twenty individuals who had been diagnosed in independent clinical interview with Bulimia Nervosa (see Appendix B).

**Self-Esteem.** The Rosenberg Self-Esteem Scale (Rosenberg, 1965) measures a self-acceptance dimension of self-esteem and consists of 10 items regarding feelings of worthlessness versus self-like and respect. Individuals are asked to respond to the items on a 5-point Likert-type scale ranging from 1 (strongly agree) to 5 (strongly disagree). The overall self-esteem score is obtained by Guttman scoring: two or three responses indicating high self-esteem on the first 3 items are scored as one item, two responses indicating high self-esteem on Items 4 and 5 are scored as one item, and two responses indicating high self-esteem on
Items 9 and 10 are scored as one item. The remaining items are scored individually, thus, the self-esteem score can range from 0 (low self-esteem) to 6 (high self-esteem).

The test-retest reliability over a 2-week period has been found to be high ($r = .85$) suggesting that the scale is stable over time (Robinson & Shaver, 1973). This measure has been found to moderately correlate ($r = .59$) with scores on the Coopersmith Self-Esteem Inventory, and with the California Psychological Inventory Self-Acceptance scale ($r = .66$) (Robinson & Shaver, 1973). Mintz and Betz (1988) found a relationship between lower self-esteem and disturbed eating habits (see Appendix C). Cronbach alpha calculated on current data ($r = .77$) suggested adequate internal consistency of items.

**Body satisfaction.** The Body Parts Satisfaction Scale (BPSS; Bohrnstedt, cited in Mintz & Betz, 1988) was designed to measure the strength and direction of individual’s feelings toward various body parts and the nature and dimensionality of their body image. The BPSS consists of a list of 24 body parts that subjects rate from 1 (extremely dissatisfied) to 6 (extremely satisfied). Subjects rate such body parts as hair, eyes, nose, mouth, complexion, overall face, shoulders, hands, arms, feet, hips, upper thighs, legs, and abdomen. An overall body satisfaction score is obtained by adding the individual item ratings and dividing by 24 (the total number of items). Thus, body
satisfaction scores can range from 1 (extremely dissatisfied) to 6 (extremely satisfied).

The internal consistency of this scale was found to be high as demonstrated by a Cronbach alpha of .89 (Noles, Cash, & Winstead, 1985). The Cronbach alpha calculated on the current sample was actually higher ($r = .93$). The correlation between mean BPSS scale and a single item measuring overall body satisfaction was .70, suggesting convergent validity for the total body satisfaction score (Bohrnstedt, cited in Mintz & Betz, 1988) (see Appendix D).

Locus of Control. The Locus of Control Scale (Rotter, 1966) is a 29-item forced choice test, including 6 filler items intended to make somewhat more ambiguous the purpose of the test, which is to measure individual differences in a generalized expectancy or belief in external control. The score consists of total number of external choices. Sample items include "Children get into trouble because their parents punish them too much" and "The trouble with most children nowadays is that their parents are too easy with them."

Internal consistency estimates are relatively stable: split half = .65 and Spearman-Brown = .79 (Rotter, 1966). Split-half reliability tends to underestimate the internal consistency because the test is an additive one and items are not comparable. The Cronbach alpha calculated on the current sample was adequate ($r = .73$) (See Appendix E).
Depression. The 20-item Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) measures depressive symptomatology in the general population. The CES-D was designed to measure current level of depressive symptomatology, with emphasis on the affective component, depressed mood. Sample items of the CES-D include, "I was bothered by things that usually don't bother me." and "I felt that everything I did was an effort." Individuals indicate the degree to which each item applies to them on a four point Likert-type scale ranging from 0, "rarely or none of the time (Less than 1 day a week)" to 3 "most or all of the time (5-7 days a week)." The possible range of scores is zero to 60, with the higher scores indicating more depressive symptoms.

Radloff (1977) found measures of internal consistency (coefficient alpha and the Spearman-Brown) to be high in the general population (.85) and even higher in the patient sample (about .90). Cronbach alpha calculated on the current sample was high (r = .90). Test-retest correlations were in the moderate range (.57) as would be expected with such a measure. Regarding validity, the CES-D was able to discriminate between patient and general population groups (Radloff, 1977). The average CES-D score for a group of psychiatric inpatients was significantly higher than the average for the general population samples. Seventy percent of the patients but only 21% of the general population
scored at and above an arbitrary cutoff score of 16. In the patient group, the correlation between the CES-D scale and ratings of severity of depression by a clinician was .56. (Craig & Van Natta, 1976). Factor analysis revealed the presence of four factors: Depressed Affect (blues, depression, loneliness, sadness), Positive Affect (hopeful, happiness), Somatic and Retarded Activity (bothered appetite, sleep problems, and problems with initiation) and Interpersonal (unfriendly and disliked by others) (see Appendix F).

Anxiety. The State-Trait Anxiety Inventory (STAI) makes a theoretical distinction between state anxiety, a transitory condition of perceived tension, and trait anxiety, a relatively stable condition of anxiety proneness (Spielberger, Gorsuch, & Sushene, 1970). Items on the STAI are rated by the individual utilizing a 4 point Likert-Scale. A rating of 4 indicates the presence of a high level of anxiety while a rating of 1 indicates the absence of anxiety. The STAI consists of 40 brief items: 20 to assess "how you feel right now" (State-Anxiety) and 20 to assess "how you generally feel" (Trait-Anxiety). Only the Trait-Anxiety measure was included in the current research. Scores for the Trait-Anxiety scale are obtained by adding the weighted scores for the twenty items. Scores vary from a minimum of 20 (low anxiety) to a maximum of 80 (high anxiety).
Test-retest reliabilities are reported for state and trait scores separately by males and females at 20 day interval: .54 (male) and .27 (female) for state, and .86 (male) and .76 (female) for trait (Buros). Cronbach alpha calculated on the current sample was high (r = .90). Validities for trait scores were estimated by correlating the scores with the IPAT Anxiety Scale, Manifest Anxiety Scale, and Affect Adjective Check List and, for 126 college women, coefficients were .75, .80, and .52, respectively.

Family characteristics. The Family Environment Scale (Moos & Moos, 1994) assesses family social environment as perceived by individual family members. The Family Environment Scale (FES) consists of 90 true-false statements that fall into 10 subscales: Cohesion, Expressiveness, Conflict, Control, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, and Organization. Each subscale measures perceived emphasis placed on that dimension by the family. Although the entire FES will be administered, only the Cohesion, Independence, Expressiveness, Conflict, and Achievement Orientation will be used to assess the specific environmental variables suggested by the literature to be most descriptive of bulimic families (Blouin et. al., 1989; Shisslak et al., 1990; Stern et al., 1989).
The subscales appear stable over an 8-week period with test-retest coefficients ranging from .68 to .86; adequate internal consistency (K-R 20) reliabilities also have been reported, ranging from .64 to .79 (Moos & Moos, 1981). Internal consistencies for the current sample was adequate for three of the subscales (Cohesion, $r = .84$; Expressiveness, $r = .63$; Conflict, $r = .79$); the KR20 was not acceptable for the Independence Subscale ($r = .30$) so this scale was dropped. The average item-subscale correlations were moderate (.45 to .58). Subscale intercorrelations were found to be around .20 which supports the assumption that each subscale is measuring a distinct aspect of the family social environment (Moos & Moos, 1981). Regarding validity, the scale has been shown to discriminate adequately between psychiatrically disturbed and normal families (Moos & Moos, 1981). The FES is an empirically tested family assessment instrument that has been used extensively in family research (Moos, Clayton, & Max, 1979) and has identified family environment patterns in families of eating-disordered subjects (Ordman & Kirschenbaum, 1986; Strober, 1981).

**Environmental stressors.** Life stressors were assessed with the 112 item College Student Life Events Schedule (CSLES; Sandler & Lakey, 1982). This instrument was developed to adequately assess the specific kinds of stressors that the college population experiences. For each
item, subjects indicate whether it occurred during the past 12 months and for those events that happen, rate the impact of the event by choosing one of four responses: "very negative" (-2), "slightly negative" (-1), "slightly positive" (1), or "very positive" (2). The potential range of scores is -224 to +224.

The CSLES was found to have a test-retest reliability of .92. The instrument was also found to correlate (r = .62) with another well-tested measure of stress: the Life Experience Scale (Sandler & Lakey, 1982) (see Appendix G).

**Coping resources.** The Coping Strategy Indicator (CSI) is a 33 item questionnaire measuring three fundamental modes of coping: problem-solving, seeking social support, and avoidance (Amirkhan, 1990). Participants are asked to come up with a specific and important problem that has happened in their lives during the last six months. With this problem in mind, they answer questionnaire items such as "Rearranged things around you so that your problem had the best chance of being resolved," and "Brainstormed all possible solutions before deciding what to do."

Participants respond on a three point scale ranging from "a lot" to "a little" to "not at all." Three points are assigned to the response "a lot", two to the response "a little" and one to the response "not at all." To score the questionnaire, items are broken out into three subscales: Problem-solving, Seeking Social support, and Avoidance and
Scores can range from 11 to 33 on each of the subscales.

Test-retest (at 4 to 8 weeks) reliability coefficients for student and the more heterogeneous community samples ranged from .77 to .86 (Amirkhan, 1990). Cronbach alpha coefficients calculated on the current sample were adequate (Problem Solving, \( r = .88 \); Seeking Support, \( r = .92 \); Avoidance, \( r = .79 \)). In a test of convergent validity, scores on the CSI were compared with a questionnaire that assesses personality characteristics. The Rotter Locus of Control scale correlated (\( r = -.27 \)) with Problem Solving, (\( r = -.160 \)) with Seeking Support, (\( r = .014 \)) with Avoidance. The CES-D Depression scale related significantly to all CSI scales (Problem Solving, \( r = -.141 \); Seeking Support, \( r = .277 \); Avoidance, \( r = .283 \)) (Amirkhan, 1990) (see Appendix H).

Social support. Satisfaction with social support was assessed by the Perceived Social Support Scale (Procidan & Heller, 1983). The developers define social support as "the extent to which an individual believes that his/her needs for support, information, and feedback are fulfilled" (p.2). The Perceived Social Support Scale (PSS) consists of two subscales; Perceived Social Support-Friends (PSS-Fr) and Perceived Social Support-Family (PSS-Fa). The current study included only the PSS-Fa. Sample item include: "My family gives me the moral support I need" (PSS-Fam). Each scale
(PSS-Fr and PSS-Fam) contains 20 items that are declarative statements. The individual responds Yes or No. The response indicative of perceiving social support is scored 1 and the other response is scored 0.

Regarding reliability, Sarason et al. (1987) found the instrument to correlate highly with the Social Support Questionnaire (SSQ): .47 for PSS-Fr and .65 for the PSS-Fam. The PSS has high internal consistency, with KR20’s for the PSS-Fr and PSS-Fam reported as .88 and .90 respectively (Procidano & Heller, 1983). The KR20 for the current sample was .94 on the PSS-Fa scale (see Appendix I).

Social desirability. The Crowne-Marlowe Social Desirability scale has been found to load on two factors (Self-Deception and Impression Management) which measures desire for social approval. Paulhus (1984) speculated that both tendencies (Impression Management and Self-Deception) are necessary for an individual to display need for approval behavior. This scale has demonstrated behavioral correlates more clearly than other scales used to measure social desirability (Crowne & Marlowe, 1964; Millham & Facobson, 1978; Strickland, 1977). It was used in this study as a control for determining whether subjects answered the questionnaires in a manner that suggested a desire for approval. This questionnaire appears in Appendix J.
Procedure

Prior to administering questionnaire packets, participants were given a statement of the study’s general purpose as well as information regarding anonymity, confidentiality, and the right to discontinue participation. In addition, they were asked to sign consent forms (see Appendix K). Because the study was longitudinal, questionnaire packetes were administered to entire psychology classes during class periods. This facilitated the process of gathering follow-up data because locating students was fairly straight forward. Participants were given a list of several mental health agencies in case their involvement in the study contributed to feelings of distress.
Descriptive Analyses

Prior to analyses, all variables in the data set were examined through SAS (1990) programs for accuracy of data entry, missing values, and fit between distributions and assumption of multivariate analysis. It should be noted that assumptions of multivariate normality were not met (see Table 3).

When an approximately normal distribution is analyzed, it displays a skewness index of zero. All variables listed in Table 1 are skewed. The W:Normal provides the Shapiro-Wilk statistic that tests the null hypothesis that the sample data were drawn from a normally distributed population. A small corresponding p value means that there is a good probability that the data were not drawn from a normal population.

As a result of the nonnormality found in the data, the less robust maximum likelihood (ML) estimation method could not be used when testing the measurement and causal models. Browne (1984) has developed a procedure based on the computation of a general weight matrix and generalized least squares (GLS) estimation that does not require the
Table 3

Distributions of Model Variables

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<th>Skewness</th>
<th>Kurtosis</th>
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</table>

Note. NEGENV = Negative Environmental Events; POSENV = Positive Environmental Events; DEP = Depression; ANX = Anxiety; FCOH = Family Cohesion; FIND = Family Independence; FEXP = Family Expressiveness; FCFL = Family Conflict; SE = Self-Esteem; BODSAT = Body Satisfaction; LOC = Locus of Control; PRBC = Problem-Solving Coping; SKC = Seeking Social Support Coping; AVDC = Avoidance Coping; SSUPC = Satisfaction with Social Support; BUL1 = Bulimia time 1; BUL2 = Bulimia time 2.
assumption that the observed variables be normally distributed. The generalized least squares (GLS) estimation method was used because it is less restrictive with respect to assumptions of multivariate normality.

Next, the internal consistency of the scales was computed. It should be noted that the reliability of one of the scales was not acceptable. The subscale from the Family Environment Scale labeled Independence had a K-R 20 of .30. With the exception of Expressiveness ($\alpha = .63$) all other scales exceeded .70 for internal consistency (see Table 2). Intercorrelations among all scales were also computed. All intercorrelations were less than .7 which decreases the risk of multicollinearity (Hatcher, 1994) (see Table 5).

Overview of Structural Equation Modeling

Linear Structural Relations Analysis (LISREL) was developed by Joreskog and Sorbom (1978). The technique uses generalized least squares (GLS) procedures to examine patterns of relationships among latent or unobserved variables. Anderson and Gerbing (1988) recommend a two-step approach for performing structural equation modeling (SEM). The first step of this process involves using confirmatory factor analysis to confirm an acceptable measurement model. A measurement model is a factor-analytic model in which one identifies the latent constructs and corresponding observed variables that will be used to measure each latent construct. The second step is to modify the measurement
model so that it specifies a causal relationship between some of the latent variables.

The SEM analyses were performed using PRELIS and LISREL-VIII (Joreskog & Sorbom, 1993) published by Scientific Software. LISREL incorporates a mathematical and statistical approach to the analysis of linear structural relationships, using matrix algebra. LISREL output includes parameter estimates and several general goodness of fit indices.

Perhaps the most widely reported goodness of fit index provided by LISREL is the chi-square test. The SAS/STAT users guide says that this statistic provides a "test of the specified model versus the alternative that the data are from a multivariate normal distribution with unconstrained covariance matrix" (1989, volume 1, p.139). In short, the chi-square statistic provides a test of the null hypothesis that the model holds exactly in the population. If the null hypothesis is correct, then the obtained chi-square value should be small and the p value (probability value) associated with it should be relatively large. The p value associated with the test indicates the likelihood of obtaining a chi-square value this large or larger if the null hypothesis were true (i.e., the model fits the data).
Table 4

Descriptive Statistics for all Observed Variables

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<th>SD</th>
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<td>Locus of Control Scale</td>
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<td>11.42</td>
<td>4.15</td>
<td>.74</td>
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<td>Center for Epidemiologic Studies Depression Scale (CES-D)</td>
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<td>16.93</td>
<td>10.32</td>
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<td>40.34</td>
<td>10.38</td>
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<td>(a) Cohesion</td>
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Table 5

Correlation Matrix for Indicator Variables

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Note. NEGENV = Negative Environmental Events; POSENV = Positive Environmental Events; DEP = Depression; ANX = Anxiety; FCOH = Family Cohesion; FIND = Family Independence; FEXP = Family Expressiveness; FCFL = Family Conflict; SE = Self-Esteem; BDOSAT = Body Satisfaction; LOC = Locus of Control; PRB = Problem-Solving Coping; SKC = Seeking Social Support Coping; AVDC = Avoidance Coping; SSUPC = Satisfaction with Social Support; BUL1 = Bulimia time 1; BUL2 = Bulimia time 2.
The degrees of freedom (df) serve as a standard by which to determine whether the chi-square value is large or small. Saris and Stronkhorst (1984) reviewed the use of this statistic in evaluating fit and found researchers who considered ratios of chi-square to df as high as 10 to 1 to be a good fit. In general, the lower the ratio (e.g., 2 or less), the more plausible the fit (Hatcher, 1994).

The Chi-Square criterion for model fit has a number of weaknesses. First, the requirement that the chi-square/df ratio should be less than 2 is somewhat arbitrary (Hatcher, 1994). Second, it has been shown that the chi-square/df ratio is affected by sample size, and that the same models may display significantly different ratios with small samples than with large samples (Marsh, Balla, & McDonald, 1988). Consequently, the chi-square should be only used as a very rough rule of thumb, and supplemented with other criteria that are not affected by sample size.

Bentler and Bonett's (1980) normed-fit index (NFI) has been proposed as an alternative to the chi-square test. Values on this index may range from 0 to 1, with values over .9 indicative of an acceptable fit of the model to the data. This index may be viewed "as the percentage of observed-measured covariation explained by a given measurement or structural model (compared with an overall, null model ... that solely accounts for the observed measure variances)" (Anderson and Gerbing, 1988, p.421).
A variation on the NFI is the non-normed fit index (NNFI, Bentler & Bonett, 1980). The NNFI has been shown to better reflect model fit at all sample sizes (Anderson & Gerbing, 1988). NNFI values over .9 are also viewed as desirable, although, unlike the NFI, the NNFI may assume values below 0 and above 1.

Finally, Bentler's (1989) comparative fit index (CFI) is similar to the NNFI in that it provides an accurate assessment of fit regardless of sample size. In addition, the CFI tends to be more precise than the NNFI in describing comparative model fit (Bentler, 1989). Values of the CFI will always lie between 0 and 1, with values over .9 indicating a good fit.

Other overall measures of fit include the Goodness of Fit Index (GFI) and the Root Mean Square Residual (RMR). The GFI is based on a ratio of squared discrepancies (between the observe covariance matrix and implied covariance matrix) to observed variances (Loehlin, 1987). The AGFI is the GFI adjusted for degrees of freedom. Values of GFI and AGFI range from 0 to 1, with values over .9 indicating good fit. The RMR is the square root of the mean of the squared discrepancies between the observed covariance matrix and the implied covariance matrix which represents an average of absolute discrepancies (Loehlin, 1987). Smaller values of RMR (less than .05) are associated with better fits. The overall fit of the proposed model in this
research will be assessed using the Chi-Square criterion, NFI, NNFI, CFI, GFI, AGFI, and the RMR.

It is often necessary in SEM analysis to modify the model when the proposed model does not fit the data well. Detailed aspects of the solution provided by LISREL8 provide information on the specific parameters within the model which are useful when improving model fit. In a general sense, modification involves either freeing or fixing model parameters. A fixed parameter has a known value which has been determined a priori by the researcher, while the free parameter's value is unknown and has to be estimated.

For each free parameter, it is important to review the parameter estimate itself as well as the $t$-value of the parameter. The $t$-value is approximately a z-statistic which is used to test the null hypothesis that the parameter is zero in the population. If a $t$-value is not significant, then it is probable that the parameter in the population is zero and thus, the parameter in the model should be fixed. In this case, the fit of the model will deteriorate slightly, although it will be more parsimonious. A decision to fix a free parameter occurs when it is discovered that the pathway involved does not account for a significant amount of the variance. That is, the $t$-value associated with the parameter is not significant.

The second type of model modification concerns freeing a previously fixed parameter. A parameter would be freed
based upon the values of the parameters' modification indices and theoretical justification. LISREL8 output provides a modification index which indicates the minimum improvement (decrease in chi-square value) that would occur if a particular parameter were freed. In freeing a parameter the overall fit of the model will be improved, although the model will be less parsimonious. In the broadest sense, the parsimony of a model refers to its simplicity. The principal of parsimony states that, when several theoretical explanations are equally satisfactory in accounting for some phenomenon, the preferred explanation is the one that is least complicated; the one that makes the fewest assumptions.

Unfortunately, modification of a model in the manner described above runs the risk of arriving at a final model which, although it may fit the data, is invalid: a model that will not generalize to other samples or to the population of interest. Invalid models occur because modifications very often capitalize on chance characteristics of the sample data. The relationships observed in the sample data will usually differ from those existing in the population, because no sample is perfectly representative of the population; therefore, most researchers are forced to make some model modifications. MacCallum et al. (1986) provided recommendations that minimize the dangers associated with modification of
structural equation models, including: (a) the use of large samples; (b) the initial model is well formulated, in that the correspondence between it and the "true" model is high; and (c) restrictive search strategies are adopted, so that no modifications are made without theoretical justification.

The conditions important in achieving model validity (e.g., large sample size and a theoretical bases for model construction and modification) were taken into account over the course of this research. Regarding sample size, Hatcher (1994) recommends a ratio of at least 5 subjects for each parameter to be estimated. The total number of parameters is the sum of the path coefficients, variances, and covariances to be estimated, and for the current study, was 35. Completed questionnaire packets were collected from 228 subjects which meets the criteria suggested by Hatcher (1994). The model proposed in the current study was based on prior research (Shatford & Evans, 1986) and other theoretical work (Cattanach & Rodin, 1988; Cattanach, Malley, and Rodin, 1988) in the bulimia literature. The model also was strongly rooted in the stress-coping literature (Billings & Moos, 1980; Miller, 1988; Pearlin et al., 1981; Pearlin & Schooler, 1978; Rodin & Salovey, 1989).

After the model has been modified it is then necessary to conduct a cross-validation analysis to determine if the modified model is meaningful in an independent sample (Bandalos, 1993). Approaches to validating the results of a
study are to either replicate the study by obtaining a second set of data (resources permitting), or by splitting the existing sample, given the sample size is sufficient, and running the analysis on the two smaller samples.

Cudeck and Browne (1983) and Browne and Cudeck (1989) have proposed a one-sample cross validation index. Their index is a measure of the discrepancy between the fitted covariance matrix in the calibration sample and the sample covariance matrix of the validation sample. The model that results in the smallest index should be the most stable in repeated samples. Bandalos (1993), in a simulation study, further examined the use of the Cudeck and Brown (1989) cross validation index and found it to be quite accurate in confirmatory factor models.

**Confirmation of the Measurement Model**

Confirmatory factor analysis (CFA) was utilized to develop an acceptable measurement model as a part of the two-step approach for structural equation modeling recommended by Anderson and Gerbing (1988). Measurement models relate latent (unobserved) constructs to the observed variables which are indicators of those latent constructs (Hoyle, 1995). In a measurement model, causal relationships between the latent constructs are not specified. Instead, each latent construct is allowed to covary (correlate) with every other latent construct (Butcher, 1994).
When conducting a confirmatory factor analysis, one begins with a model that predicts the existence of a specific number of latent variables, and predicts which indicator variables load on each factor (Butcher, 1994). If the model provides a reasonably good approximation of reality, it should do a good job of accounting for the observed relationships in the data set. In other words, the model should provide a good fit to the data.

Prior to conducting confirmatory factor analysis, the factor structure of scale items from measured variables were examined through exploratory factor analysis (EFA). Exploratory factor analysis is used to identify the number and nature of the factors that are responsible for covariation in the data set (Kim & Mueller, 1978).

Exploratory factor analysis of scale items was conducted in SAS and confirmatory factor analysis of the measurement model was conducted in LISREL8. Comparison between theory and scale data was accomplished via fit indices provided by LISREL8 (e.g., Chi-square, Goodness-of-Fit Index, Adjusted Goodness-of-Fit Index, and Root Mean Squared Residual).

Exploratory factor analyses were performed on the measured variables for the following latent constructs: Psychological Disturbance, Family Characteristics, Psychological Characteristics, and Coping strategies. Exploratory factor analysis was not attempted for the single
indicator construct (i.e., Bulimia). Similarly, positive life events and negative life events were simply rated on the basis of the level of their occurrence or nonoccurrence making them inappropriate for any type of exploratory factor analysis.

The entire measurement model, including all latent constructs (e.g., Environmental Events, Psychological Disturbance, Family Characteristics, Psychological Characteristics, Coping Resources, and Bulimia) was evaluated through confirmatory factor analysis in LISREL8. The data for these analyses were 228 college females who provided complete questionnaire packets.

EFA of latent variables. Two indicators of Psychological Disturbance (CES-D Scale and STAI Scale) were identified through previous research (Hinz & Williamson, 1987). All items from both the CES-D and STAI Scale loaded on one factor. Two items from the CES-D were dropped because of factor loadings below .30, internal consistency was rechecked and remained high. Because of the expected theoretical differences in depression and anxiety these two separate measurement variables (e.g., depression and anxiety) were modelled on the latent variable Psychological Disturbance.

Three indicators of Family Characteristics (e.g., Cohesion, Expressiveness, and Conflict) were presented by Moos and Moos (1994) in the Family Environment Scale (FES).
The Independence scale was dropped earlier in the analysis because of poor internal consistency. Examination of the scree plot of eigenvalues revealed a three factor structure. However, the factor structure was problematic in that several items from the Conflict scale loaded strongly on the factor that consisted primarily of items from the Cohesion Scale. Two items from the Conflict scale were dropped to improve the factor structure. Again, internal consistency was rechecked and remained high. After this adjustment, all factor loadings were above .30 on three factors representing Cohesion, Expressiveness and Conflict. Three indicators (self-esteem, locus of control, body satisfaction) of Psychological Characteristics were identified through previous research (Shatford & Evans, 1986). Examination of the scree plot of eigenvalues revealed a three factor structure, however most of the variance was accounted for by the first factor. All items from the Self-Esteem Scale and the Body Satisfaction loaded on factor one and had factor loadings above .30. Items from the Locus of Control Scale do not seem to be related to the underlying construct of Psychological Characteristics. Only one of the items from this scale loaded (above .30) on factor one and only 9 out of 23 loaded on factor two. Consequently, the Locus of Control Scale was eliminated from the measurement model. Because of the expected theoretical differences in Self-Esteem and Body Satisfaction, two separate measurement
variables were modelled on the latent variable Psychological Characteristics.

Four indicators of Coping Resources (Problem Solving, Seeking Social Support, Avoidance, and PSS-Fa) were identified from previous research (Amirkhan, 1990; Procidano & Heller, 1983). Examination of the Scree Plot of eigenvalues revealed a four factor structure. Items from the CSI loaded on the three factors just as in Amirkhan's (1990) research. All items from the PSS-Fa loaded on the fourth factor. All factor loadings were above .30 for each of the scale items.

CFA of the measurement model. The entire measurement model, including all latent constructs (e.g., Environmental Events, Psychological Disturbance, Family Characteristics, Psychological Characteristics, Coping Resources, and Bulimia) was evaluated through confirmatory factor analysis in LISREL8. Confirmatory Analyses revealed a problem area within the latent variable Coping Resources.

The observed variables Problem Solving, Seeking Social Support, and Avoidance accounted for very little of the variance in the latent variable Coping Resources ($R^2 = .04$, .07, and .07 respectively). On the other hand, Perceived Social Support-Family accounted for the bulk of the variance in the latent variable Coping Resources ($R^2 = .86$). Significant $t$ = values as well as the theoretical importance of these scales, however, justified retaining them in the
measurement model. Fit indices for the measurement model are as follows: \( \chi^2(70, N = 228) = 111, \ p = 0.0, \ NFI = .99, \ NNFI = .99, \ CFI = 1.00, \ GFI = .96, \ RMR = .07. \)

**The Structural Equation Causal Model**

The purpose of this phase of the analysis was to identify the best fitting, most parsimonious causal model. On the basis of theory (Pearlin et al., 1981) and previous research (Shatford & Evans, 1986), two causal models were hypothesized to determine the importance of the exogenous constructs in predicting bulimic behavior (See Figures 1 and 2; pp. 41 & 42). In these models, Environmental Stressors, Psychological Disturbance, Family Characteristics, and Psychological Characteristics were conceptualized as independent (exogenous) latent variables, while Coping Resources and Bulimia were conceptualized as dependent (endogenous) latent variables (see Figure 1). In the second model Psychological Disturbance becomes an endogenous latent variable (see Figure 2).

Initial attempts to fit the structural model (Model 1a) to the sample data were unsuccessful, thus a series of modifications were undertaken. Modifications were restricted to those that were consistent with previous theory and empirical studies and were accepted only if the resultant change in Chi-Square was significant.
LISREL8 provides a preliminary solution in a case such as this so that the source of the problem can be traced.

From this tentative solution, it was discovered that the latent variables, Psychological Disturbance and Psychological Characteristics were highly correlated ($r = .84$), suggesting a high level of empirical redundancy (Bagozzi & Yi, 1988). The structural model was improved by
combining these four measured variables into one latent variable.

Within the theta-delta matrix (i.e., measurement errors in the independent variables), one of the measured variables, Negative Life Events had a negative error variance. Regarding a situation involving a nonpositive theta-delta matrix, Kaplan (1989) suggests setting the "offending element" to a small positive value. This was accomplished utilizing a procedure outlined by Bollen (1989), the error variance of the observed variable, Negative Events was set equal to 1 minus the scale reliability times the variance of the measure. Since a reliability coefficient could not be calculated on this scale, scale reliability was estimated at .85, a procedure suggested by Joreskog and Sorbom (1988). This corrected the negative error variance.

However, on a subsequent run of the model, a new problem emerged, the t-value for the regression coefficient of Positive Events variable was not significant. Based on this information, it seemed appropriate to drop the observed variable Positive Events from the measurement model. The latent variable, Environmental Stressors was then defined solely by the measured variable Negative Events.

The revised Model 1a was not a good fit to the data (see Table 5 for fit indices). Seventy-eight percent of the variance of Coping Resources was accounted for by the latent
variables Environmental Stressors, Psychological Disturbance, and Family Characteristics. However, examination of $t$-values in this equation revealed that only Family Characteristics was contributing significantly. Environmental Stressors and Psychological Disturbances were dropped from the equation. The path from Coping Resources to Bulimia was significant but accounted for only 2 percent of the variance in Bulimia.

When Model 1b was run, the solution was found to be nonadmissible (i.e., it failed to converge). It was clear by this point that several aspects of Shatford and Evan's model were not generalizing to the current sample. Neither Environmental Stressors, Psychological Disturbances, nor Psychological Characteristisers had an impact on Coping Resources. These variables did not seem to be functioning as stressors in a stress-coping context culminating in disordered eating patterns, although there is extensive research that links these variables with bulimia (Cattanach, Malley, & Rodin 1988; Cohen, & Hoberman, 1983; Hinz & Williamson, 1987; Katzman & Wolchick, 1984).

A segment of the stress-coping literature (i.e., Pearlin et al., 1981) was reexamined to understand the problems with the current model (see Figure 3) and provide direction for model revision. In addition, Shatford's unpublished dissertation (1980) was also examined because it detailed the development of the model that was eventually
Figure 3. Model 1A: Hypothesized Complete Bulimia Model
cross-validated and published in 1986 article by Shatford and Evans.

Within Pearlin et al.'s (1981) proposed paradigm, there are several junctures at which mediators can conceivably intervene: prior to an event, between an event and the life strain it stimulates, between the strain and the diminishment of self concept, and prior to the stress outcome. A model that was more consistent with Pearlin et al.'s, (1981) work would conceptualize depression as an outcome of poor coping rather than a precursor. Initially, Shatford (1980) conceptualized depression as an outcome of the stress-coping process. This hypothesis was not confirmed in her study and based on statistical results, her model was revised and depression was modeled as a precursor.

Based on this information, it was decided the model would be revised so that Coping Resources was considered a mediator between Family Characteristics and Psychological Disturbances (i.e., anxiety, depression, body satisfaction, and self-esteem). Psychological Disturbances was then directly related to bulimia. Within this new conceptualization, a woman whose Coping Resources had broken down might become depressed, anxious, have lower self-esteem and less body satisfaction making her more vulnerable to developing eating disordered symptoms. There is ample support in the literature for the relationship between these variables and bulimia, (Garner & Garfinkel, 1981; Hinz &
Williamson, 1987; Noles, Cash, & Winstead, 1985; Willmuth, Leitenberg, Rosen, & Cado, 1988) suggesting that they may increase the vulnerability of women to develop maladaptive eating patterns.

In an additional revision, Coping Resources was divided into two separate latent variables: perceived social support from family (PSS-Fa) and coping strategies (i.e., problem solving, seeking social support, avoidance). In other words, two models were created (Model 2A and Model 2B) that differed only in what observed variables represented Coping Resources. In Model 2A, Coping Resources was represented by Perceived Social Support-Family. In Model 2B, Coping Resources was represented by the Coping Strategy Indicator (i.e., problem solving, seeking social support, & avoidance).

These modifications are consistent with Pearlin et al.'s (1981) conceptualization of the stress process in which two distinct mediators of stress are distinguished: social supports and coping. Social resources and coping resources are typically treated in research as separate and unrelated issues. Similarly, Dohrenwend et. al., (1981) distinguish between internal mediators (e.g., coping abilities, expectations, prior experience) and external mediators (e.g., material resources, social supports, social context). It is important to note, however, that each is a resource people can access to mediate the stressful impact
of life problems and, although they are two distinct phenomena, they both play a mediating role in the stress process.

Because there is strong theoretical support for the role of Environmental Stressors in the development of bulimia (Cattanach, Malley, & Rodin, 1988; Greenberg, 1986; Strober, 1981; Wolf & Crowther, 1983) this latent variable was retained in the revised model as well. In this model, two paths were proposed. The first from Environmental Stressors to Coping Resources (Cattanach & Rodin, 1988; Pearlin et al., 1981; Shatford & Evans, 1986) and the second going to Psychological Disturbance (Pearlin et al., 1981; Radloff, 1977).

The following hypotheses will be tested in the revised model.

1. Family Characteristics (cohesion, expressiveness, and conflict) are hypothesized to have a direct effect on Coping Resources.
   a. In Model 2A, women coming from an unhealthy family will be more likely to draw on coping strategies (problem solving, seeking social support, & avoidance).
   b. In Model 2B, women coming from a healthy family will be more likely to be satisfied with social support from the family (Perceived Social Support-Family).
2. Coping Resources are hypothesized to have a direct effect on Psychological Disturbance.
   a. In Model 2A, Coping Resources (i.e., Problem Solving, Seeking Social Support, & Avoidance) are hypothesized to have a direct effect on Psychological Disturbance (Anxiety, Depression, Body-Satisfaction, and Self-Esteem). Women who are having to draw on coping resources are likely to experience more disturbances.
   b. In Model 2B, Coping Resources (i.e., Perceived Social Support-Family) are hypothesized to have a direct effect on Psychological Disturbance (i.e., Anxiety, Depression, Body-Satisfaction, and Self-Esteem). Women who are happy with social support from their family are likely to experience less disturbances.

4. Psychological Disturbances (i.e., Anxiety, Depression, Body-Satisfaction, and Self-Esteem) are hypothesized to have a direct effect on Bulimia. Women who are disturbed are more likely to develop bulimia.

5. Environmental Stressors (Negative Events) are hypothesized to increase utilization of Coping Resources (Problem Solving, Seek Social Support,
Avoidance, and Perceived Satisfaction with Support-Family) and increase Psychological Disturbances (Anxiety, Depression, Body-Satisfaction, and Self-Esteem).

Models 2A and 2B were validated in the current data (see Figures 4 and 5) and both models fit the data well (see Table 5). Within the theta-delta matrix (i.e., measurement errors in the independent variables), one of the measured variables, Coping Resources had a negative error variance. Again, Kaplan's (1989) procedure was utilized to set the error for Coping Resources to zero. Finally, one path was dropped in both models because of a nonsignificant t-value. The path from Environmental stressors to Coping Resources was not significant in either model and a better fit was

Table 7

<table>
<thead>
<tr>
<th>Model</th>
<th>χ²</th>
<th>df</th>
<th>p</th>
<th>NFI</th>
<th>NNFI</th>
<th>CFI</th>
<th>GFI</th>
<th>RMR</th>
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<td>1A</td>
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<td>100</td>
<td>0.00</td>
<td>.97</td>
<td>.97</td>
<td>.98</td>
<td>.84</td>
<td>.25</td>
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<td>49</td>
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<td>.95</td>
<td>.97</td>
<td>.95</td>
<td>.05</td>
</tr>
<tr>
<td>2B</td>
<td>66</td>
<td>41</td>
<td>0.08</td>
<td>.94</td>
<td>.97</td>
<td>.98</td>
<td>.95</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note. N = 228. 1A = Apriori Model; 2A & 2B = Final Models; χ² = Chi-Square; df = degrees of freedom; NFI = Normed fit index; NNFI = non-normed fit index; GFI = Goodness of Fit Index; CFI = comparative fit index; RMR = Root Mean Square Residual.
achieved by including only the path from Environmental Stressors to Psychological Disturbances.

In addition to significant loadings on all but one path in Models 2A and 2B, the sign for each path coefficient was in the expected direction. The path from Family Characteristics to Coping Resources in Model 2A had a negative coefficient, confirming that women describing a healthy family environment (e.g., high cohesion, high expressiveness, and low conflict) were less likely to utilize coping strategies such as problem solving, seeking, social support, and avoidance. The path from Family Characteristics to Coping Resources in Model 2B had a positive coefficient, confirming that women describing a healthy family environment (e.g., high cohesion, high expressiveness, and low conflict) were more likely to report satisfaction with social support (PSS-FA).

Conclusions. Both models (Model 2A and 2B) tested in this study fit the data well. However, fit indices from Model 2B were a slightly better (see Table 5). As was stated earlier, the only difference between Model 2A and 2B is in regards to how the coping resources construct is defined. Model 2A represented the coping construct with two coping strategies (i.e., problem solving, seeking support). Model 2B only included perceived family support in the representation of the coping construct. The slightly better fit of Model 2B suggest that perceived family support was
more important in the etiology of bulimia than the two coping strategies included in Model 2A.
Figure 4. Revised Model 2A: Complete Bulimia Model (Coping Strategies)
Figure 5: Revised Model 2A: Complete Bulimia Model (Perceived Family Support)
CHAPTER IV

DISCUSSION

Introduction

Garfinkel and Garner's (1982) theoretical conceptualization of bulimia as a multidetermined disorder was confirmed in the present study. Previous theoretical work (Wolf & Crowther, 1983), consistent with Garfinkel et al.'s, proposed the integration of socio-cultural factors, disturbances in body image, and life stressors into an etiological model of bulimia. However, statistical analyses employed (Wolf & Crowther, 1983) were correlational and therefore provided only a limited understanding of how factors culminate into bulimic symptoms.

Structural equation modeling (SEM) analysis was employed in the current study, allowing simultaneous examination of causal relationships between factors (e.g., environmental stressors, psychological disturbance, family characteristics, psychological characteristics, and coping resources) hypothesized to contribute to the development of bulimia nervosa in college females. The model integrated two important etiological/theoretical perspectives in the bulimia literature: the stress-coping perspective (Cattanach & Rodin, 1988; Shatford & Evans, 1985) and the
family systems perspective (Minuchin et al., 1978). The combination of these two areas into a model provided an organizing framework to increase understanding of bulimia etiology. A longitudinal component, administration of the BULIT-R at the beginning and end of the semester, allowed evaluation of factor interrelationships over time.

**Findings from Model 2A.** In an etiological model (Model 2A) that fit the data rather well (See Table 6 & Figure 3) Family Characteristics, Coping Resources and Environmental Stressors were indirectly related to bulimic symptoms. These variables interacted with one another and ultimately were related to bulimic symptoms through psychological disturbance. These findings contribute to a better understanding of the etiology of bulimia from a multidimensional rather than linear perspective.

An inverse relationship between Family Characteristics and Coping Resources confirmed that college women reporting an unhealthy family environment (e.g., low cohesion, low expressiveness, and high conflict) utilized more coping resources (i.e., problem solving strategies & seeking social support). A direct and positive impact of these Coping Resources (e.g., problem solving and seeking support) on Psychological Disturbance (e.g., anxiety, depression, body dissatisfaction, and low self-esteem) confirmed that women who drew heavily on coping resources experienced higher
levels of depression, anxiety, low self-esteem and body dissatisfaction.

Current findings offer clarification for confusing aspects of previous research focusing on the relationship between bulimia and family characteristics (Kent & Clopton, 1990; Head & Williamson, 1990; Blouin et al., 1990; Steiger et al., 1992). Previous research indicates a correlational relationship between perception of family dysfunction and general pathology, such as anxiety, depression and body dissatisfaction (Kent & Clopton, 1990; Head & Williamson, 1990; Blouin et al., 1990; Steiger et al., 1992). Gaining a clear understanding of the nature of the relationship has been difficult in previous research because these studies did not distinguish direct and indirect effects. Instead, these studies described correlational relationships between family dysfunction, pathology, and disordered eating patterns without clarification of the direction of these relationships.

The current study allowed the simultaneous consideration of family characteristics, coping resources, psychological disturbances and bulimia. The study confirmed an indirect effect for family characteristics and coping resources on bulimia. The direct and positive impact of psychological disturbance on bulimia confirms the notion that women experiencing anxiety, depression, body dissatisfaction, and low self-esteem are also likely to
report bulimic symptoms. These findings are particularly notable because depression is one of the most common presenting problems among college students who seek counseling (Beck & Young, 1978; Kramer, Berger, & Miller, 1974). It may be that the high incidence of depression on the college campus increases women’s risk for developing disordered eating behaviors.

A direct effect between Environmental Stressors (negative events) and Psychological Disturbances was confirmed, where women experiencing negative events were more likely to report Psychological Disturbance (anxiety, depression, body dissatisfaction, and low self-esteem). The hypothesized path between Environmental Stressors (Negative Events) and bulimia, however, was not confirmed indicating that there was not a direct effect between these two factors. Thus, Psychological Disturbances appears to mediate the relationship between Negative Events and bulimia.

This study was consistent with other research in which undesirable events (such as death of a family member) were more likely to be associated with impaired functioning than desired events such as job promotion or marriage (Sarason, Johnson, & Siegel, 1978). Positive Events, as measured in this model was not a good indicator of Environmental Stressors and thus was not included in the model.
Summary of Model 2A Findings. When taken as a whole, the direct and indirect links between constructs in Models 2A provide rich information regarding the nature of reported distress in women describing disordered eating patterns. For example, statistical findings indicate that interpersonal factors (e.g., Family Characteristics) and stressful events (i.e., Environmental Stressors) are critical components of psychological distress in women manifesting disordered eating patterns.

Women reporting an unhealthy family environment (i.e., low cohesion, low expressiveness, and high conflict) also reported heavy utilization of coping strategies (i.e., problem solving and seeking support) and greater psychological problems (e.g., anxiety, depression, and body dissatisfaction, and low self-esteem). Women reporting negative environmental events also reported increased Psychological Disturbance.

These two factors (i.e., Environmental Stressors and Family Characteristics) elucidate aspects of the nature of one of the most important paths in the etiological model, which is that between Psychological Disturbance and Bulimia. Interpersonal factors and stressful events are indirect but important components of the psychological disturbance which has a direct link to disordered eating patterns and bulimia. These findings help clarify the nature of the depression, anxiety, body dissatisfaction and low self-esteem these
women report in that interpersonal factors are likely to be contributing to distress.

Findings from Model 2B. Model 2B was similar to Model 2A in that Family Characteristics, Coping Resources and Environmental Stressors were not directly related to bulimic symptoms. Model 2B differed in that Coping Resources in this model was measured by a single indicator: Perceived Satisfaction with Family Support. A direct and positive relationship between Family Characteristics and Coping Resources indicated that college women who reported an unhealthy family environment (i.e., low cohesion, low expressiveness, and high conflict) also reported less satisfaction with social support from their families. An inverse relationship between perceived satisfaction with social support and Psychological Disturbance (e.g., anxiety, depression, body dissatisfaction, and low self-esteem) confirmed that women dissatisfied with social support reported greater psychological distress.

These findings shed light on some confusing aspects of the social support literature. It has been suggested in past research that support does mediate the impact of stressful circumstances (Eaton, 1978) yet this literature offers no clear understanding of the conditions that determine whether or not support will be effective (Lieberman & Mullan, 1978). If one possesses family, friends, and a circle of associates, one is not necessarily
the automatic beneficiary of support in times of trouble (Pearlin et al., 1981).

Findings from the current study are consistent with Pearlin et al.'s (1981) suggestion that the degree to which people can draw on social relations for support depends on more than either the extensiveness of the relations or frequency of interaction. Support comes when people's engagement with one another extends to a level of involvement and concern, not when they merely touch at the surface of each other's lives. Being embedded in a network is only the first step toward having access to support; the final step depends on the quality of the relations one is able to find within the network (Pearlin, et al., 1981) or perceived satisfaction.

Consistent with Model 2A, a direct effect between Environmental Stressors (negative events) and Psychological Disturbances was confirmed, where women experiencing negative events were more likely to report Psychological Disturbance (anxiety, depression, body dissatisfaction, and low self-esteem). Again, the hypothesized direct path between Environmental Stressors (Negative Events) and bulimia, was not confirmed indicating that the effects of Environmental Stressors are indirect and mediated Psychological Disturbance.

Model 2B was consistent with Model 2A, in that undesirable events (such as death of a family member) were
more likely to be associated with impaired functioning than desired events such as job promotion or marriage (Sarason, Johnson, & Siegel, 1978). Positive Events, as measured in this model was not a good indicator of Environmental Stressors and thus was unrelated to bulimia.

**Summary of Model 2B Findings.** Overall findings from Model 2B are similar to those from Model 2A in that Family Characteristics and Environmental Stressors have important implications with regards to the nature of the distressed reported by women with disordered eating patterns. Additional findings, from this model include information about perceived family support. Women reporting an unhealthy family environment (e.g., low cohesion, low expressiveness, and high conflict) also report little perceived support from family members. Low perceived family support had a direct link with Psychological Disturbance. Again, these findings are helpful in understanding the nature of the distress reported by women with disordered eating patterns. The women who reported numerous psychological problems (e.g., anxiety, depression, and body dissatisfaction, and low self-esteem) were not happy with family support and are at high risk for developing disordered eating patterns.

**Conclusions.** Both models (Model 2A and 2B) tested in this study fit the data well. However, fit indices from Model 2B were slightly better than those for Model 2A. The
slightly better fit of Model 2B to sample data suggests that perceived family support is very important in the etiology of bulimia. This finding is consistent with the other literature documenting the relationship between family characteristics and bulimia (Blouin, Zuro, & Blouin, 1989; Kent & Clpton, 1988; Scalf-McIveer & Thompson, 1989; Strober & Humphrey, 1987). Furthermore, findings from this study illustrate one way in which family characteristics are important in the development of bulimia. A healthy family environment (i.e., high expressiveness, low conflict, and high cohesion) is often accompanied by the experience of perceived support by college women who report less psychological disturbance (i.e., anxiety, depression, low self-esteem, and body dissatisfaction). Psychological disturbance as defined in the model had an inverse relationship with bulimia.

**Longitudinal Findings**

This study was the first to add a longitudinal component to a LISREL analysis of bulimia. Results confirm that the hypothesized relationships between model constructs were consistent over time (a three month period) in both of the final models (Model 2A and 2B). In other words, bulimic symptoms at time one predicted bulimic symptoms at time two, accounting for 87% of variance in both models.

Epidemiological findings from the current study are consistent with other research (Striegel-Moore, Silberstein,
Frensch, & Rodin, 1989) in that the prevalence of bulimia in college females at follow-up was virtually unchanged. At baseline and follow-up (Striegel-Moore et. al., 1989) the prevalence of bulimia was 3.8%. One explanation for this finding in the present study, is that the college sample was generally healthy; in that only 4 out of the 228 women sampled reported receiving treatment for an eating disorder. Therefore, there would be little statistical evidence of treatment effects or a decrease in reported disordered eating patterns over time.

Although not a direct relationship, several factors included in Model 2A and 2B (i.e., Family Characteristics, Coping Resources, and Environmental Stressors) were conceptualized as predisposing women to develop bulimia. The direct relationship between Psychological Disturbance and Bulimia at time one leads one to speculate as to whether depression is both a predisposing as well as a maintaining factor in the bulimia process.

The present model indicates that, for this university sample, higher levels of depression, anxiety, body dissatisfaction, and low self-esteem (e.g., Psychological Disturbance) were related to more bulimic symptoms. Because this model was unidirectional, however, it did not provide information about possible reciprocal influence of bulimic behavior on these characteristics.
Other literature (Beebe, 1987) conceptualized bulimia as being a cyclical, or an episodic disorder. Specifically, Beebe (1987) described the affective changes which occur within the binge-purge cycle. Before a binge, bulimics tend to experience significantly increased stress and anxiety, which are often alleviated during the binge episode. The binge gives rise to feelings of loss of control, followed by increased guilt, helplessness and depression. This post-binge affect is often reduced during purgation, when subjective control is reclaimed, such that after the purge the bulimic experiences security and relief mixed with guilt and depression. If components of this process described by Beebe (1987) were to be measured temporally, perhaps an episode of binge eating would precipitate depression, and depression would, in turn, reinitiate the process.

An unexpected finding of this study was the indirect (rather than direct) relationship between Negative Events and Bulimia. Other research (Strober, 1981) has found a strong correlation longitudinally between life stress and bulimia. The findings of the present study may be partially accounted for in a theoretical sense by Beebe's cyclical conceptualization of bulimia. The role of stress in the bulimia cycle may include both internal and external stress. Negative Events might predispose women to psychological disturbance but that a more internally produced stress by these women may be a maintaining factor in the disease
process itself and could be an aspect of the Psychological Disturbances experienced by these women.

Although the potential influences of Family Characteristics as a maintaining factor in bulimia could not be ruled out by the current study, viewing these Characteristics as a predisposing condition makes more sense when the developmental realities of the college group are considered. For college women, many live away from home and have begun the process of separating from families of origin. Thus, interpersonal relationships that may have a more direct relationship with bulimia would be peer relationships, both male and female. Such a relationship was confirmed in a recent study (Thelen, Kanakis, Farmer, & Pruitt, 1993) which examined the relationship between bulimia and satisfaction with interpersonal relationships. There was strong negative correlation between bulimic symptoms and ratings of satisfaction with male relationships.

In conclusion, the present longitudinal component of Models 2A and 2B confirm relationships (both direct and indirect) between Family Characteristics, Coping Resources, Environmental Stressor, Psychological Disturbance and Bulimia. This study opens the way to a whole new series of questions in regards to possible reciprocal relationships between correlates of bulimia. A better understanding of the possible reciprocal relationship between Psychological
Disturbance and Bulimia and well as a possible reciprocal relationship between bulimia and male relationships an addition to the current model would clarify aspects of the disease as a process.

Limitations of the Study

The present study was limited by aspects of the research design. The problems of self-report methodology are particularly troublesome when examining eating disorders such as bulimia because of the secretive nature of the disorder. Bulimia has received quite a bit of attention in the media during the last ten years, so many women are aware of the symptoms. Consequently, college women may be less willing to admit to behaviors that have been associated with the syndrome of bulimia nervosa. Because of the large number of participants needed for structural equation modeling analysis, follow-up interview were not practical.

Measures were taken to assure the participants that their responses would be confidential and that questionnaire data would be anonymous. Participants did not place their name anywhere on the questionnaire and follow-up questionnaires were matched by social security numbers (last four digits). In addition, the Crown-Marlowe social desirability scale was administered to address the issue of truthfulness. Correlations between this scale and all other measures did not exceed .20 suggesting that participants
were probably not attempting to present themselves in a more favorable light.

Another methodological limitation is that generalization of the results may not go beyond college women. It has been noted by Pyle, Mitchell, Eckert, Halvorson, Neuman, and Goff (1983) that individuals meeting DSM-III criteria in university samples often differ from those presenting clinically, primarily with respect to the use of purging techniques. University sample are more likely to utilize strategies such as excessive exercise rather than vomiting to control weight. Bulimic students have been found to be more likely to employ restrictive dieting/fasting than purging. Consequently, attempts to extend treatment implications to the bulimic population as a whole must be made with caution. It could be argued, however, that the psychological concommitments of bulimia do not differ in the two groups and therefore, treatment aimed at these factors can benefit from research on bulimic symptoms.

An additional limitation is that all statistical analyses were based on correlational data. Consequently, one cannot infer causality from these findings. Instead, the analyses only provide information about the interrelationships between correlates of bulimia.

A final limitation to the study was that statistical findings for Models 2A and 2B were not cross-validated on a
separate sample due to a limited sample size. Although 370 questionnaires were collected at time one, only 228 questionnaires were collected on women at both time one and time two making it impossible to split the sample for cross-validation purposes. In addition, single sample cross-validation procedures, such as the cross-validation index of Browne & Cudeck (1989) was not possible because a sample size of 360 was required.

Treatment Implications

Despite the limitations of the study, the investigation provides some promising leads for treatment interventions for women diagnosed with disordered eating patterns. From the complexity of the model, it is apparent that interventions may occur at many levels (family systems, coping resources, social support, psychological disturbance).

The fact that bulimics have been shown to maintain maladaptive attitudes toward food, eating, and their self-efficacy (Fairburn, 1981) might suggest that cognitive therapy for depression would prove beneficial in modifying such maladaptive cognitions if included as a component of multimodal treatment. Since findings in this study suggest a direct impact of psychological disturbance on bulimic symptoms, an important aspect of treatment would be targeting any symptoms of depression, anxiety, low self-esteem and body-dissatisfaction in therapy. This may be one
reason there is a great deal of support in literature for cognitive behavioral approaches for the therapeutic treatment of bulimia (Andersen, 1987; Garner, Fairburn & Davis, 1987; Wilson & Fairburn, 1993).

In addition, findings from the current study suggest that interpersonal factors (i.e., satisfaction with family support) have a direct impact on psychological disturbance, making this another important intervention point. It would be important to learn about the client’s family environment and target dysfunctional areas. Interpersonal relationships might also be improved through group therapy.

**Areas for Future Research**

A better understanding of coping in bulimia could be achieved by expanding this variable. Appraisal is an aspect of coping discussed in Lazarus and Folkman’s (1984) stress theory that could be incorporated into a future model. Lazarus and Folkman (1984) stress theory defined psychological stress as a relationship between person and environment that is appraised by the person as taxing or exceeding his or her resources and endangering the person’s well-being. According to Lazarus and Folkman (1984) mediators of the person-environment interaction include environmental constraints and resources, appraisals, and coping strategies.

The importance of the direct relationship between depression and bulimia leads one to speculate as to whether
depression is both a predisposing as well as a maintaining factor in the bulimic process. The present model indicates that, for this university sample, depression is a precursor of bulimic behavior. Because the model tested in this study is a unidirectional model, it does not provide information about possible reciprocal influence of bulimic behavior on depression. Bulimia is generally conceptualized as being a cyclical, or episodic disorder, and if the components of the stress process were to be measured temporally, perhaps an episode of binge eating would precipitate depression, and depression would, in turn, reinitiate the process.

Individuals suffering from bulimia tend to experience predictable affective changes across the binge-purge cycle. Before a binge, bulimics tend to experience significantly increased stress and anxiety, which are often alleviated during the binge episode. The binge gives rise to feelings of loss of control, followed by increased guilt, disgust, helplessness and depression (Beebe, 1994). Further research would be able to confirm this process by testing for a reciprocal relationship between depression/anxiety and bulimia.

Other questions that could be addressed through future research have to do with the disease process itself. It would be helpful to understand the ways in which the relationships between the correlates of bulimia change once the disorder is fully established. Cross-validation of this
model in a clinical population would help distinguish precipitating from maintaining factors in the disease process.

A natural extension of this research is longitudinal sampling on other variables in the model. For example, participants could be tracked over time for depression and it could be determined whether shifts in depression coincide with shifts in bulimia. Longitudinal sampling could also allow for the delineation of precipitating versus maintaining variables. Finally, this research could be extended by including men and other female racial/ethnic groups.

Conclusions

This study was important in that it is beginning the process of defining a comprehensive etiological model of bulimia. This research integrated two important etiological/theoretical perspectives in the bulimia literature: the stress-coping perspective (Cattanach & Rodin, 1988; Shatford & Evans, 1986) and the family systems perspective (Minuchin et al., 1978). Structural equation modeling analyses employed in this study allowed the simultaneous examination of several correlates of bulimia (Family Characteristics, Coping Resources, Environmental Stressors, and Psychological Disturbances) identifying direct and indirect effects between these factors and bulimia. Findings have important treatment implications by
increasing the understanding of underlying mechanisms in the development of bulimia.
APPENDIX A

DEMOGRAPHIC AND WEIGHT QUESTIONNAIRE
DEMOGRAPHIC AND WEIGHT QUESTIONNAIRE

Directions: Please answer all items on this questionnaire honestly as they apply to you. All information you provide will be kept strictly confidential.

I. PERSONAL DATA

1. Age: __________

2. Marital Status: ___ Single ___ Married
   ___ Separated/Divorced

3. Academic Rank in School:
   ___ freshmen
   ___ sophomore
   ___ junior
   ___ senior
   ___ graduate school
   ___ other (please specify) __________

4. Number of Years Attending an Institution of Higher Education (e.g., university, community college):
   __________

5. Cumulative Grade Point Average:
   ___ 3.5 - 4.0
   ___ 3.0 - 3.49
   ___ 2.5 - 2.99
   ___ 2.0 - 2.49
   ___ less than 1.99

6. Academic Major (please specify): ____________
7. Race/Ethnic Group:  
   ___Black, non-Hispanic  
   ___Caucasian  
   ___Hispanic  
   ___Asian-American  
   ___Native American  
   ___Other (please specify) _____  

8. Religious Preference:  
   ___Catholic  
   ___Protestant  
   ___Jewish  
   ___Other Religion  
   (please specify_______)  
   ___None  

II. PARENTAL DATA  

9. Birth Parents’ Marital Status:  
   ___married  
   ___divorced  
   ___separated  

10. Father’s occupation/job (please specify):  ___________  

11. Mother’s occupation/job (please specify):  ___________  

12. Income Level of Parents:  
   ___ 0-10,000  
   ___ 10,001 - 25,000  
   ___ 25,001 - 40,000  
   ___ 40,001 - 60,000  
   ___ greater than 60,000  

13. How many siblings do you have? _______________
III. WEIGHT HISTORY

14. Present Height: ___feet  ___inches

15. Present Weight: ___lbs.

16. Your Ideal Weight: ___lbs.

17. Have you ever had a Weight Problem?  ____YES  ____NO  
   --IF YES, PLEASE ANSWER QUESTION 18. IF NO, PROCEED TO 
   QUESTION 19.

18. What type of Weight Problem have you had (please specify):
   ____Anorexia Nervosa
   ____Bulimia Nervosa
   ____Unhealthy Underweight, but not to the point of 
       Anorexia Nervosa
   ____Underweight (wanted to gain weight but couldn't)
   ____Overweight (weight 10% higher than a normal 
       comfortable weight)
   ____Obese (weight high enough to be a health risk and 
       significantly interferes with your life)

19. Have you ever been in treatment for an eating disorder?  
   IF YES, PLEASE SPECIFY WHAT TYPE:
   ____Anorexia Nervosa
   ____Bulimia Nervosa
   ____Obesity
   ____Other (please specify) ________________
20. Are you currently in treatment for an eating disorder?

___YES  ___NO

IF YES, PLEASE SPECIFY WHAT TYPE:

___Anorexia Nervosa
___Bulimia Nervosa
___Obesity
___Other (please specify) __________________
APPENDIX B

BULIMIA TEST REVISED (BULIT-R)
BULIMIA TEST REVISED (BULIT-R)

Please respond to each item as honestly as possible; remember all of the information you provide will be kept strictly confidential.

1. I am satisfied with my eating patterns.
   1. agree
   2. neutral
   3. disagree a little
   4. disagree
   5. disagree strongly

2. Would you presently call yourself a "binge eater?"
   1. yes, absolutely
   2. yes
   3. yes, probably
   4. yes, possibly
   5. no, probably not

3. Do you feel you have control over the amount of food you consume?
   1. most or all of the time
   2. a lot of the time
   3. occasionally
   4. rarely
   5. never

4. I am satisfied with the shape and size of my body.
   1. frequently or always
   2. sometimes
   3. occasionally
   4. rarely
   5. seldom or never

5. When I feel that my eating behavior is out of control, I try to take rather extreme measures to get back on course (strict dieting, fasting, laxatives, diuretics, self-induced vomiting, or vigorous exercise).
   1. always
   2. almost always
   3. frequently
   4. sometimes
   5. never or my eating behavior is never out of control
6. I use laxative or suppositories to help control my weight.
   1. once a day or more
   2. 3 - 6 times a week
   3. once or twice a week
   4. 2 - 3 times a month
   5. once a month or less (or never)

7. I am obsessed about the size and shape of my body
   1. always
   2. almost always
   3. frequently
   4. sometimes
   5. seldom or never

8. There are times when I rapidly eat a very large amount of food.
   1. more than twice a week
   2. twice a week
   3. once a week
   4. 2 - 3 times a month
   5. once a month or less (or never)

9. How long have you been binge eating (eating uncontrollably to the point of stuffing yourself?)
   1. not applicable; I don't binge eat
   2. less than 3 months
   3. 3 months to 1 year
   4. 1 - 3 years
   5. 3 or more years

10. Most people I know would be amazed if they knew how much food I can consume at one sitting.
    1. without a doubt
    2. very probably
    3. probably
    4. possibly
    5. no

11. I exercise in order to burn calories.
    1. more than 2 hours per day
    2. about 2 hours per day
    3. more than 1 but less than 2 hours per day
    4. one hour or less per day
    5. I exercise but not to burn calories or I don't exercise
12. Compared with women your age, how preoccupied are you about your weight and body shape? 
   1. a great deal more than average 
   2. much more than average 
   3. more than average 
   4. a little more than average 
   5. average or less than average 

13. I am afraid to eat anything for fear that I won’t be able to stop. 
   1. always 
   2. almost always 
   3. frequently 
   4. sometimes 
   5. seldom or never 

14. I feel tormented by the idea that I am fat or might gain weight. 
   1. always 
   2. almost always 
   3. frequently 
   4. sometimes 
   5. seldom or never 

15. How often do you intentionally vomit after eating? 
   1. 2 or more times a week 
   2. once a week 
   3. 2 - 3 times a month 
   4. once a month 
   5. less than once a month or never 

16. I eat a lot of food when I’m not even hungry. 
   1. very frequently 
   2. frequently 
   3. occasionally 
   4. sometimes 
   5. seldom or never 

17. My eating patterns are different from the eating patterns of most people. 
   1. always 
   2. almost always 
   3. frequently 
   4. sometimes 
   5. seldom or never
18. After I binge eat I turn to one of several strict methods to try to keep from gaining weight (vigorous exercise, strict dieting, fasting, self-induced vomiting, laxative, or diuretics).
   1. never or I don’t binge eat
   2. rarely
   3. occasionally
   4. a lot of the time
   5. most of or all of the time

19. I have tried to lose weight by fasting or going on strict diets.
   1. not in the past year
   2. once in the past year
   3. 2 – 3 times in the past year
   4. 4 – 5 times in the past year
   5. more than 5 times in the past year

20. I exercise vigorously and for long periods of time in order to burn calories.
   1. average or less than average
   2. a little more than average
   3. more than average
   4. much more than average
   5. a great deal more than average

21. When engaged in an eating binge, I tend to eat foods that are high in carbohydrates (sweets and starches).
   1. always
   2. almost always
   3. frequently
   4. sometimes
   5. seldom, or I don’t binge

22. Compared to most people, my ability to control my eating behavior seems to be:
   1. greater than others’ ability
   2. about the same
   3. less
   4. much less
   5. I have absolutely no control

23. I would presently label myself a "compulsive eater", (one who engages in episodes of uncontrolled eating).
   1. absolutely
   2. yes
   3. yes, probably
   4. yes, possibly
   5. no, probably not
24. I hate the way my body looks after I eat too much.
   1. seldom or never
   2. sometimes
   3. frequently
   4. almost always
   5. always

25. When I am trying to keep from gaining weight, I feel that I have to resort to vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics.
   1. never
   2. rarely
   3. occasionally
   4. a lot of the time
   5. most or all of the time

26. Do you believe that it is easier for you to vomit than it is for most people?
   1. yes, it’s no problem at all for me
   2. yes, it’s easier
   3. yes, it’s a little easier
   4. about the same
   5. no, it’s less easy

27. I use diuretics (water pills) to help control my weight.
   1. never
   2. seldom
   3. sometimes
   4. frequently
   5. very frequently

28. I feel that food controls my life.
   1. always
   2. almost always
   3. frequently
   4. sometimes
   5. seldom or never

29. I try to control my weight by eating little or no food for a day or longer.
   1. never
   2. seldom
   3. sometimes
   4. frequently
   5. very frequently
30. When consuming a large quantity of food, at what rate of speed do you usually eat?
1. more rapidly than most people have ever eaten in their lives.
2. a lot more rapidly than most people
3. a little more rapidly than most people
4. about the same rate as most people
5. more slowly than most people (or not applicable)

31. I use laxative or suppositories to help control my weight.
1. never
2. seldom
3. sometimes
4. frequently
5. very frequently

32. Right after I binge eat I feel:
1. so fat and bloated I can’t stand it
2. extremely fat
3. fat
4. a little fat
5. ok about how my body looks or I never binge eat

33. Compared to other people of my sex, my ability to always feel in control of how much I eat is:
1. about the same or greater
2. a little less
3. less
4. much less
5. a great deal less

34. In the last 3 months, on the average, how often did you binge eat (eat uncontrollably to the point of stuffing yourself)?
1. once a month or less (or never)
2. 2 - 3 times a month
3. once a week
4. twice a week
5. more than twice a week

35. Most people I know would be surprised at how fat I look after I eat a lot of food.
1. yes, definitely
2. yes
3. yes, probably
4. yes, possibly
5. no, probably not or I never eat a lot of food
36. I use diuretics (water pills) to help control my weight.
   1. 3 times a week or more
   2. once or twice a week
   3. 2 - 3 times a month
   4. once a month
   5. never
APPENDIX C

SELF-ESTEEM SCALE (Rosenberg, 1965)
SELF-ESTEEM SCALE

DIRECTIONS: Below is a series of statements concerning how people feel about themselves. For each item, please circle the response which best describes what you believe to be true according to the following scale:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

Remember, it is very important that you respond to all the items and that you answer them honestly as they apply to you. There are no right or wrong answers. All of the information you provide will be kept strictly confidential.

1. I feel that I’m a person of worth, at least on an equal basis with others.
   1  2  3  4

2. I feel that I have a number of good qualities.
   1  2  3  4

3. All in all, I am inclined to feel that I am a failure.
   1  2  3  4

4. I am able to do things as well as other people.
   1  2  3  4

5. I feel I do not have much to be proud of.
   1  2  3  4

6. I take a positive attitude toward myself.
   1  2  3  4

7. On the whole, I am satisfied with myself.
   1  2  3  4

8. I wish I could have more respect for myself.
   1  2  3  4
9. I certainly feel useless at times.

10. At times I think I am no good at all.
APPENDIX D

BODY SATISFACTION SCALE
BODY SATISFACTION SCALE

**DIRECTIONS:** Below is a list of body parts. Please rate how satisfied you are with each body part according to the following scale:

extremely 1   2   3   4   5   6 extremely
dissatisfied  satisfied

Remember, it is **very important** that you respond to all the items and that you answer them **honestly** as they apply to you. All of the information you provide will be kept **strictly confidential**.

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Weight</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Hair</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Eyes</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Ears</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Nose</td>
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<tr>
<td>Mouth</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>Teeth</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>Voice</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Chin</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Complexion</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>Overall Face</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Shoulders</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Breasts</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Arms</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Hands</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Buttocks</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Size of Sex Organs</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Appearance of Sex Organs</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Hips and Upper Thighs</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Legs (calves) Ankles</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Feet</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>General Muscle Tone</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>
APPENDIX E

THE LOCUS OF CONTROL SCALE
THE LOCUS OF CONTROL SCALE

Directions: Each item below consists of two statements, circle the letter corresponding to the statement that you believe to be most true.

Remember, it is very important that you respond to all the items and that you answer them honestly as they apply to you. There are no right or wrong answers. All of the information you provide will be kept strictly confidential.

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 why 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 to students 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 to get along with others.
8. a. Heredity plays the major role in determining one's personality.
   b. It is one's experiences 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 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 on 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 that 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 fortune 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 gets 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 really is no 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 many 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 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 much 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 study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
b. A good leader makes it 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 too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athleticism 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 the people are responsible for bad government on a national as well as on a local level.
APPENDIX F

CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE (CES-D)
CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE (CES-D)

DIRECTIONS: Below is a list of the ways you might have felt or behaved. Please state how often you have felt this way during the past week.

0 - Rarely or None of the Time (Less than 1 Day)
1 - Some or a Little of the Time (1-2 Days)
2 - Occasionally or a Moderate Amount of Time (3-4 Days)
3 - Most or All of the Time (5-7 Days)

DURING THE PAST WEEK:

1. I was bothered by things that usually don’t bother me.
   0  1  2  3

2. I did not feel like eating; my appetite was poor.
   0  1  2  3

3. I felt that I could not shake off the blues even with help from my family or friends.
   0  1  2  3

4. I felt that I was just as good as other people.
   0  1  2  3

5. I had trouble keeping my mind on what I was doing.
   0  1  2  3

6. I felt depressed.
   0  1  2  3

7. I felt that everything I did was an effort.
   0  1  2  3

8. I felt hopeful about the future.
   0  1  2  3

9. I thought my life had been a failure.
   0  1  2  3

10. I felt fearful.
    0  1  2  3

11. My sleep was restless.
    0  1  2  3

12. I was happy.
    0  1  2  3
13. I talked less than usual.
   0  1  2  3

   0  1  2  3

15. People were unfriendly.
   0  1  2  3

16. I enjoyed life.
   0  1  2  3

17. I had crying spells
   0  1  2  3

18. I felt sad.
   0  1  2  3

19. I felt that people dislike me.
   0  1  2  3

20. I could not get "going."
   0  1  2  3
APPENDIX G

COLLEGE STUDENT LIFE EVENTS SCHEDULE (CSLES)
Directions: The following questionnaire contains a list of events which may or may not have occurred in your life during the past 12 months (1 year). For each event, please do the following:

1. Think about whether you experienced the event. If you did not experience it in the past 12 months (1 year), then skip it and go on to the next item.

2. If you did experience the event during the past 12 months, then indicate whether the event was negative or positive on the scale associated with each item. Indicate whether the event was very negative (-2), slightly negative (-1), slightly positive (+1), very positive (+2).

There are no right or wrong answers, so please respond honestly as to what has occurred in your life during the last 12 months.

1. Ended intimate relationship (boyfriend/girlfriend) -2 -1 +1 +2
2. Marriage -2 -1 +1 +2
3. Became a parent -2 -1 +1 +2
4. Became engaged -2 -1 +1 +2
5. Negative encounter with professor -2 -1 +1 +2
6. Marital separation or divorce -2 -1 +1 +2
7. Increased separation from children -2 -1 +1 +2
8. Reestablished old personal friendship -2 -1 +1 +2
9. Developed good relationship with teacher -2 -1 +1 +2
10. Beginning or increased sexual activity -2 -1 +1 +2
11. Had small/large disagreement with friend -2 -1 +1 +2
<table>
<thead>
<tr>
<th></th>
<th>Event Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Personal rejection by a close friend or lover</td>
<td>-2</td>
</tr>
<tr>
<td>13.</td>
<td>Started a love relationship</td>
<td>-2</td>
</tr>
<tr>
<td>14.</td>
<td>Increased amount of dating</td>
<td>-2</td>
</tr>
<tr>
<td>15.</td>
<td>Separation from parents or siblings</td>
<td>-2</td>
</tr>
<tr>
<td>16.</td>
<td>Separation from close friend due to moving</td>
<td>-2</td>
</tr>
<tr>
<td>17.</td>
<td>Chose to terminate relationship with close friend</td>
<td>-2</td>
</tr>
<tr>
<td>18.</td>
<td>Relationship with boyfriend or girlfriend became worse</td>
<td>-2</td>
</tr>
<tr>
<td>19.</td>
<td>Decreased number of friends</td>
<td>-2</td>
</tr>
<tr>
<td>20.</td>
<td>Significantly improved your relationship with boyfriend, girlfriend, or close friend</td>
<td>-2</td>
</tr>
<tr>
<td>21.</td>
<td>Learning that a close friend/relative is very different than you thought (e.g., sexual behavior, use of serious drugs, crime)</td>
<td>-2</td>
</tr>
<tr>
<td>22.</td>
<td>Relationship with relative became worse</td>
<td>-2</td>
</tr>
<tr>
<td>23.</td>
<td>Relationship with relative became better</td>
<td>-2</td>
</tr>
<tr>
<td>24.</td>
<td>Began living with lover (not marriage)</td>
<td>-2</td>
</tr>
<tr>
<td>25.</td>
<td>Decreased amount of dating</td>
<td>-2</td>
</tr>
<tr>
<td>26.</td>
<td>Relationship with spouse became worse</td>
<td>-2</td>
</tr>
<tr>
<td>27.</td>
<td>Relationship with spouse improved</td>
<td>-2</td>
</tr>
<tr>
<td>28.</td>
<td>Decreased sexual activity</td>
<td>-2</td>
</tr>
<tr>
<td>29.</td>
<td>Difficulty with sexual performance</td>
<td>-2</td>
</tr>
<tr>
<td>Event Description</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Developed relationship with people who have new and interesting ideas or life styles</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>+2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Became an aunt or uncle</td>
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<tr>
<td>-2</td>
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</tr>
<tr>
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<td>+2</td>
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<tr>
<td>Marriage of close friend or relative</td>
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<td></td>
</tr>
<tr>
<td>-1</td>
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<td>+2</td>
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<td></td>
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<tr>
<td>Death of a friend</td>
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<td></td>
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<tr>
<td>-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
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<td></td>
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<tr>
<td>+1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+2</td>
<td></td>
<td></td>
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<tr>
<td>Friend or relative encountered serious trouble or failure experience</td>
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<td>-1</td>
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<tr>
<td>+2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents' financial status became better</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td></td>
<td></td>
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<tr>
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<td></td>
<td></td>
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<tr>
<td>+2</td>
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<tr>
<td>Received a visit or visited family</td>
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<tr>
<td>+1</td>
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</tr>
<tr>
<td>+2</td>
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<td></td>
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<tr>
<td>Worsening of parents' financial status</td>
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</tr>
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<tr>
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<tr>
<td>+2</td>
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<tr>
<td>Friend or relative had important positive experience</td>
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<tr>
<td>Health of close friend/relative became much worse</td>
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<td>-2</td>
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<tr>
<td>Death of close relative (e.g., parent)</td>
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<tr>
<td>Parents separated or divorced</td>
<td>-2</td>
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<td>-2</td>
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<td>+2</td>
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<tr>
<td>Remarriage of parent(s)</td>
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<tr>
<td>Serious conflict between family members</td>
<td>-2</td>
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<td>+2</td>
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<td>Significantly increased your debt level</td>
<td>-2</td>
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<td>+2</td>
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<tr>
<td>Fired or lost job</td>
<td>-2</td>
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<td>-2</td>
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<td>+2</td>
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<tr>
<td>Quit job</td>
<td>-2</td>
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<td>+2</td>
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<tr>
<td>Received positive recognition at job (e.g., promotion, raise)</td>
<td>-2</td>
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<td>-2</td>
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<td>+2</td>
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<tr>
<td>Major change in work or school hours</td>
<td>-2</td>
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<td>-2</td>
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<td>Event</td>
<td>Rating</td>
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<td>---------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Increased economic difficulties</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Acquired a car</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Won a large amount of money (over $10,000) in a lottery or sweepstakes</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Improved your financial status</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Began a new job (part or full time)</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Increased difficulty with new job</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Discharged from military</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Improved master of academic material</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Significantly improved course grades</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Transferred to new school</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Began college for first time</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Encountered increased difficulty with school regulations or facilities</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Withdrawal from college/university</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Completed an assignment for school</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Returned to school after long absence</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Graduated from H.S. or junior college</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Applied to graduate/professional school</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Decided on a major or career</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Increased academic demands from classes</td>
<td>-2</td>
<td></td>
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<tr>
<td>68.</td>
<td>Problems with academic coursework</td>
<td>-2</td>
</tr>
<tr>
<td>69.</td>
<td>Accepted in graduate/professional school</td>
<td>-2</td>
</tr>
<tr>
<td>70.</td>
<td>Moved out of parents' home</td>
<td>-2</td>
</tr>
<tr>
<td>71.</td>
<td>Moved back into parents' home</td>
<td>-2</td>
</tr>
<tr>
<td>72.</td>
<td>Change of residence (e.g., moved)</td>
<td>-2</td>
</tr>
<tr>
<td>73.</td>
<td>Serious conflict with roommate</td>
<td>-2</td>
</tr>
<tr>
<td>74.</td>
<td>Improved living conditions (ex: housing)</td>
<td>-2</td>
</tr>
<tr>
<td>75.</td>
<td>Difficulty with landlord/landlady</td>
<td>-2</td>
</tr>
<tr>
<td>76.</td>
<td>Moved to a new city</td>
<td>-2</td>
</tr>
<tr>
<td>77.</td>
<td>Improved physical appearance</td>
<td>-2</td>
</tr>
<tr>
<td>78.</td>
<td>Physical appearance became worse</td>
<td>-2</td>
</tr>
<tr>
<td>79.</td>
<td>Physical health became worse due to illness or accident</td>
<td>-2</td>
</tr>
<tr>
<td>80.</td>
<td>Began or increased use of illicit drugs</td>
<td>-2</td>
</tr>
<tr>
<td>81.</td>
<td>Improved your physical health</td>
<td>-2</td>
</tr>
<tr>
<td>82.</td>
<td>Hospitalization of self</td>
<td>-2</td>
</tr>
<tr>
<td>83.</td>
<td>Improved your physical health</td>
<td>-2</td>
</tr>
<tr>
<td>84.</td>
<td>Worsening of personal health/ habits</td>
<td>-2</td>
</tr>
<tr>
<td>85.</td>
<td>Did not experience fatigue</td>
<td>-2</td>
</tr>
<tr>
<td>86.</td>
<td>Decreased use of illicit drugs</td>
<td>-2</td>
</tr>
<tr>
<td>87.</td>
<td>Involvement in accident</td>
<td>-2</td>
</tr>
<tr>
<td>88.</td>
<td>FEMALE: Possible unwanted pregnancy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MALE: Girlfriend/wife's possible unwanted pregnancy</td>
<td>-2</td>
</tr>
<tr>
<td></td>
<td>Event Description</td>
<td>Scores</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>89.</td>
<td>FEMALE: Had an abortion MALE: Girlfriend/wife had abortion</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>90.</td>
<td>Began counseling or psychotherapy</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>91.</td>
<td>Began volunteer work</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>92.</td>
<td>Received recognition or award for achievement</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>93.</td>
<td>Victim of crime</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>94.</td>
<td>Problem with the law (arrested.. etc.)</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>95.</td>
<td>Acquired a pet</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>96.</td>
<td>Major change in or renewed dedication to philosophy of life</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>97.</td>
<td>Leadership position in organization</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>98.</td>
<td>Loss of pet through runaway or death</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>99.</td>
<td>Traveled to a new and interesting place</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>100.</td>
<td>Increase in amount of leisure time</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>101.</td>
<td>Decreased involvement in hobby or task</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>102.</td>
<td>Joined a social organization</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>103.</td>
<td>Won an award at an athletic competition</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>104.</td>
<td>Increased exposure to cultural or entertainment experiences</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>105.</td>
<td>Accomplished a goal in a hobby or recreational activity</td>
<td>-2 -1 +1 +2</td>
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<tr>
<td>106.</td>
<td>Major increase in religious commitment</td>
<td>-2 -1 +1 +2</td>
</tr>
<tr>
<td>107.</td>
<td>New or increased involvement in hobby or recreational activity</td>
<td>-2 -1 +1 +2</td>
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</tr>
<tr>
<td>108. Not accepted into social organization you desired</td>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td>109. Organization you belong to failed to accomplish important goal</td>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td>110. Organization you belong to accomplished an important goal</td>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td>111. Increased use of alcohol</td>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td>112. Rejected by all graduate/professional schools you desired to attend</td>
<td>-2</td>
<td>-1</td>
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APPENDIX H

THE COPING STRATEGY INDICATOR (CSI)
The Coping Strategy Indicator (CSI)

We are interested in how people cope with the problems and troubles in their lives.

Listed below are several possible ways of coping. We would like you to indicate to what extent you, yourself, used each of these coping methods. All of your responses will remain anonymous.

Try to think of one problem you have encountered in the last six months or so. This should be a problem that was important to you, and caused you to worry (anything from the loss of a loved one to a traffic citation, but one that was important to you).

Please describe this problem in a few words (remember, your answer will be kept anonymous):

________________________________________________________________________

With this problem in mind, indicate how you coped by checking the appropriate box for each coping behavior listed on the following pages. Answer each and every question even though some may sound similar.

Did you remember to write down your problem? If not, please do so before going on.

KEEPING THAT STRESSFUL EVENT IN MIND, INDICATE TO WHAT EXTENT YOU...

1. Let your feelings out to a friend?
   1. a lot  2. a little  3. not at all

2. Rearranged things around you so that your problem had the best chance of being resolved?
   1. a lot  2. a little  3. not at all

3. Brainstormed all possible solutions before deciding what to do?
   1. a lot  2. a little  3. not at all
4. Tried to distract yourself from the problem?
   1. a lot     2. a little     3. not at all

5. Accepted sympathy and understanding from someone?
   1. a lot     2. a little     3. not at all

6. Did all you could to keep others from seeing how bad things really were?
   1. a lot     2. a little     3. not at all

7. Talked to people about the situation because talking about it helped you to feel better?
   1. a lot     2. a little     3. not at all

8. Set some goals for yourself to deal with the situation?
   1. a lot     2. a little     3. not at all

9. Weighed your options very carefully?
   1. a lot     2. a little     3. not at all

10. Daydreamed about better times?
    1. a lot     2. a little     3. not at all

11. Tried different ways to solve the problem until you found one that worked?
    1. a lot     2. a little     3. not at all

12. Confided your fears and worries to a friend or relative?
    1. a lot     2. a little     3. not at all

13. Spent more time than usual alone?
    1. a lot     2. a little     3. not at all

14. Told people about the situation because just talking about it helped you to come up with solutions?
    1. a lot     2. a little     3. not at all
15. Thought about what needed to be done to straighten things out?
   1. a lot  2. a little  3. not at all

16. Turned your full attention to solving the problem?
   1. a lot  2. a little  3. not at all

17. Formed a plan of action in your mind?
   1. a lot  2. a little  3. not at all

18. Watched television more than usual?
   1. a lot  2. a little  3. not at all

19. Went to someone (friend or professional) in order to help you feel better?
   1. a lot  2. a little  3. not at all

20. Stood firm and fought for what you wanted in the situation?
   1. a lot  2. a little  3. not at all

21. Avoided being with people in general?
   1. a lot  2. a little  3. not at all

22. Buried yourself in a hobby or sports activity to avoid the problem?
   1. a lot  2. a little  3. not at all

23. Went to a friend to help you feel better about the problem?
   1. a lot  2. a little  3. not at all

24. Went to a friend for advice on how to change the situation?
   1. a lot  2. a little  3. not at all

25. Accepted sympathy and understanding from friends who had the same problem?
   1. a lot  2. a little  3. not at all
26. Slept more than usual?
   1. a lot  2. a little  3. not at all

27. Fantasized about how things could have been different?
   1. a lot  2. a little  3. not at all

28. Identified with characters in novels or movies?
   1. a lot  2. a little  3. not at all

29. Tried to solve the problem?
   1. a lot  2. a little  3. not at all

30. Wished that people would just leave you alone?
   1. a lot  2. a little  3. not at all

31. Accepted help from a friend or relative?
   1. a lot  2. a little  3. not at all

32. Sought reassurance from those who know you best?
   1. a lot  2. a little  3. not at all

33. Tried to carefully plan a course of action rather than acting on impulse?
   1. a lot  2. a little  3. not at all
APPENDIX I

PERCEIVED SOCIAL SUPPORT SCALE
Perceived Social Support Scale

DIRECTIONS: The statements which follow refer to feelings and experiences which occur to most people at one time or another in their relationships with friends. Please circle Yes or No to indicate whether or not you agree with each statement (do not circle both responses). There are no right or wrong answers.

Remember, it is very important that you respond to all the items and that you answer them honestly as they apply to you. All of the information you provide will be kept strictly confidential.

1. My friends give me the moral support I need.
   Yes   No

2. Most other people are closer to their friends than I am.
   Yes   No

   Yes   No

4. Certain friends come to me when they have problems or need advice.
   Yes   No

5. I rely on my friends for emotional support.
   Yes   No

6. If I felt that one or more of my friends were upset with me, I’d just keep it to myself.
   Yes   No

7. I feel that I’m on the fringe in my circle of friends.
   Yes   No

8. There is a friend I could go to if I were just feeling down, without feeling funny about it later.
   Yes   No

9. My friends and I are very open about what we think about things.
   Yes   No

10. My friends are sensitive to my personal needs.
    Yes   No

11. My friends come to me for emotional support.
    Yes   No
12. My friends are good at helping me solve problems.  
   Yes  No

13. I have a deep sharing relationship with a number of friends.  
   Yes  No

14. My friends get good ideas about how to do things or make thing from me.  
   Yes  No

15. When I confide in friends, it makes me feel uncomfortable.  
   Yes  No

16. My friends seek me out for companionship.  
   Yes  No

17. I think that my friends feel that I'm good at helping them solve problems.  
   Yes  No

18. I don't have a relationship with a friend that is as intimate as other people's relationships with friends.  
   Yes  No

19. I've recently gotten a good idea about how to do something from a friend.  
   Yes  No

20. I wish my friends were much different.  
   Yes  No
APPENDIX J

SOCIAL DESIRABILITY SCALE
Social Desirability Scale

Directions: Indicate whether or not the statement describes you, by using T for true or F for false.

1. I'm always willing to admit it when I make a mistake. T  F

2. I always try to practice what I preach. T  F

3. I never resent being asked to return a favor. T  F

4. I have never been irked when people expressed ideas very different from my own. T  F

5. I have never deliberately said something that hurt someone's feelings. T  F

6. I like to gossip at times. T  F

7. There have been occasions when I took advantage of someone. T  F

8. I sometimes try to get even rather than forgive and forget. T  F

9. At times I have really insisted on having things my own way. T  F

10. There have been occasions when I felt like smashing things. T  F
APPENDIX K

INFORMED CONSENT FORM
I agree to voluntarily participate in a study concerning personality characteristics and eating patterns of college students. As a participant in this study, I agree to complete a series of questionnaires designed to measure variables such as environmental stressors, psychological characteristics, family characteristics, coping responses, and eating patterns. I understand that I will also be asked to complete another brief questionnaire during the last week of the semester. The purpose of the study is to better understand the relationship, if any, between personality characteristics, stress/coping characteristics, and eating patterns.

I understand that all information I provide will be confidential, and will not be recorded in any way that could identify me personally. In addition, I understand that there is no personal risk or discomfort directly involved with this research and that I am free to discontinue participation at any time.

If I have any questions or problems that arise in connection with my participation in this study, I should contact Amy Street or supervisor, Dr. Trent Petrie, Department of Psychology, 565-2671 (work).

(Date) (Participant’s Signature)

(Date) (Investigator’s Signature)

THIS PROJECT HAS BEEN REVIEWED BY UNIVERSITY OF NORTH TEXAS COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS (Phone 565-3940)
REFERENCES


Craig, T., & Van Natta, P. A. (1976). Presence and persistence of depressive symptomatology in patients and


Lacey, J. H., Coker, S., & Birtchnell, S. A. (1986). *Bulimia: Factors associated with its etiology and*


