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A preliminary exploration of the reliability and validity estimates of an instrument that assesses bulimia: The Bulimic Symptom Severity Scale

Rhodes, Theresa Lynn, Ph.D.
The Ohio State University, 1989
A PRELIMINARY EXPLORATION OF THE RELIABILITY AND
VALIDITY ESTIMATES OF AN INSTRUMENT THAT ASSESSES
BULIMIA:
THE BULIMIC SYMPTOM SEVERITY SCALE

DISSERTATION
Presented in Partial Fulfillment of the Requirements for the
Degree Doctor of Philosophy in the Graduate School
of the Ohio State University.
By
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1989

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CHAPTER I
Introduction

Eating problems and eating disorders pose a significant health problem, especially since the incidence rates have increased dramatically in the past two decades (Mitchell & Eckert, 1987). Societal pressure on women for thinness has greatly influenced the development of eating disorders. According to Garner, Garfinkel, Schwartz, and Thompson, (1980) the cultural expectations and values of thinness for women have been major contributing factors in the increased incidence of eating disorders. The success and attractiveness of women has been judged, at least partially, to depend on their achievement of the cultural norm for attractiveness: thinness. Striving for thinness remains a crucial aspect of achieving success for women and appears to play an important role in developing eating disordered behaviors (Garner, Rocket, Olmsted, Johnson, & Coscina, 1985). In addition to the expectation of thinness, other societal attitudes have obtained similar influence in the development of eating disorders, for example, the glorification of youth, the value on dieting, and the prejudice against obesity (Garner, et al., 1985). A societal message is clear: beauty and self-worth are based on thinness and the result of the message is eating disorders.
Defining The Construct

Societal attitudes and expectations about thinness influence the development of eating disorders in general and specifically, the development of bulimia. Bulimia has been increasingly investigated since being designated as a psychiatric syndrome in 1980 by the American Psychiatric Association (DSM-III, 1980). Much of the literature has focused on describing and defining the syndrome (Abraham & Beumont, 1982; Johnson & Larson, 1982; Johnson, Lewis, & Hagman, 1984; Pyle, Mitchell & Eckert, 1981). Bulimia has been described as a binge eating and purging cycle that allows for avoidance and denial of traumatic issues (Muss, 1986), as an alternative coping mechanism, and as a source of comfort or punishment (Hooker & Convisser, 1983). Bulimia has also been labelled a variety of names, such as, the "binge-purge syndrome" (Schlesier-Stropp, 1984); "bulimarexia" (Boskind-White & White, 1983); and "bulimia nervosa" (Russell, 1979). Characteristics that appear to be a common thread between the variety of descriptions of bulimia include: binge eating episodes, compensation methods such as, self-induced vomiting, laxative use, fasting, and exercise, depression, anxiety (Fairburn, Cooper, Kirk, & O'Connor, 1985); preoccupation with food, eating and weight gain (Schlesier-Stropp, 1984); and an awareness that the eating behaviors are abnormal (Wardel & Beinart, 1981).

Bulimia has been characterized in two primary ways: as a symptom and as a syndrome (Cooper, Charnock, & Taylor, 1987; Gray & Ford, 1984; Mintz, 1987; Russell, 1985). Bulimia as a symptom is
synonymous with binge eating. Individuals have been classified as bulimic based solely on their binge eating behaviors. Describing bulimia in this way, binge eating, has been problematic because binge eating without associated compensatory methods is also a central feature of other eating disturbances. According to Wardel and Beinart, (1981) the symptom binge eating is a the primary feature of clinically diagnosed obesity and compulsive overeaters. Additionally, individuals who are diagnosed as anorectic also occasionally engage in binge eating behaviors. It would appear that engaging in binge eating behaviors alone, would not clearly discriminate an individual who is bulimic from one who is obese or from one who is anorectic. Since binge eating is a feature of other eating disturbances as well as a feature of bulimia, a reliance on binge eating behaviors as the discriminating factor between bulimia and other eating disturbances seems simplistic and inappropriate. Because bulimia as a syndrome is defined by a number of symptom features rather than simply binge eating, it allows for a more complete and unambiguous representation of bulimia. Based on a clearer representation of bulimia, more accurate discriminations between bulimic and nonbulimic individuals could be made.

Incidence of bulimia. To illustrate the confusion resulting from the use of both symptom definitions (binge eating) and syndrome definitions of bulimia, a brief exploration of the literature describing the incidence of bulimia will be presented. The incidence of bulimia has been reported to range from 3.8% (Stranger & Printz, 1980) to 83% (Fairburn & Cooper, 1982) in both college and community samples. The latter percentage is an example of the use of a single
criterion to define bulimia; the investigators used the responses to an advertisement in a popular women's magazine that inquired as to whether the respondents had engaged in binge eating behaviors. Eighty-three per cent of those responding to the ad had endorsed binge eating behaviors. The size of this reported incidence of bulimia reflects how the use of binge eating as an indicator of bulimia may distort the true incidence rate of the disorder. Basing their incidence rate on the DSM-III criteria for bulimia, Stranger and Printz, (1980) found that of the 500 students interviewed, 3.8% of them described their eating patterns as consistent with the those of the DSM-III criteria. The typical incidence rate of bulimia in college samples appears to be within a 2% to 6% range, where the stricter the criteria (i.e., criteria that includes more symptom features) used to delineate the bulimic sample, the lower the incidence rate. Pyle, Mitchell, Eckert, Halvorson, and Newman, (1983) demonstrated the effects of various levels of criteria stringency on reported incidence rates of bulimia by manipulating the criteria used to delineate samples of bulimics from college undergraduates. In that study the reported incidence rate for bulimia was 4.1%. However, when the criteria were changed to include additional symptoms, the reported incidence rate for bulimia was reduced to 2.1%.

In other studies, (Gray & Ford, 1986; Healy, Conroy, & Walsh, 1985; Johnson, Lewis, Love, & Stuckey, 1984; VanThorn & Vogel, 1985) the incidence of bulimia was reported to range from 4.9% to 10.8% for high school and college samples. Gray and Ford (1986), in particular, proposed that the lack of consistency in the diagnostic
criteria for bulimia and the varied manner in which different criteria have been applied to the study samples have been responsible for the disparate reporting of the incidence of bulimia. The results from these studies are indicative of the confounding effects of using various criteria to define bulimia. It would appear that the lack of agreement on the definition of bulimia (i.e., as a symptom or as a syndrome) has produced a number of inconsistencies in the reported incidence of bulimia.

Symptom vs syndrome bulimia. In response to the inconsistencies in definition of bulimia, a group of studies have explored the issue of symptom vs. syndrome by directly comparing symptom and syndrome groups (Katzman & Wolchik, 1984; Leon, Carroll, Cherny, & Finn, 1985; Wardel & Beinart, 1981; Williamson, Kelley, Daves, Ruggiero, & Blouin, 1985). Results from these studies have generally demonstrated that the incidence of the bulimic syndrome is much lower than the incidence of the bulimic symptom, binge eating. Many of these studies that have compared symptom and syndrome groups have revealed differences in psychological distress including: depression, anxiety, impulsivity (Williamson, et al., 1985), body-image distortions, low self-esteem, and high need for approval (Katzman & Wolchik, 1984), and substance abuse (Leon, et al., 1985). Hart and Ollendick (1985) investigated the incidence of bulimia in both college and working samples of women and found that the number of women in each sample that reported binge eating was considerably higher than those who met the criteria for bulimia the syndrome. The binge eating behaviors were endorsed by 41% of the
working women and 69% of the college women, whereas, the numbers of women who were classified as having the syndrome of bulimia were 1% and 5%, respectively, for the working and college women in the study.

One explanation for why binge eating appears to be a common behavior among college women is that it is associated with college life and serves some social and celebratory functions for many college women (Ondercin, 1979). According to Ondercin (1979), binge eating is a common pattern of behavior frequently used to cope with anxiety and depression, especially on college campuses, and should not be used as the sole indicator of bulimia. If binge eating is a fairly common behavior of college women, then its role as the diagnostic indicator of bulimia seems limited. There appears to be a need to clarify the relationship between bulimia and binge eating and to establish the diagnostic significance of binge eating (Crowther & Chernyk, 1986) and that continued use of binge eating as the criterion for distinguishing bulimics from nonbulimics will result in an overestimation of the incidence of the syndrome as well as, the impossibility of comparisons across investigations.

The proposition that an eating disturbance continuum exists is one approach to clarifying the relationship between binge eating and bulimia. Many theorists have hypothesized the notion that eating disorders exist on a continuum with anorexia positioned at one end of the continuum and no weight or eating concerns on the other end, with a variety of other eating disturbances (e.g., chronic dieting, fad bulimia, bulimia, purging bulimics, binge eating, and obesity).
positioned between the two extreme points. (Herzog & Norman, 1985; Mickalide & Andersen, 1985; Ruderman, 1985; Striegel-Moore, et al., 1986). It has also been suggested that the set of eating disturbances along the continuum share some fundamental features, such as the unyielding pursuit of thinness (Mickalide & Andersen, 1985). The organization of the continuum allows for specific descriptions of the symptoms that are involved in each type of eating disturbance and therefore, establishes understandable distinctions between disturbances.

Studies that have compared the characteristics of the different eating disturbance groups from the continuum have found some important differences between groups and have found support for the notion of an eating disorder continuum (Dykens & Gerrard, 1986; Edwards, & Nagelber, 1986; Herzog & Norman, 1985; Polivy & Herman, 1987). Despite finding similarities in family variables between anorectic, anorectic with binge eating episodes, and bulimic groups, Herzog and Norman (1985) found some notable differences in psychological features and in sexual behaviors and concluded that bulimia and anorexia should be classified as distinct syndromes. In another study, (Dykens & Gerrard, 1986) comparisons were made between bulimics, chronic dieters, and controls resulting in the following differences: (a) bulimics and chronic dieters exhibited lower levels of self-esteem and external locus of control as compared to controls and (b) bulimics exhibited more sex-typed behaviors and more substance abuse than the dieter and control groups. Although dieters may not represent a pathological stage on the continuum and
have been ignored as a serious point along the eating disturbance continuum, Polivy and Herman (1987) contend that dieters share some disturbed features with both anoretics and bulimics, such as, fear of weight gain and dissatisfaction with body. Hence, dieters should be included on the eating disturbance continuum.

Movement along the eating disturbance continuum seems to be associated with increased psychological distress and with severity of symptom number and quality (Squire, 1983). Specifically, movement along the continuum is associated with lower self-esteem, more depression, more preoccupation with and fear of weight gain, stronger drives toward thinness, and less of a sense of control (Ousley, 1986; Striegel-Moore, et al., 1986). Distinctions on the basis of symptom quality and severity are supported by research that has compared different groups positioned on the eating disturbance continuum. The continuum appears to include nonpathological (i.e., dieters) and pathological (i.e., bulimia) disturbances and seems to address, at least partially, the question of what discrimates between the symptom of bulimia (binge eating) and the syndrome of bulimia.

The syndrome of bulimia. Another approach toward clarifying the definition of bulimia is the use of more stringent and comprehensive set of criteria to discriminate between bulimic and nonbulimic behaviors (Hart & Ollendick, 1985; Root, Fallon, & Friedrick, 1986; Schlesier-Stropp, 1984; Thelen, Mann, Pruitt & Smith, 1987). This approach to defining bulimia seeks to illuminate the components of bulimia the syndrome by including more of the symptom features in the criteria for bulimia. According to Mitchell, Hatsukami, Eckert,
and Pyle (1985), bulimia can no longer be thought of as a problem of binge eating; it is more complex than that and includes other symptom features, such as psychological and personality factors in addition to binge eating patterns. The complexity of the syndrome is based on the fact that it involves a number of symptom dimensions including: behavioral, psychological, affective, cognitive, and attitudinal symptoms (Root, et al., 1986). Bulimia the syndrome is a heterogeneous disorder that is characterized by a number of prominent features.

The clinical profile of bulimia is not limited to behavioral symptomatology (Abraham, & Beumont, 1982; Cooper, 1984; Fairburn & Garner, 1987; Lazerson, 1984) but is more accurately described as involving a number of symptom features. The DSM-IIIR criteria for bulimia is an example of a set of criteria that describes bulimia as a syndrome which has a number of important symptom features. The DSM-IIIR criteria for bulimia (American Psychiatric Association, 1987) are as follows: (a) recurrent episodes of binge eating; (b) a feeling of loss of control over eating during binge eating episodes; (c) regular endorsement of self-induced vomiting, laxative usage, diuretic usage, strict dieting or fasting, or vigorous exercise in order to prevent weight gain; (d) a minimum of two binge eating episodes per week for at least three months, and (e) a persistent overconcern with body shape and weight. Included in the criteria are behavioral symptoms (i.e., binge eating and compensating behaviors), an affective symptom (i.e., feeling of loss of control) and an attitudinal symptom (i.e., preoccupation with body shape and weight).
The prominent features of bulimia. An accurate assessment of bulimia would necessarily include a consideration of each of the prominent features: behavioral, affective, attitudinal, and cognitive. (Katzman & Wolchik, 1984; Root et al., 1986). The primary behavioral features of bulimia include binge eating episodes and any one or a combination of the compensating methods, such as self-induced vomiting or vigorous exercise.

The affective features of bulimia include all of the emotional reactions associated with the disturbance, for example, the feeling of no control over the eating patterns or in other areas of one's life (Johnson & Love, 1985; Lazerson, 1984). Another example of an emotional reaction associated with bulimia is the use of food as a coping mechanism to anesthetize, to comfort, or to punish oneself (Thompson, Berg, & Shatford, 1987). The relationship between bulimia and mood changes, particularly dysphoric moods, is one of the frequently researched affective features of bulimia. Much of the literature investigating mood changes in bulimics has revealed a substantial incidence of depression and increased dysphoric moods following binge eating episodes (Cooper & Bowskill, 1986; Johnson & Larson, 1982; Johnson-Sabine, Wood, & Wakeling, 1984). According to Cooper and Fairburn (1986) and Hinz and Williamson (1987), a depressed mood is a central feature of bulimia. Bulimics are characterized by depression and dysphoric affect in association with their disturbed eating patterns. They are also characterized by binge eating and compensatory behaviors, and by utilizing their binge/compensating patterns as a coping mechanism.
Closely related to affective features of bulimia are the attitudinal symptom features that include such symptoms as, endorsement of sex roles and of sociocultural norms for thinness (Root et al., 1986). Neuhaus and Florin (1982) reported that bulimic women held more traditional views of appropriate sex roles and were less likely to believe that they had much control over their lives. Striegel-Moore, et al.,(1985) found that bulimic women were considerably more accepting of attitudes valuing the importance of women's beauty than were normal controls. Similarly, investigations that have focused on the self-concept of bulimics have revealed that bulimics tend to have devalued self-images (Weinreich, Doherty, & Harris, 1985), low self-esteem (Baird & Sights, 1986; Lewis & Johnson, 1983), and low self-efficacy (Schneider, O'Leary, & Agras, 1987). Bulimics more readily endorse sociocultural norms regarding thinness and attractiveness, have lower self-esteem, and have more negative self-concepts than do comparable groups of nonbulimics.

A final feature area of bulimic symptomatology is the cognitive and perceptual distortions that accompany and perpetuate the disturbed eating patterns. Bulimics typically exhibit an intense fear of weight gain and preoccupation with weight (Cutts & Barrios, 1986) and distorted perceptions of body size and shape (Powers, Schulman, Gleghorn, & Prange, 1987; Ruff & Barrios, 1986). The distorted body perceptions and preoccupation with weight bolster the drive for thinness that many bulimics strive to achieve. Similar to the other characteristic symptoms of bulimia, the perceptual and cognitive
distortions contribute only one part to the configuration of symptoms that constitute the syndrome of bulimia.

The syndrome of bulimia is comprised of a number of characteristic symptoms and may also be organized by a number of subtypes. It has been suggested that bulimia is a group of eating disturbances that are closely related through the behavioral manifestations of each subtype, where the most severe type is characterized by symptomatology that meets all of the criteria for the syndrome (DSM-IIIR criteria) (Fairburn & Garner, 1987; Lacey, 1985; Thompson, Berg & Shatford, 1987). The subtypes are classified by different clusters of symptoms such as weight level (e.g., normal weight, low weight) (Garner, Olmsted, & Garfinkel, 1985; Herzog & Norman, 1985), eating disturbance history (e.g., history of anorexia or no history of eating problems) (Leon, et al., 1985; Mickalide & Andersen, 1985), method of compensation (e.g., purging bulimics, dieting/fasting bulimics) (Grace, Jacobson & Fullager, 1985), and the severity of binge eating episodes (e.g., subthreshold bulimics who engage in binge eating episodes less than 8 times per month and binger bulimics who binge eat but who do not compensate) (Fairburn & Garner, 1987; Katzman & Wolchik, 1984). The binge eating behaviors are the one symptom that all subtypes have in common, what determines the subtype is the extent to which the other symptoms of the syndrome are present and in what configuration they exist. Subtypes of bulimia are defined by specific bulimic symptoms in varying degrees of severity.
Bulimia is a multidimensional disorder that is characterized not only by disturbed eating patterns, but also by other associated symptoms features. Effective assessment and treatment must address all of the symptom features of the syndrome instead of focusing on binge eating solely (Mitchell, Hatsykami, Pyle, & Eckert, 1986). Since bulimia can be described as multidimensional it is important that assessment instruments address the scope of the symptoms in a comprehensive manner. To accomplish a comprehensive assessment of bulimia an instrument would have to evaluate the various symptoms exhibited by bulimics (Swift, 1985). A main purpose of this study was to investigate the assessment value of the Bulimic Symptom Severity Scale (BSSS; Rhodes, 1985) for evaluating bulimic symptomatology. It was predicted that the BSSS would provide a thorough assessment of bulimic symptomatology and would support the notion that bulimia is multidimensional.

Bulimic Instrumentation

The importance of a thorough assessment of bulimia and bulimic symptomatology has been established (Root, et al., 1986; Striegel-Moore, et al., 1986; Swift, 1985) Given the need for comprehensive assessment of bulimia, two questions should be addressed: (a) what are the available instruments? and (b) what is the capacity of each instrument for assessing bulimia? The number of instruments available that are purported to assess bulimia is limited, and there are a number of concerns associated with these instruments. Few tests have been developed primarily as assessment instruments of bulimia, and of those employed for evaluating bulimia, none assesses the
syndrome in its entirety. One major weakness is that the majority of bulimic instruments focus on the binge eating and compensating patterns of bulimia instead of evaluating all of the symptom features. A focus on the disturbed eating patterns seems to adequately address bulimia the symptom but is incongruous with the notion that bulimia is multidimensional. An absence of reliability and validity data of the available instruments is another problematic area of concern. Finally, a third limitation of the current bulimic instrumentation is the poor applicability of the instruments for evaluating bulimia because of the rationale underlying the development of each instrument (i.e., development of instruments for assessing anorexia or eating disturbances in general without a focus on bulimia, specifically). In order to more fully explore the limitations of the current bulimic instruments, a brief description of representative instruments and concerns associated with each will be given.

Two assessment instruments have been applied to bulimia despite being more globally focused on eating disorders, specifically on describing anorexia. The Eating Attitudes Test (EAT) (Garner & Garfinkel, 1979) is one of the most widely used eating disorder instruments. The EAT was developed as a measure of the symptoms of anorexia which does include binge eating and self-induced vomiting. It essentially is a behaviorally-based scale that evaluates anoretic behaviors and thoughts. The application of the EAT to bulimia as a syndrome is quite limited given the fact that it was originally developed for use with anoretics. Because it assesses binge eating and vomiting it can be used to evaluate the binge eating symptom of
bulimia, however, it clearly does not assess the remaining symptom features of bulimia which greatly limits its utility as a bulimic measure. Carter and Moss (1984) have raised some questions about the utility of the EAT as a screening device for either anorexia or bulimia. Further questions have been raised about the use of the EAT as a diagnostic tool (Eisler & Szmukler, 1985). The limited utility of the EAT as an assessment device for bulimia is based on its developmental purposes (i.e., to assess anorexia), on its narrow assessment of bulimic symptoms (i.e., binge eating and vomiting), and on its questionable diagnostic competencies.

Similar concerns have been raised about another more generally focused eating disorder instrument, the Eating Disorder Inventory (EDI) (Garner, Olmsted & Polivy, 1983). The EDI was developed to be an assessment instrument for both anorexia and bulimia, and it is purported to measure the behavioral and psychological traits of both disorders. One problem with the EDI is that it was created on the basis of clinical observations of anorectic clients and was normed on a group of anoretics. No bulimics were included in the norming group or in the observation group, yet it has been applied to bulimics (Eberly & Eberly, 1985). Because the EDI was developed using anorectic criterion groups, the application of it to bulimic groups that do not also suffer from anorexia seems unfounded. The EDI assess bulimia by evaluating binge eating and purging patterns and by addressing some of the psychological symptoms that are shared by both anoretics and bulimics. An improvement over the EAT is that the EDI addresses one more of the symptom features of bulimia (psychological features);
however, like the EAT, the EDI only assesses the symptom of bulimia by evaluating the binge eating patterns instead of the syndrome of bulimia that involves a number of other symptom features.

A second type of instrument that has been used with bulimics is the symptom-focused instrument that has emphasized assessment of binge eating as the criterion for evaluating bulimia. There have been a number of scales recently developed in that vain, focused on the assessment of binge eating patterns of behavior including: (a) the Binge Scale (Hawkins & Clement, 1980), (b) the Binge Eating Questionnaire (Halmi, Falk & Schwartz, 1981) and (c) the Bulimic Investigatory Test, Edinburgh (Henderson & Freeman, 1987). The premise underlying these scales is that bulimia can be evaluated on the basis of binge eating episodes (Halmi, et al., 1981). All of these scales have binge eating as a primary focus and fail to address the other features of bulimia. Additionally, they have shown only limited estimates of validity and reliability. For example, the Binge Scale reported a one month, test-retest reliability of .88, but no other reliability or validity data have been reported. The Binge Eating Questionnaire has been used to validate the DSM-III criteria for bulimia, but other validity data have not been reported (Halmi, et al., 1981). The Bulimic Investigatory Test, Edinburgh (BITE) is easy to administer and acceptable to subjects (Henderson & Freeman, 1987). These two qualities hardly constitute it as a reliable and valid measure of bulimia, especially since it focuses on binge eating and none of the other symptom features of bulimia. The symptom-focused instruments seem appropriate for assessing a symptom of bulimia, but the utility of
these instruments for assessing the syndrome of bulimia is questionable.

Similar to the binge eating scales, there are other scales that have a one symptom focus. The Bulimic Cognitive Distortions Scale (BCDS) (Schulman, Kinder, Powers, Prange, & Gleghorn, 1986) and the Goldfarb Fear of Fat Scale (GFFS) (Goldfarb, Dykens, & Gerrard, 1985) are two examples of assessment instruments that evaluate bulimia on the basis of one symptom area. The Bulimic Cognitive Distortions Scale has shown some evidence of reliability and validity. For example, the internal consistency coefficients are reported to be .60+, and the scale coefficient alpha is reported to be .97. The BCDS has two factors that reflect automatic eating behaviors and distortions about physical appearance. Once again, these are features of bulimia but they are not the only features of the syndrome. Likewise, the Goldfarb Fear of Fat Scale addresses one symptom feature of bulimia, the fear of weight gain, but does not address the other aspects of the syndrome.

The utility of one final instrument the Bulimia Test (BULIT) (Smith & Thelen, 1984) will be addressed. The BULIT has shown high reliability data and has reported validity data such as discriminating between bulimic and nonbulimic groups (Thelen, Mann, Pruitt, & Smith, 1987). It was developed as an operationalized version of the DSM-III criteria for bulimia and assesses bingeing and compensating behaviors of bulimia including: binge eating, vomiting, laxative use, fasting, and weight fluctuations. The BULIT is probably the strongest of the instruments that assess bulimia because it has established reliability and validity data, and because it assesses more of
the syndrome features as compared to the other instruments. However, the focus of the BULIT on the behavioral features of bulimia to the exclusion of affective, cognitive, and attitudinal symptom features limits its utility for assessing the syndrome of bulimia.

While binge eating patterns are an important feature of the syndrome of bulimia, it has become increasingly important to address more of the symptom features of the disturbance in order to more fully understand bulimia in its entirety (Fairburn & Garner, 1987; Mitchell, et al., 1985; Root et al., 1986). Focusing on binge eating excludes many important features of bulimia that require attention if a thorough understanding of the disorder is to be achieved (Swift, 1985). The assessment instruments that have been utilized for evaluation of bulimic symptomatology have been limited in number and scope because they have emphasized single symptoms (e.g., binge eating behaviors). A further limitation of the bulimic instrumentation is the restricted reliability and validity data concerning the instruments.

Because of the limits on the utility of current instrumentation, there is a need to develop an instrument that will assess bulimia in a comprehensive manner, that is, evaluating the various symptom features of the syndrome: affective, cognitive, attitudinal, psychological, and behavioral instead of focusing on any one of the features. Additionally, there is a need for an instrument that will measure the severity of bulimia and attend to the subtype issue (Ortega, Wamanely, Malonado, & Hubbard, 1987). The Bulimic Symptom Severity Scale(BSSS) (Rhodes, 1985) was developed to assesses bulimia in a comprehensive manner and was developed as a
measure of symptom severity. The BSSS addresses the prominent features of bulimia, through the four scale dimensions (behavioral, psychological, sociocultural, and self-concept) and has revealed high initial estimates of reliability.

The main purpose of this study was to explore the utility of the Bulimic Symptom Severity Scale for assessing the features of bulimia in a comprehensive manner. An exploration of the validity of the dimensions and investigations of the discriminating ability of the BSSS were primary tests of the utility of the BSSS for assessing bulimia.

An important aspect of this investigation was exploring the extent to which the BSSS measured what it purported to measure (bulimic symptomatology) and the extent to which it did so in a consistent and stable manner. In other words, the measurement qualities of reliability and validity were investigated as a second purpose of this study. Since the utility of any instrument is based on its reliability (Walsh & Betz, 1985) that component of the study was most salient. The criterion-related validity of the BSSS was explored through a series of group comparisons of bulimic subtypes and of nonbulimic groups. Convergent validity was explored through the relationship between the BSSS and an independent measure of bulimia, the BULIT. Investigations of the criterion-related validity, the internal consistency and stability reliabilities, and the factor structure of the BSSS provided a sense of the psychometric qualities of the BSSS and of its utility as an effective assessment instrument for bulimia.

A third purpose of the study was to explore the incidence rates of bulimia and of the bulimic subtypes and to explore the utility of the
BSSS for differentiating subtypes on the basis of symptom profiles. For example, Binger individuals, as compared to Bulimics, as compared to Subthreshold individuals would exhibit unique clusters of symptom features. Subsequently, each subtype group would exemplify a different profile of feature symptoms as illustrated by their scores on the separate subscales of the BSSS. Thus, providing support for the suggested multidimensionality of bulimia. If the BSSS did accurately differentiate between bulimic subtypes then the utility of the instrument for assessing bulimia the syndrome and bulimia as defined by specific constellations of symptoms would have confirmatory support.

In summary, bulimia has been variously defined and has been described as a multidimensional disturbance which most likely is comprised of subtypes. Bulimia has been described as a symptom (binge eating) and as a syndrome that includes a number of symptom features: behavioral, affective, cognitive, and attitudinal. It has been suggested that despite the focus on binge eating as the central feature of bulimia, that the syndrome involves more than one primary symptom. The instrumentation has reflected the emphasis on describing bulimia as a symptom instead of as a syndrome and therefore, has been limited by the narrow focus. Because of the limitations of the current bulimic instruments, a need for a measure that assesses the syndrome of bulimia is proposed. The objectives of this study were to investigate the psychometric features of the BSSS and to explore the utility of the BSSS for assessing the syndrome of bulimia.
The following questions were addressed in this investigation:

1) Is the BSSS a reliable measure? Specifically, were the estimates of test-retest stability of the BSSS over an eight-week time period high? Was there internal consistency on the BSSS and within its subscales?

2) Is the BSSS a valid measure of bulimic symptomatology? Specifically, was there a high correlation between the BSSS and the BULIT (convergent validity)? Did the BSSS and its subscales differentiate between the various comparison groups studied (bulimic and nonbulimic)? Was the order of severity of the groups as measured by the BSSS, supportive of the following predicted order: most severe to least severe, Treatment, Bulimic, Subthreshold, Binger, Nonbulimic groups? Did the subtypes of bulimia exhibit different profiles of symptoms, as measured by the BSSS?

3) Were the dimensions of the BSSS (Behavioral, Psychological, Sociocultural, and Self-Concept) empirically supported by the factor analysis?
CHAPTER II

Method

Respondents

Respondents were recruited on a voluntary basis from two general subject pools between 1986-1989: undergraduate women students enrolled at a large mid-western university. (n=1014) and women meeting the DSMIII-R criteria for bulimia nervosa and who were receiving treatment for their condition (n=17). The aforementioned treatment sample was diagnosed and referred by therapists from several midwestern college counseling centers (n=5), from two midatlantic region college counseling centers (n=5), and from community mental health centers located in Ohio and Virginia (n=7). A subset of the undergraduate women (n=448) were given course credit for their participation while the remaining respondents in that sample (n=566) were recruited from the residence hall system.

The respondents ranged in age from 15 to 46, with the majority, 882, falling into the 15-20 year old range (87.6%). 84 were in the 21-24 age range (8.3%); 27 in the 26-34 age range (2.7%); 11 in the 35-44 age range (1.1%); and 3 in the above 45 age range (0.3%). The majority of respondents were Caucasian (n=894, 89%); 64 were Black (6.4%); 23 were Asian (2.3%); 19 were Hispanic (1.9%); and 7 were unspecified (0.7%). The majority of respondents reported coming from upper middle and middle class family as defined by
income level, ranging from 8,000 to 50,000+ dollars annual income, 332 (33%) and 297 (29.5%) respectively; 193 came from upper class family incomes (19.2%); 137 (13.6%) and 48 (4.8%) reported coming from poverty level and low level family incomes, respectively. The education level of the respondents varied from completion of high school to completion of a graduate program. The majority of respondents, 872, reported having completed 1-3 years of college (86.6%); 117 were college freshpersons and had completed high school (11.6%); 12 were college graduates (1.2%); 4 had completed 1-3 years of graduate level courses (0.4%); and 2 had received a graduate degree (0.2%). The marital status of the respondents was illustrated by a majority of single individuals, 879 (87.4%); followed by 77 who reported being in a partnered relationship (7.7%); 28 were married (2.85%); 21 were divorced (2.1%); and 1 was separated (0.1%).

**Instrumentation**

Three assessment instruments and a demographic questionnaire were utilized in this investigation. The Bulimia Test (Smith & Thelen, 1984), The Bulimic Symptom Severity Scale (Rhodes, 1985), and the Weight Management, Eating and Exercise Habits Questionnaire (Ousley, 1986) were administered to the test-retest respondent pool (n=127) on two occasions and to the remaining respondents (n=361) on one occasion. All three instruments were utilized to assess bulimic symptoms, and additionally the WMQ was utilized for categorizing the respondents into groups characterized by different disturbed eating and compensating behaviors. Since the BULIT is an independent measure of bulimia and has be shown to have high levels of reliability
and validity, it was chosen to represent a criterion variable to investigate the criterion-related validity of the BSSS. The demographic questions elicited information such as race, age, family income level, weight perception, and education level. Refer to Appendix A for a copy of the demographic questions. The remaining respondents in the college sample (n=566) were administered the BSSS and the demographic questions only. The treatment sample was administered all three of the instruments.

**The Bulimic Symptom Severity Scale.** The Bulimic Symptom Severity Scale (BSSS) was utilized to assess a respondent's bulimic symptomatology including behavioral, affective and attitudinal dimensions. The BSSS was developed using a rational approach to test construction as a multidimensional assessment instrument for bulimia. The rational approach to test construction, according to Walsh and Betz (1985), is a test construction method that necessitates a direct relationship between the test items and the construct of interest, that is, the content of the test items directly reflect the construct being measured. The construct purported to be measured by the BSSS, bulimic symptomatology, is logically represented by the content of the items contained within the dimensions of the BSSS.

The BSSS is an 88-item, self-report instrument utilizing a five-point Likert scale, ranging from 1-never to 5-always. The BSSS is comprised of items forming four dimensions of bulimic symptomatology. The Behavioral dimension is composed of 27 items that represent behavioral activities associated with the binge/purge cycle of bulimia. An example of an item representing this facet of
Bulimia is "When eating gets beyond my control, something else has to stop it, such as pain, sleep or vomiting." There are 22 items contained in both the Self-Concept and Sociocultural dimensions of the BSSS. An item example from the Self-Concept dimension is: "I feel responsible for much of the unhappiness in my life." and reflects self-perceptions, especially as they apply to one's worthiness. The Sociocultural dimension contains items about attitudes toward weight gain and body types (e.g., "My physical appearance is a crucial measure of my success."). Finally, the Psychological dimension reflects the affective components of eating disordered behaviors including preoccupation with food and eating and a loss of control. "When I cannot count on anything else in my life I can count on eating to make me happy." is an example of an item from the Psychological dimension.

The BSSS has been shown to be internally consistent on each of the dimensions (Cronbach's alpha coefficients of .96, .94, .95, and .95 for the Behavioral, Self-Concept, Sociocultural, and Psychological dimensions, respectively) and on the entire scale (Cronbach's Alpha coefficient of .98; Rhodes, 1985). Split-half reliability has also been demonstrated by Guttman Split-half correlation coefficients ranging from $r=.92$ to $r=.95$. The reliability of the BSSS has been shown to be very high which indicates that the instrument is measuring a construct in a highly consistent manner. Because the instrument is in the developmental phases, what it measures has not been adequately investigated; however, bulimic symptomatology is the proposed construct assessed by the BSSS.
The BSSS is scored by summing the numbers associated with each item response, on a 1=never, 2=rarely, 3=sometimes, 4=often, 5=always scale. It is posited that higher scores reflect more severe bulimic symptomatology. Respondents were instructed to answer each item as it pertained to her perceptions of self, that is how accurately the item described or reflected her own perceptions, attitudes, and feelings. Norms have not yet been established concerning profiles for specific eating disordered groups. Therefore no data are available on typical profiles of eating disorder types. See Appendix B for a complete copy of the BSSS.

The Weight Management, Eating, and Exercise Habits Questionnaire. The Weight Management, Eating, and Exercise Habits Questionnaire (WQM; Ousley, 1986) was utilized to gather information about the bingeing and compensating behaviors of the respondents in order to classify them into comparison groups. Four comparison groups were defined based on the responses to the WMQ and based on the criteria for inclusion in comparison groups (Mintz, 1987). See Appendix C for a copy of the criteria used to classify respondents into comparison groups. The four comparison groups were: 1) a bulimic group, 2) a subthreshold group, 3) a binger group, and 4) a nonbulimic group.

The WMQ was developed by Ousley (1986) as an operationalized version of the DSM-III criteria for bulimia. It is a self-report, descriptive measure that inquires about specific behaviors associated with a diagnosis of bulimia nervosa. The questionnaire is divided into three sections: weight history, weight control, and binge eating. No
reliability data are available for the WMQ. However, the utility of the instrument for accurately portraying behavioral manifestations of bulimia nervosa and other eating disturbances has been shown in other studies that have employed the WMQ (Ousley, 1986; Mintz, 1987). The WMQ provides a straightforward, albeit self-reported, description of bingeing and compensating behaviors and for that reason was chosen to provide data on each respondent's bulimic behaviors. A copy of the WMQ used in this study can be found in Appendix D.

**Bulimia Test.** The Bulimia Test (BULIT) was developed to represent the characteristics of the diagnostic categories of the DSM-III criteria for bulimia. The BULIT is a 32-item, self-report, multiple-choice scale designed to assess the symptoms of bulimia. The predictive validity of the BULIT has been reported to be high (r=.82) for differentiating bulimics from normals (Smith & Thelen, 1984). Likewise, the test-retest reliability of the BULIT has been shown to be high (r=.87) illustrating stability of measurement. A factor analysis of the BULIT items revealed six factors with the following associated internal consistencies: (a) Bingeing (r=.87), (b) Vomiting (r=.89), (c) Negative feelings about over eating (r=.91), (d) Menstruation difficulties (r=.88), (e) Preference for high caloric easily ingested foods (r=.83), and (f) Weight fluctuations (r=.66) (Thelen, Mann, Pruitt, & Smith, 1987). The Bingeing factor accounted for the largest amount of variance (63%) and hence, has been delimited as the primary symptom of bulimia, according to Thelen, et al. (1987). The BULIT has been shown to be positively correlated with another measure of binge eating behaviors, the Binge Scale (Hawkins &
Clement, 1980) and thus, has demonstrated a limited degree of criterion-related validity. Because the estimates of reliability and validity of the BULIT were good, it was chosen as the independent measure of bulimia in which to compare the BSSS.

The BULIT is scored by summing the responses across the 32-item scale, where each response is given a numerical value ranging from 1 to 5. A total score of 102 or higher is representative of a bulimic response profile. The BULIT scores were compared to the BSSS scores for an indication of convergent validity and that the two scales were measuring the same construct, bulimia symptomatology. An investigation of the differentiating ability of the BULIT was also included in this investigation. The BULIT is found in Appendix E.

Procedure

Investigation of the reliability and validity of the BSSS was completed in a series of data collection steps. The first step was the test-retest procedure that required respondents to complete the test battery (BSSS, BULIT, & WMQ) on two occasions. The respondents (n=127) were administered the tests on Oct. 7, 1988 in groups of 25-50 and after an eight-week interval (Dec. 2, 1988), responded a second time to the entire group of instruments. The second step in the data collection process involved collecting data from another group of respondents (n=321) who answered the instruments on only one occasion (Jan, 1989). The data collected in the second step of the process was utilized for the group comparisons, for the factor analyses, and for the item analyzes. This respondent pool was also tested in
groups of 25-50. Both samples of respondents were solicited from a large pool of undergraduate students enrolled in an introductory level psychology course and were given class credit for their participation. Likewise, both samples were read instructions prior to completing the instruments and were debriefed with a written summary. See Appendix F for a copy of the instructions and debriefing statement.

The third step was recruiting the clinical sample from the various mental health agencies described earlier. The clinical sample data was utilized in the group comparisons to test for criterion-related validity of the BSSS. The clinical sample was recruited from a number of mental health agencies through their therapists. The clients were judged appropriate for the study by therapists who utilized the study inclusion criteria and the DSM-IIIR criteria for bulimia as guidelines. After the clients were deemed appropriate for the study, (diagnosed as bulimic) the therapist read a standardized instruction script to each client explaining the study and the request for their participation. (For copies of the inclusion criteria provided for the therapists, the script explaining the study, and the instructions for the respondents, see Appendix G; Clients who agreed to participate in the study were given a packet of materials containing the three instruments, demographic questions, an answer sheet, a set of instructions, and a stamped envelope addressed to the investigator. Upon completion of instruments, the respondents were instructed to mail the packet to the investigator.

The final step in the data collecting process was collecting a large sample of respondent data on the BSSS alone, in order to factor
analyses it and investigate the underlying structure of the instrument. The residence hall system at a large midwestern university supplied the pool of respondents (n=566) for this step of the data collection process. Respondents completed the BSSS and the demographic questions and returned them to the investigator.

**Group selection.**

The college sample was divided into eating disturbance groups on the basis of their responses to the WMQ and on the criteria proposed by Mintz (1987) to delineate a college sample into groups according to their exhibited eating habits and methods of compensation. Further, the criteria for differentiating respondents into eating disturbance groups was based on the work of Katman and Wolchik (1984), Ousley (1986), and Fairburn and Garner (1987). Comparisons on the BSSS and on the BULIT were made between the eating disturbance groups. Reported responses to the WMQ, or how each respondent described her eating and compensating behaviors, were defining factors for classification into the comparison groups. There were six comparison groups delineated: (a) the Bulimic group was defined as those respondents who reported bingeing 8 times or more per month and compensating with any one of the following methods: by using laxatives, diuretics, or self-induced vomiting once a month or more; by exercising 58 hours or more per month; or by fasting, using appetite control pills, or eating on a special diet once a week or more. (b) Subthreshold group was defined as those respondents who reported bingeing and compensating behaviors but at a level lower than was demarcated for inclusion into the Bulimic group and at a level below
what was used for the diagnosis of bulimia nervosa (e.g., less than 8 binges per week and less than one vomiting episode per month), (c) the Bingers group was defined as those respondents who reported a problem with bingeing behaviors and who did not meet the compensating criteria set for the Bulimic group, (d) the Non-bulimic group was defined as those respondents who reported no binge eating behavior and if compensating methods were endorsed, they were below the levels set for the Bulimic group, (e) the Treatment group was comprised of the clients recruited from the mental health agencies, all of those respondents met the DSM-IIIR criteria for bulimia, and (f) the Residence hall group that was comprised of respondents recruited from the residence hall system and who could not be classified into eating disturbance groups due to lack of bingeing and compensating data.

Analysis of Data

For the purposes of data analysis, six groups were compared on the basis of scale scores on the BSSS and the BULIT. The six groups were the treatment group, the residence hall group, and the four delineated groups from the college sample. Group differences with respect to mean scores on the BSSS and on the BULIT were investigated separately using one-way analyses of variance. Tukey's procedure was utilized for control of inflation of the alpha level due to multiple comparisons. A Pearson product-moment correlation coefficient was computed to examine the relationship between the scores on the BSSS and the scores on the BULIT and to investigate
criterion-related validity of the BSSS. The Bartletts test for homogeneity of variance (Chi squared statistic; Winer, 1971) was employed to explore the possibility of violation of the homogeneity of variance assumption of ANOVA. Additionally, due to the small and uneven sample sizes, all of the group comparisons calculated were computed at a .01 alpha level to control for any liberal effects of a nonnormal sample distribution or for a heterogeneous variances. A Pearson Product-moment correlation coefficient was computed between the responses to the BSSS which was administered twice in the test-retest data collection step.

The responses to the BSSS were combined across the respondent pools that were used in the data collection process for the purpose of factor analysis and the investigation of the structure of the BSSS. Because the data were combined across the respondent pools, group differences (comparisons between the psychology undergraduate and the residence hall respondents) with respect to mean scores on the BSSS were explored using an analysis of variance. The one-way analysis of variance was computed to test the homogeneity of the two primary respondent pools. Respondents' answers to the 88 items of the BSSS were item analyzed and factor analyzed. The resulting factor structure guided refinement of the BSSS. An exploratory factor analysis was computed to investigate the underlying factor structure of the BSSS and to eliminate items that did not load highly (.40 and above; Walsh & Betz, 1985) on any factor pattern. Computations of Cronbach alpha coefficients and Guttman Split-half correlation coefficients for the resulting factor scales were utilized to investigate
the internal consistency of each of the designated scales as well as the entire scale. The resulting factor pattern was compared to the four proposed dimensions in order to explore the legitimacy of the organization of the BSSS into four categories of symptom types. The comparison of the factor pattern to the proposed dimensions was an aspect of the refinement process of the BSSS and an exploration of the theoretical assumptions underlying the development of the BSSS as a multidimensional scale for assessing a multifaceted construct: bulimia (Garner & Garfinkle, 1985). Group comparisons using one-way analysis of variance were made on each of scales of the BSSS to investigate the potential for descriptive group profiles across the subscales of the BSSS.
CHAPTER III

Results

The results of this study will be presented in four sections. Presented in the first section are the characteristics of the respondents as they were classified into comparison groups. The scale structure through factor analysis and a presentation of the reliability estimates of the scale are the second and third sections, respectively. Both the second and third sections of results include reports of descriptive data of the BSSS and its subscales and a description of scale refinement procedures. Finally, the fourth section addressed the validity of the scale via analyses of the hypothesized relationships between the BSSS and the BULIT as a function of the comparison groups.

Descriptive Information

Respondents were categorized as bulimic, subthreshold, bingers, nonbulimic, or residence hall on the basis of their responses to the WMQ. The importance of categorizing the residence hall group separately from the nonbulimic group was based on the fact that no data concerning the respondents' bingeing and compensating behaviors were collected. Therefore, the probability was high that the residence hall group included individuals who engaged in bulimic behaviors and could be classified as Bulimic, Subthreshold, or as a Binger which would make combining the data from the residence hall...
### Table 1

Sample Descriptive Data

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<th>Treatment</th>
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<td>Freq %</td>
<td>Freq %</td>
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<td></td>
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<tr>
<td><strong>Education Level</strong></td>
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<td></td>
</tr>
<tr>
<td>High School</td>
<td>2</td>
<td>11.8</td>
<td>2</td>
<td>15.4</td>
<td>11</td>
</tr>
<tr>
<td>1-3 College</td>
<td>11</td>
<td>64.7</td>
<td>11</td>
<td>84.6</td>
<td>50</td>
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<tr>
<td>College Graduate</td>
<td>1</td>
<td>5.9</td>
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<td>4</td>
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<tr>
<td>1-3 Graduate Degree</td>
<td>2</td>
<td>11.8</td>
<td>1</td>
<td>1.6</td>
<td>1</td>
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<tr>
<td>Graduate Degree</td>
<td>1</td>
<td>5.9</td>
<td></td>
<td></td>
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<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
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<tr>
<td>Single</td>
<td>12</td>
<td>70.6</td>
<td>11</td>
<td>84.6</td>
<td>44</td>
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<tr>
<td>Divorced</td>
<td>1</td>
<td>5.9</td>
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<td>1</td>
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<tr>
<td>Married</td>
<td>4</td>
<td>23.5</td>
<td>1</td>
<td>7.7</td>
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<tr>
<td>Separated</td>
<td>1</td>
<td>0.2</td>
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<tr>
<td>Partnered</td>
<td></td>
<td>7.7</td>
<td>15</td>
<td>24.2</td>
<td>4</td>
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</tbody>
</table>
group and the nonbulimic group inappropriate. A total of 1031 females participated in this study. Presented in Table 1 are demographic and descriptive information about the respondents broken down by comparison group. A description of the respondents in both the Treatment and Bulimic groups was primarily Caucasian (88.2%) & (92.3%), 15-20 years old (35.3%) & (92.3%), had completed 1-3 years of college (64.7%) & (84.6%), single (70.6%) & (84.6%), had poverty level family incomes (47.1%) & (38.5%), perceived herself to be overweight (76.5%) & (76.9%), and were dissatisfied with her weight (64.7%) & (53.8). Furthermore, the respondents in the Subthreshold and Binger groups, respectively, were similarly described as being Caucasian (88.7%) & (96.7%), 15-20 years old (85.5%) & (83.3%), college sophomores, juniors or seniors (80.6%) & (80%), single (71%) & (76.7%), from upper middle class family incomes (35.5%) & (30%), overweight (58.1%) & (50%), and as being dissatisfied with their current weight (53.2%) & (53.3%). Both the Nonbulimic and the Residence hall groups could be described in the same ways that the typical respondent was described, with one exception: the Nonbulimic group respondents typically reported being from middle class family incomes instead of from upper class family incomes. The 4 eating disturbance groups appeared to be very similar with two notable exceptions: (a) the Treatment and Bulimic groups reported poverty level family incomes instead of upper middle class family incomes; (b) the Treatment, Bulimic, Subthreshold, and Binger groups respondents perceived their weight level to be overweight instead of average.
Two of the descriptive questions, weight perception and weight satisfaction, were significantly correlated with the BSSS, the BSSS that was completed at the second administration of the instruments in the test-retest step of the data collection process (BSSS2), and the BULIT. Positive relationships between weight perception and the three instruments, with correlations ranging from $r=.44$ to $r=.49$ and negative relationships between the weight satisfaction and the three instruments, ranging from $r=-.40$ to $r=-.54$, were found. The relationships of the two descriptive items to the instruments revealed that self-perceptions of higher weight were associated with more bulimic symptoms and being satisfied with one's weight was associated with fewer bulimic symptoms.

The incidence rates for the bulimic subtypes found in this study were comparable to the range of incidence rates reported in other investigations of bulimia and bulimic symptoms. The incidence rate for the Bulimic group was 3%, while the incidence rates for the Subthreshold and Binger groups were 15% and 7%, respectively.

**Factor Analysis**

Since one objective of this study was to examine the factor structure of the BSSS, a principal components factor analysis, using oblique rotation of the 88 items of the BSSS, was performed on the BSSS data from all of the samples. Because the BSSS data from all of the samples were combined for the factor analysis, an analysis of variance comparing the two primary respondent samples (the undergraduate psychology students and the respondents recruited from the residence hall system) was computed.
Table 2
Differences Between Treatment, Psychology Undergraduates, and Residence Hall Respondents on BSSS and Subscales of BSSS

<table>
<thead>
<tr>
<th>BSSS</th>
<th>Affective Components</th>
<th>Exercise</th>
<th>Socio-Cultural</th>
<th>Self-Concept</th>
<th>Purge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparisons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 vs 2</td>
<td>172.52*</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1 vs 3</td>
<td>121.80*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 vs 2</td>
<td>5.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P < .01
Group Defined as: 1 - Treatment, 2 - Psych 100 Undergraduates, 3 - Residence Hall Group
identify differences in group responses that would make combining
the data inappropriate. These group comparisons are presented in
Table 2. There were no significant differences between the course
undergraduates and the residence hall undergraduates on the BSSS,
F(2, 1028)= 54.98, p< .001. The means and standard deviations for
the undergraduate psychology and residence hall groups were
M=192.19, SD=48.54 and M=197.9, SD=49.96, respectively. The
group differences on the subscales of the BSSS were also
nonsignificant with respect to the residence hall and undergraduate
psychology group. The results of the analyses of variance were F(2,
1028)=66.81, p<.001, F(2, 1028)=104.76, p <.001, F(2,1028)=2.84, p
<.001, F(2,1028)=19.89, p <.001, F(2, 1028)=45.76, p <.001, for the
Affective Components and Preoccupation, Purge, Exercise,
Sociocultural Attitudes, and Self-Concept subscales, respectively. The
means and standard deviations for the psychology undergraduates and
the residence hall students on the Affective Components and
Preoccupation, Purge, Exercise, Sociocultural Attitudes, and Self-
Concept subscales were M=49.17, SD=19.03, M=52.39, SD=19.67;
M=11.42, SD=5.14, M=11.98, SD=5.96; M=11.72, SD=3.86, M=12.28,
SD=3.74; M=48.61, SD=14.25, M=46.03, SD=13.96; M=54.56,
SD=14.89, M=57.79, SD=14.01; respectively. Hence, combining the
data for the factor analysis appeared to be a legitimate procedure.

The results of the factor analysis revealed that 8 factors
produced eigenvalues greater than the Kaiser criterion of 1.0
(Gorsuch, 1974). Thus, the Scree-test (Cattell, 1966) was applied to
identify the appropriate number of factors that would account for more
Figure 1
Plot of Eigenvalues for Factors Loading 1.0+
<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigenvalue</th>
<th>Percent Variance</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>I  Self Concept (22 items)</td>
<td>30.81</td>
<td>58.20</td>
<td>58.20</td>
</tr>
<tr>
<td>II Exercise (4 items)</td>
<td>5.05</td>
<td>9.45</td>
<td>67.64</td>
</tr>
<tr>
<td>III Affective Component &amp; Preoccupation (27 items)</td>
<td>4.57</td>
<td>8.96</td>
<td>76.61</td>
</tr>
<tr>
<td>IV Sociocultural Attitudes (16 items)</td>
<td>2.76</td>
<td>5.43</td>
<td>82.04</td>
</tr>
<tr>
<td>V Purge (9 items)</td>
<td>1.61</td>
<td>3.11</td>
<td>85.15</td>
</tr>
</tbody>
</table>
than just error variance (Gorsuch, 1974). Deletion of factors was determined by plotting the eigenvalues of the 8 factors until they leveled off and formed a nearly horizontal line. At the point of leveling off, all factors to the right were considered error factors and all factors to the left were considered "real factors" (Tinsley & Tinsley, 1987). In Figure 1 a plot of the eigenvalues for the first 8 factors is presented. As indicated, the straightening of the line at eigenvalue 1.612 indicated that no more than five factors should be extracted. The five significant factors, their eigenvalues, and their percent variances that resulted from the principal components factors analysis and the tests determining the number of appropriate factors are presented in Table 3. An item was assigned to a factor if it had a factor loading of .40 of above and the items that loaded on more than two factors were evaluated for relevance of content and were assigned to the factors that produced the highest factor loading. The relevance of the item was evaluated with respect to the proposed dimensions of the BSSS. See Appendix H for a listing of the items by dimensions and the factor loadings for each item on each factor (factor matrix).

Factor 1, identified as Self-Concept, had an eigenvalue of 30.81 and a percent total of 58.2 which clearly accounted for the majority of the variance. The other four factors were identified as Exercise, Affective Components & Preoccupation, Sociocultural Attitudes, and Purge, for Factor 2, Factor 3, Factor 4, and Factor 5, respectively. The total amount of variance accounted for by all of the five factors combined was 85.15%. An examination of the content of items within Factor 1, Self-Concept, revealed many of the items that were originally
designated as comprising the Self-Concept dimension. These items appeared to represent perceptions of self, especially as they relate to feelings of worthiness and esteem. Factor 2, Exercise, reflected items that describe the use of exercise as a compensating method for overeating. All four items on Factor 2 were added to the BSSS after its initial development (Rhodes, 1985) to address the issue of including exercise in the criteria for diagnosis for bulimia (DSM-III-R, 1987; Fairburn, 1986). Factor 3, Affective Components & Preoccupation, represented a description of the emotions associated with bulimic behaviors, such as bingeing and purging and also represented the preoccupation with food, weight gain, and eating that usually accompanies eating disordered behaviors. Factor 3 appeared to contain many of the items that defined the Psychological dimension of the original BSSS; however it also included a focus on preoccupation and control items as they relate to eating disordered behaviors. Factor 4, Sociocultural Attitudes, represented attitudes about weight gain and body types that are grounded in sociocultural norms about physical appearance, especially as they pertain to women. Items contained in Factor 4 were representative of those items originally comprising the Sociocultural dimension of the BSSS. Finally, Factor 5, Purge, contained items that reflect the purging component of the binge/purge cycle of bulimia. The purging items were all originally a part of the Behavioral dimension that appears to have been divided into Factors 2, 3, and 5. See Appendix H for a final listing of items, including content, by factor.
Table 4

Intercorrelations Between BSSS Factors Scores

<table>
<thead>
<tr>
<th></th>
<th>F1: Self-Concept</th>
<th>F2: Exercise</th>
<th>F3: Affective Component</th>
<th>F4: Sociocultural Attitudes</th>
<th>F5: Purge</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1: Self-Concept</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2: Exercise</td>
<td>.28</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3: Affective Component</td>
<td>.66</td>
<td>.50</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preoccupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F4: Sociocultural Attitudes</td>
<td>.58</td>
<td>.63</td>
<td>.72</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>F5: Purge</td>
<td>.44</td>
<td>.25</td>
<td>.60</td>
<td>.40</td>
<td>1.00</td>
</tr>
</tbody>
</table>

F1: Self-Concept
F2: Exercise
F3: Affective Component
F4: Sociocultural Attitudes
F5: Purge
Table 5

BSSS Items and Factor Loadings by Factor

<table>
<thead>
<tr>
<th>Factor</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td>#1 - .43, #2 - .42, #6 - .63, #17 - .55, #22 - .64, #23 - .68,</td>
</tr>
<tr>
<td>Self-Concept</td>
<td>#33 - .63, #34 - .47, #38 - .57, #40 - .60, #50 - .53, #51 - .80,</td>
</tr>
<tr>
<td></td>
<td>#52 - .58, #54 - .81, #59 - .47, #60 - .67, #67 - .71, #73 - .48,</td>
</tr>
<tr>
<td></td>
<td>#74 - .66, #75 - .58, #78 - .69, #83 - .80 (22 Items)</td>
</tr>
<tr>
<td>Range</td>
<td>.40 - .81</td>
</tr>
<tr>
<td>Factor 2</td>
<td>#21 - .54, #29 - .78, #71 - .79, #85 - .79 (4 items)</td>
</tr>
<tr>
<td>Exercise</td>
<td>Range = .54 - .79</td>
</tr>
<tr>
<td>Factor 3</td>
<td>#5 - .48, #7 - .75, #10 - .94, #11 - .77, #15 - .90, #18 - .68,</td>
</tr>
<tr>
<td>Affective</td>
<td>#19 - .83, #20 - .67, #24 - .71, #25 - .76, #31 - .88, #36 - .56,</td>
</tr>
<tr>
<td>Component &amp;</td>
<td>#39 - .86, #46 - .81, #48 - .57, #57 - .67, #61 - .50, #62 - .64,</td>
</tr>
<tr>
<td>Preoccupation</td>
<td>#63 - .80, #65 - .88, #66 - .51, #68 - .64, #69 - .58, #77 - .87,</td>
</tr>
<tr>
<td></td>
<td>#80 - .61, #82 - .52, #87 - .94 (27 items) Range = .48 - .94</td>
</tr>
<tr>
<td>Factor 4</td>
<td>#14 - .41, #16 - .70, #26 - .43, #27 - .61, #28 - .42, #37 - .63,</td>
</tr>
<tr>
<td>Sociocultural</td>
<td>#41 - .80, #43 - .71, #45 - .98, #47 - .73, #53 - .55, #72 - .65,</td>
</tr>
<tr>
<td>Attitudes</td>
<td>#76 - .64, #81 - .62, #84 - .42, #86 - .77 (16 items)</td>
</tr>
<tr>
<td>Range</td>
<td>.41 - .98</td>
</tr>
<tr>
<td>Factor 5</td>
<td>#3 - .66, #30 - .80, #32 - .87, #42 - .94, #44 - .48, #49 - .57,</td>
</tr>
<tr>
<td>Purge</td>
<td>#58 - .94, #64 - .92, #88 - .94, (9 items) Range = .48 - .94</td>
</tr>
</tbody>
</table>
Due to the theoretical inter-relationship of the dimensions underlying the scale items, an oblique (Harris-Kaiser, 1964) rotation was performed as part of the factor analysis procedure to extract factors that would represent the correlations between the items of the BSSS. The inter-factor correlations for the five factor structure of the BSSS are presented in Table 4. As is evident by the correlations, each factor was at least moderately correlated with two or more of the other factors. Factor 1, Self-Concept, was most highly correlated with Factor 3, Affective Components, \( r = .66 \), followed by a .58 correlation with Factor 4, Sociocultural Attitudes. Factor 2, Exercise, was most highly correlated with Factor 4, Sociocultural Attitudes, \( r = .63 \) and Factor 3, Affective Components, \( r = .50 \), while Factor 3, Affective Components, correlated most highly with Factor 4, Sociocultural Attitudes, \( r = .72 \), and correlated moderately with all of the other Factors. Factor 4, Sociocultural Attitudes, correlated most highly with Factor 3, Affective Components, \( r = .72 \) and Factor 2, Exercise, \( r = .63 \), and finally, Factor 5, Purge, correlated most highly with Factor 3, Affective Components, \( r = .60 \). The weakest relationships between the factors were illustrated by the following correlations: \( r = .25 \), Factor 2, Exercise, and Factor 5; Purge, \( r = .28 \), Factor 1, Self-Concept, and Factor 2; Exercise, \( r = .40 \), Factor 4 Sociocultural Attitudes, and Factor 5, Purge.

Factor items were derived utilizing a .40 or above factor loading as the item retention criterion, because these items would contribute significantly to the factor definition (Walsh & Betz, 1985). The five significant factors of the BSSS and the items that comprise the factors
are presented in Table 5. Items were clustered around the factors as follows: Factor 1 had 26 items with a range of factor loadings of .41-.81; Factor 2 had 4 items with a factor loading range of .54-.79; Factor 3 had 27 items ranging from .48-.94; Factor 4 had 17 items with factor loading range of .41-.98; and Factor 5 was composed of 9 items with a factor loading range of .48-.94. Based on the retention criterion for items (.40 or above factor loading) 5 items were deleted from the scale: items 4, 9, 12, 70, and 79, resulting in an 83-item scale. Appendix I contains the items deleted from the scale via factor analysis.

**Reliability estimates**

The preceding factor analyses resulted in the refinement of the BSSS to contain five subscales and 83 items. Further refinement of the scale was completed using item analysis data. Five items were deleted from the scale on the basis of their item-total correlation. The criterion used for item retention was a .30+ item-total correlation and was based on guidelines used for item analysis as part of a procedure for test construction (Aiken, 1985; Nunnally, 1970). According to Aiken (1985), .30 item-total correlation and higher is an acceptable level for determining item retention. Therefore, the final version of the BSSS contained 78 items and five subscales: Self-Concept-22 items; Exercise-4 items; Affective Components & Preoccupation-27 items; Sociocultural Attitudes-16 items; and Purge-9 items.

**Internal consistency reliability.** The results of the item discrimination analysis on the revised BSSS are reported for each subscale and for the entire scale in Table 6. An evaluation of the
internal consistency of each scale and of the entire instrument was investigated through computing Guttman split-half correlation coefficients and Cronbach's alpha coefficients. The Guttman split-half coefficient procedure randomly assigned items for each subscale to alternative halves to explore possible sampling error (Guttman, 1945; SPSSX, 1988). Strong, positive correlations, between the halves of each subscale and the two halves of the entire scale and the extent to which the alpha coefficients for each half were similar, illustrated internal consistency. In Table 6 for each subscale and for the entire scale is presented: (a) ranges and means of the item-total correlation coefficients; (b) Cronbach alpha coefficients for each scale as well as, for the entire scale; and (c) Guttman split-half correlation coefficients. The item-total correlation range for the entire scale was .25-.77, with an item-total mean of .54. The coefficient alpha for the entire scale was .98, while the split half coefficient was .97 and the alpha coefficients for the 40-item halves were .95 and .96. The item-total means for the subscales ranged from .40 (Exercise) to .67 (Affective Components), while the item-total correlation coefficients range for all of the subscales appeared to be moderate to high (.30-.66, Self-Concept; .25-.47, Exercise; .45-.77, Affective Components; .46-.77 Sociocultural Attitudes; .47-.69, Purge). The range of Cronbach alpha coefficients, for the subscales was .87-.97, where the Exercise scale produced the lowest coefficient, and the Affective Components scale produced the highest coefficient alpha. The Guttman split-half coefficients for the subscales were also high, ranging from .86 (Exercise) to .96 (Affective Components). The estimates of internal
<table>
<thead>
<tr>
<th>Scale</th>
<th>Item-Tot Corr</th>
<th>Item-Tot Mean</th>
<th>(Standardised) Cronbach's Alpha</th>
<th>Cronbach's Coefficient</th>
<th>Guttman's Split-Half Coefficient</th>
<th>BSSS²</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSSS Entire Scale</td>
<td>.25 - .77</td>
<td>.54</td>
<td>.98</td>
<td>.97</td>
<td>.85</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Factor 1 Self-Concept</td>
<td>.30 - .66</td>
<td>.48</td>
<td>.91</td>
<td>.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor 2 Exercise</td>
<td>.25 - .47</td>
<td>.40</td>
<td>.87</td>
<td>.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor 3 Affective Component Preoccupation</td>
<td>.45 - .77</td>
<td>.67</td>
<td>.97</td>
<td>.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor 4 Sociocultural Attitudes</td>
<td>.46 - .77</td>
<td>.63</td>
<td>.94</td>
<td>.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor 5 Purge</td>
<td>.46 - .69</td>
<td>.55</td>
<td>.95</td>
<td>.94</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. BSSS² is the second administration of the BSSS after an 8 week interval.
consistency reliability for the BSSS and its subscales were high, (Nunnally, 1970), all within the .85, and above range and all except the Exercise subscale produced coefficients at the .90 and above level.

A summary of the descriptive statistics of the BSSS and its subscales, following the item analysis and factor analysis refinements and item deletions is presented in Table 7. Presented in the Table are means, standard deviations, and observed ranges of responses for each subscale and for the entire BSSS.

Test-retest reliability. An estimate of the stability of the BSSS was derived from the test-retest procedure performed as part of the reliability investigation of this study. The time interval between the first administration of the BSSS and the second administration was 8-weeks. Presented in Table 6 are the Pearson product-moment correlation obtained between the scores on the two administrations of the BSSS. The resulting relationship between the scores was high, (r=.85), showing that the BSSS was measuring a construct (hypothesized to be bulimic symptomatology) in a stable and consistent manner (Walsh & Betz, 1985).

Validity

Exploration of the validity of the BSSS is grounded in demonstration of its reliability (Cronbach, 1970; Walsh & Betz, 1985). Since the estimates of the reliability of the BSSS were high, investigation of the validity of the instrument was a logical next step in the process of exploring the psychometric qualities of the BSSS. Without high reliability, a test’s usefulness and validity would be in serious jeopardy (Walsh & Betz, 1985).
### Table 7

Descriptive Statistics of BSSS: Means, Standard Deviations, Ranges

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Self Concept</td>
<td>56.88</td>
<td>14.99</td>
<td>26-115</td>
</tr>
<tr>
<td>II Exercise</td>
<td>12.02</td>
<td>3.81</td>
<td>4-20</td>
</tr>
<tr>
<td>III Affective Component &amp; Preoccupation</td>
<td>51.85</td>
<td>20.55</td>
<td>27-130</td>
</tr>
<tr>
<td>IV Sociocultural Attitudes</td>
<td>47.49</td>
<td>14.31</td>
<td>18-85</td>
</tr>
<tr>
<td>V Purge</td>
<td>12.06</td>
<td>6.22</td>
<td>9-45</td>
</tr>
<tr>
<td>Total Scale</td>
<td>197.43</td>
<td>51.76</td>
<td>100-395</td>
</tr>
</tbody>
</table>

N = 1031
Table 8
Criterion Related Validity: Correlations Between BSSS\(^2\), Bulit, Weight Perception and Weight Satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Bulit</th>
<th>(n)</th>
<th>BSSS(^2)</th>
<th>(n)</th>
<th>BSSS</th>
<th>(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSSS</td>
<td>.87*</td>
<td>460</td>
<td>.85*</td>
<td>127</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSSS(^2)</td>
<td>.67*</td>
<td>127</td>
<td></td>
<td></td>
<td>.85*</td>
<td>127</td>
</tr>
<tr>
<td>Weight Perception</td>
<td>.49*</td>
<td>441</td>
<td>.48*</td>
<td>125</td>
<td>.44*</td>
<td>1007</td>
</tr>
<tr>
<td>Weight Satisfaction</td>
<td>-.53*</td>
<td>441</td>
<td>-.39*</td>
<td>125</td>
<td>-.54*</td>
<td>1007</td>
</tr>
</tbody>
</table>

*\(p < .001\)

Note. BSSS\(^2\) is the second administration of the BSSS after an 8 week interval.
Criterion-related validity. Presented in Table 8 is a measure of criterion-related validity of the BSSS. The relationship between the BSSS and an independent measure of bulimia, the BULIT, was explored. The Pearson product-moment correlation of $r=0.87$ between the BSSS and the BULIT was significant ($p<0.001$). The relationship between the BSSS administered during the second testing session of the test-retest procedure and the BULIT was not the same as the previously stated relationship despite the fact that the BSSS and the BSSS second were the same instrument. Nevertheless, the correlation was significant $r=0.67$ ($p<0.001$).

Group differences criterion-related validity. Another measure of criterion-related validity is group differences or the extent to which the test can differentiate between groups (Walsh & Betz, 1985). Comparison groups were delineated on the basis of reported bingeing and compensating behaviors and on the basis of similar procedures used for classifying respondents into groups on the basis of their eating disorder symptoms (Katzman & Wolchik, 1984; Mintz, 1987; Nagelberg, Hale, & Ware, 1984; Ousley, 1986). The scores on the BSSS and on the BULIT of each eating disturbed group were compared separately to investigate the efficacy of each instrument to differentiate groups. Prior to computing the analyses of variance, however, the Bartlett's test was employed to explore the possibility that the homogeneity of variance assumption that underlies the analyses was violated by the samples used in this investigation (Winer, 1971). The results of the Bartlett's test were nonsignificant, $X^2(6)=21.14$, $p>0.95$, showing that the null hypothesis could not be
Table 9
Means, Standard Deviations and Analysis of Variance Results for Bulit Across Comparison Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Bulit</th>
<th>Pairwise Comparisons</th>
<th>Differences Between Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M = 17</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>124.12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>15.52</td>
<td></td>
</tr>
<tr>
<td>1 Treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Bulimic</td>
<td>M = 13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>109.92</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>20.42</td>
<td></td>
</tr>
<tr>
<td>3 Subthreshold</td>
<td>M = 67</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>82.37</td>
<td>1 vs 2</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>18.10</td>
<td>1 vs 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 vs 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 vs 5</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>145.79*</td>
<td></td>
</tr>
<tr>
<td>4 Binger</td>
<td>M = 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>69.37</td>
<td>2 vs 3</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>19.70</td>
<td>2 vs 4</td>
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<td></td>
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<td></td>
<td>2 vs 5</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>145.79*</td>
<td></td>
</tr>
<tr>
<td>5 Nonbulimic</td>
<td>M = 338</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>54.40</td>
<td>3 vs 4</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>14.55</td>
<td>3 vs 5</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>145.79*</td>
<td></td>
</tr>
<tr>
<td>6 Treatment &amp; Bulimic Combined</td>
<td>M = 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>117.97</td>
<td>6 vs 3</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>18.89</td>
<td>6 vs 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 vs 5</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>190.29*</td>
<td></td>
</tr>
</tbody>
</table>

*p < .001
**p < .01
rejected; that is, a conclusion that the variances were significantly different from one another was not warranted. The normality assumption of analysis of variance was also explored because of the small and uneven group sizes. According to Keppel(1982), even if the normal distribution assumption is violated, experiment results would not be significantly affected because the F distribution is so robust. However, if either the homogeneity of variance or normality assumptions are violated, a liberal effect can be corrected for by using a lower alpha level (Keppel,1982). To that end, all of the group comparisons were computed at a .01 alpha level instead of a .05 alpha level to ensure that even if sample responses were skewed from the normal distribution and variances were substantially different, the results would not be affected.

The results of the analyses of variance of the BULIT as a function of membership in the five eating disturbance groups (Treatment, Bulimic, Subthreshold, Binger, and Combined Treatment and Bulimic) and the nonbulimic group are presented in Table 9. The residence hall group was not used in these comparisons because those respondents did not complete the BULIT. The analyses of variance yielded a significant effect for comparison group $F(4,460)=145.79$, $p<.001$. Pairwise comparisons using the Tukey-Kramer test for significance were performed for the BULIT and are also presented in Table 9. Significant differences were found at the .01 significance level on all but one intergroup comparison: the comparison between the treatment and bulimic groups. Because these two groups did not differ significantly and were hypothesized to be nearly the same, they
Table 10

Means, Standard Deviations, and Analyses of Variance Results for the BSSS and the Five Subscales of the BSSS as a Function of Comparison Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>BSSS</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self-</td>
<td></td>
<td></td>
<td>Affective</td>
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</tr>
<tr>
<td></td>
<td>Concept</td>
<td></td>
<td></td>
<td>Components &amp;</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Preoccupation</td>
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<td></td>
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<td>Socio-</td>
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<td>Culture</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Purge Factor</td>
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<td></td>
</tr>
<tr>
<td>1 Treatment</td>
<td></td>
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</tr>
<tr>
<td>M = 17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>319.71</td>
<td>76.76</td>
<td>11.53</td>
<td>104.24</td>
<td>62.00</td>
<td>31.71</td>
</tr>
<tr>
<td>SD</td>
<td>42.59</td>
<td>12.28</td>
<td>4.53</td>
<td>16.72</td>
<td>11.83</td>
<td>8.81</td>
</tr>
<tr>
<td>2 Bulimic</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>M = 13</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>N</td>
<td>283.92</td>
<td>66.69</td>
<td>13.31</td>
<td>90.92</td>
<td>62.23</td>
<td>18.92</td>
</tr>
<tr>
<td>SD</td>
<td>50.49</td>
<td>19.83</td>
<td>4.11</td>
<td>17.06</td>
<td>10.59</td>
<td>14.42</td>
</tr>
<tr>
<td>3 Subthreshold</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M = 67</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>232.94</td>
<td>53.42</td>
<td>13.96</td>
<td>66.73</td>
<td>55.43</td>
<td>13.43</td>
</tr>
<tr>
<td>SD</td>
<td>47.81</td>
<td>15.33</td>
<td>3.26</td>
<td>20.30</td>
<td>13.03</td>
<td>6.39</td>
</tr>
<tr>
<td>4 Binger</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>M = 30</td>
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<td></td>
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</tr>
<tr>
<td>N</td>
<td>200.07</td>
<td>51.57</td>
<td>10.57</td>
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<td>45.30</td>
<td>10.93</td>
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<td>46.73</td>
<td>12.44</td>
<td>4.07</td>
<td>22.82</td>
<td>13.97</td>
<td>4.23</td>
</tr>
<tr>
<td>5 Nonbulimic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M = 338</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>179.88</td>
<td>50.96</td>
<td>11.32</td>
<td>43.58</td>
<td>44.72</td>
<td>10.78</td>
</tr>
<tr>
<td>SD</td>
<td>39.83</td>
<td>13.04</td>
<td>3.77</td>
<td>13.47</td>
<td>13.58</td>
<td>3.83</td>
</tr>
<tr>
<td>6 Resident Hall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M = 566</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>197.90</td>
<td>45.55</td>
<td>12.28</td>
<td>52.39</td>
<td>42.47</td>
<td>11.98</td>
</tr>
<tr>
<td>SD</td>
<td>49.96</td>
<td>12.02</td>
<td>3.74</td>
<td>19.67</td>
<td>12.63</td>
<td>5.96</td>
</tr>
<tr>
<td>P</td>
<td>42.92a</td>
<td>28.71a</td>
<td>7.74a</td>
<td>65.18a</td>
<td>20.95a</td>
<td>50.66a</td>
</tr>
</tbody>
</table>

Groups 1 & 2 Treatment

| Bulimic Combined |      |      |      |                |       |       |
| M = 30          |      |      |      |                |       |       |
| N                | 304.20 | 72.40 | 12.30 | 98.47          | 62.10 | 26.17 |
| SD               | 48.79  | 16.49 | 4.37  | 17.88          | 11.12 | 13.05 |
| P                | 61.11a | 34.66a | 9.26a | 80.23a          | 26.21a | 51.77a |

*a p < .001
were combined and the analysis of variance was computed a second time. In the second analysis all of the groups differed significantly \( F(3,460)=190.29, p<.001 \). Likewise, the results of the Tukey-Kramer test showed significant differences between all pairwise comparisons at the .01 level. The Treatment group scored highest on the BULIT \((M=124.12, SD=15.52)\) followed by the combined Treatment and Bulimic group \((M=117.97, SD=18.89)\), the Bulimic group \((M=109.92, SD=20.42)\), the Subthreshold group \((M=82.37, SD=18.1)\), the Binger group \((M=69.37, SD=19.7)\), and finally the Nonbulimic group \((M=54.40, SD=14.55)\). According to Smith and Thelen (1984), the scoring cutoff for discriminating between bulimic and nonbulimic individuals is 102. The cutoff score appeared to accurately discriminate between bulimic and nonbulimic individuals, although it does not consider subthreshold or binger individuals as exhibiting bulimic behaviors. The BULIT seemed to accurately differentiate between bulimic and nonbulimic individuals.

Presented in Table 10 are the results from two one-way analyses of variance on the BSSS and on its subscales as a function of membership in comparison groups. The analyses of variance revealed a significant effect of group membership on the BSSS \( F(5, 1025)=49.92, p<.001 \). The pairwise comparisons using the Tukey-Kramer test for significance also was employed to test intergroup comparisons. All comparisons were significant at the .01 level except for the Bulimic and Treatment groups; and the Binger and Subthreshold, Residence hall, and Nonbulimic groups comparisons. A second analysis of variance was computed using the combined
treatment and bulimic groups as one of the comparison groups. \(F(4,1026)=61.11, \ p<.001\), with the same results as the first analysis concerning the pairwise comparisons: all of the group comparisons were significant at the .01 level except the comparisons between the Binger group and the Subthreshold, the Residence hall, and the Nonbulimic group. The Treatment group showed the highest mean score on the BSSS (\(M=319.71, \ SD=42.59\)) and thus, as predicted, showed the highest amount of bulimic symptomatology. The remaining group means on the BSSS were as follows: the combined Treatment and Bulimic group (\(M=304.2, \ SD=48.79\)), the Bulimic group (\(M=283.92, \ SD=50.49\)), the Subthreshold group (\(M=232.94, \ SD=47.81\)), the Binger group (\(M=200.07, \ SD=46.73\)), the Residence hall group (\(M=197.90, \ SD=49.96\)), and the Nonbulimic group (\(M=179.88, \ SD=39.83\)). The tests comparing the group scores on the BSSS show that the scale does discriminate between comparison groups.

A further test of the differentiating ability of the BSSS was the analysis of variance computed on the group responses to each subscale of the BSSS. These analyses were computed to measure the differences between groups on each scale and to explore the possibility that response profiles for each group would emerge. Similar to the analyses of variance computed on the entire BSSS instrument, comparisons were made for five groups (combining the Treatment and Bulimic groups) and for six groups (Treatment and Bulimic groups compared separately). The data from the ANOVAS of the five BSSS subscales as a function of group membership are presented in Table
10.. Significant group differences were found on all of the scales when six groups were used $F(5,1025)=65.18$, $p<.001$ for the Affective Components scale; $F(5,1025)=50.66$, $p<.001$ for the Purge scale; $F(5,1025)=7.74$, $p<.001$ for the Exercise scale; $F(5,1025)=20.95$, $p<.001$ for the Sociocultural Attitudes scale; and $F(5,1025)=28.71$, $p<.001$ for the Self-Concept scale.

The pairwise comparisons of all of the groups across all of the subscales of the BSSS are presented in Table 11. The Tukey-Kramer test was employed to investigate the pairwise differences between each group on each scale. On the Affective Components scale the groups that did not differ from each other were the Treatment and Bulimic groups; and the Binger group from three groups: the Subthreshold, the Residence hall, and the Nonbulimic groups. On the Purge scale the groups that significantly differed from each other at the .01 level were Treatment group from all other groups; the Bulimic group from all other groups except the Subthreshold group; and the Subthreshold group from the Nonbulimic group. The significant differences between groups on the Exercise scale included the Subthreshold and the Binger, Residence hall, and Nonbulimic groups; and the Residence hall and Nonbulimic groups. On the Sociocultural Attitudes scale the following significant differences were found: Treatment and Binger, Residence hall, and Nonbulimic groups; Bulimic and Binger, Residence hall, and Nonbulimic groups; and Subthreshold and the Binger, Residence hall, and Nonbulimic groups. Finally, on the Self-Concept scale, no group differences were found between the Treatment and Bulimic groups; between Bulimic and
Table 11
Group Differences on Pairwise Comparisons for each BSSS Subscale

<table>
<thead>
<tr>
<th></th>
<th>Affective Concept</th>
<th>Exercise</th>
<th>Sociocultural Attitudes</th>
<th>Purge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group</strong></td>
<td><strong>Differences</strong></td>
<td><strong>Differences</strong></td>
<td><strong>Differences</strong></td>
<td><strong>Differences</strong></td>
</tr>
<tr>
<td><strong>Comparisons</strong></td>
<td><strong>Between Mean</strong></td>
<td><strong>Between Mean</strong></td>
<td><strong>Between Mean</strong></td>
<td><strong>Between Mean</strong></td>
</tr>
<tr>
<td>1 vs 2</td>
<td>10.07</td>
<td>1 vs 2</td>
<td>1.78</td>
<td>1 vs 2</td>
</tr>
<tr>
<td>1 vs 3</td>
<td>22.94*</td>
<td>1 vs 3</td>
<td>2.43</td>
<td>1 vs 3</td>
</tr>
<tr>
<td>1 vs 4</td>
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<td>1 vs 4</td>
<td>0.96</td>
<td>1 vs 4</td>
</tr>
<tr>
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<td>0.75</td>
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<td>0.21</td>
<td>1 vs 6</td>
</tr>
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<td>2 vs 3</td>
<td>0.65</td>
<td>2 vs 3</td>
</tr>
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<td>2.74</td>
<td>2 vs 4</td>
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<td>1.03</td>
<td>2 vs 5</td>
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<td>3 vs 4</td>
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<td>1.68*</td>
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</tr>
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<td>5 vs 6</td>
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<td>26.85*</td>
<td>7 vs 6</td>
<td>0.93</td>
<td>7 vs 6</td>
</tr>
</tbody>
</table>

*p < .01

Note: Group defined as: 1 = Treatment, 2 = Bulimic, 3 = Subthreshold, 4 = Binger, 5 = Residents Hall, 6 = Nonbulimic, 7 = Combined Treatment & Bulimic
Subthreshold groups; between Subthreshold and Binger or Residence hall groups; nor between Binger and either Residence hall or Nonbulimic groups.

Significant group differences were found on all of the scales when five comparison groups (combining treatment and bulimic groups) were used in the analysis of variance: $F(4,1026)=80.23$, $p<.001$; $F(4,1026)=51.77$, $p<.001$; $F(4,1026)=9.26$, $p<.001$; $F(4,1026)=26.21$, $p<.001$; $F(4,1026)=34.66$, $p<.001$; for the Affective Components, Purge, Exercise, Sociocultural Attitudes, and Self-Concept scales, respectively. All of the previously reported pairwise comparisons remain significant at the .01 level for this analysis, and additional comparisons made between the combined Treatment and Bulimic group and the other groups on each scale were also reported to be significant at the .01 level. The combined group was significantly different from all other groups on the Affective Components scale, on the Purge scale, and on the Self-Concept scale. Additionally, the combined group was significantly different than all other groups except the Subthreshold group on the Exercise and Sociocultural Attitudes scales.

In summary, the subscales of the BSSS appeared to produce differences in group means and, thus, seemed to be useful in discerning the bulimic symptoms associated with specific eating disturbed groups. The Affective Components and Self-Concept scales appeared to be the best of the subscales at discriminating between bulimic and nonbulimic groups and for discriminating between the
Figure 2

Graph of Bulimic Subtype Profiles on the Subscales of the BSSS
specific bulimic groups (i.e., Treatment, Bulimic, Subthreshold, Binger). Whereas, the Sociocultural scale seemed to be better for distinguishing between bulimic and nonbulimic groups but not for differentiating between the bulimic groups. The Purge scale distinguished between the treatment group and all other groups including the bulimic group but did not differentiate between the other bulimic groups and the nonbulimic groups (Residence hall & Nonbulimic). The Exercise scale was the least discriminating of the five scales.

Eating disturbance group profiles. Figure 2 is an illustration of the groups differences on each subscale and across the subscales of the BSSS. Represented in Figure 2 are the patterns of scale means for each group. The group profiles across the scales appear to follow a pattern that places the Treatment group at the top of each scale with the remaining groups positioned in descending order based on severity of bulimic symptoms: Bulimic, Subthreshold, Binger groups, then the Residence hall, and Nonbulimic groups. This positioning order of groups on scales was, for the most part, consistent with the predictions made concerning group profiles. The one inconsistency in the predicted group order was found on the exercise subscale. The profiles of the groups provide preliminary evidence for group norms on the subscales, as well as estimates of subscale differentiating competencies.
CHAPTER IV
Discussion

This study was a preliminary step in the process of validating the BSSS. The process of developing and validating an instrument is complex and demanding and requires many steps in order to achieve a good, psychometrically sound measure of a psychological construct. The main objective of this study was to explore the measurement properties of the Bulimic Symptom Severity Scale: the reliability and validity of the BSSS.

Reliability and Validity Estimates of the BSSS

The most salient results of this investigation were the reliability and validity estimates of the BSSS. The reliability estimates were high, \((rs > .85)\) indicating that the BSSS was measuring respondents' bulimic symptomatology in a systematic manner. Specifically, the internal consistency and the stability over an eight-week period of the BSSS were shown to be high and, therefore, provided a necessary foundation on which to base the validity of the instrument (Aiken, 1984). The reliability estimates for the subscales of the BSSS also were high \((rs > .85)\), further illustrating the consistency of the BSSS and establishing confidence in the utility of the instrument. Because the internal consistency and stability estimates of the BSSS were high, the assumption that the BSSS measures bulimia in a repeatable way is supported.
The strong positive relationship \((r=.85)\) between the BSSS and the BULIT evidenced good criterion-related validity of the BSSS. The conclusion that the BSSS measured what it purported to measure is based on the strong association between the BSSS and the BULIT. An interesting finding related to the association between the BSSS and the BULIT was the discrepancy in the relationships between the BULIT and the two sets of group responses (the set of responses produced by the respondents involved in the test-retest procedure and the set of responses produced by the respondents who only completed the BSSS once) on the BSSS. The BULIT was highly correlated with each BSSS response set; however, it correlated more highly with the responses to the BSSS that were not a part of the test-retest procedure. The discrepancy may have been due to differences in size of the data sets \((n=887 \text{ vs. } n=127)\), and thus, a difference in error variance.

In addition to the estimate of convergent validity obtained through the association between the BSSS and the BULIT, another measure of criterion-related validity was also evidenced by the significant differences on the BSSS between the comparison groups (eating disturbance groups). The BSSS differentiated between the Treatment group and the Nonbulimic group and between the bulimic subtype groups (Treatment, Bulimic, Subthreshold, Binger) and the Nonbulimic group, except for the Binger group. One reason for the exception may have been that the defining behaviors for the Binger group (defined by binge eating problems without significant endorsement of compensating methods) were considered by the
college women in the sample to be more "normative behaviors" (Mintz, 1987) than deviant behaviors and thus, may have vitiated any significant differences between the Binger group and the nonbulimic group.

The BSSS also effectively differentiated between the subtypes of bulimia, with one exception; no difference was found between the Binger and Subthreshold groups. Since the binge eating pattern is a feature of both disturbances it may be a defining symptom of both subtypes. If such were the case, then validity of using the compensating methods to distinguish the two disturbances would be suspect. In other words, perhaps the symptoms of the two disturbances are more similar than different, and separate classification may not be warranted. Another possible explanation is that the BSSS was more sensitive to discrepancies in bulimic subtypes that were more divergent; for example the BSSS was more able to detect the differences between two subtypes that were positioned at the extremes of the bulimic subtypes, such as treatment and binger groups.

The symptom severity of the eating disturbed groups, as measured by the BSSS, evidenced the predicted order from most to least severe symptoms, where the Treatment group scored the highest on the BSSS followed by the Bulimic, the Subthreshold, the Binger and the Nonbulimic groups. Since the groups scored in the predicted order, it would appear that the BSSS provides a measure of symptom severity in addition to a measure of differences between bulimic and nonbulimic groups. Overall, the BSSS was a valid measure of bulimic
versus. nonbulimic symptomatology and was effective in distinguishing between subtypes of bulimia.

The underlying factor structure was another interesting finding in this investigation. Overall, the results of the factor analysis confirmed the predicted dimensions of the BSSS. The items of the original BSSS were divided into subscales that were predicted to account for the important features of the bulimia syndrome. The original dimensions (Behavioral, Psychological, Self-Concept, and Sociocultural) were empirically corroborated by the factor analysis. The items generally clustered together as predicted, with one important deviation: the behavioral dimension items were disassociated, with the binge eating items emerging in the other subscales and the vomiting and exercise items emerging as separate subscales. The addition of exercise as an example of a compensating method, to the criteria for bulimia (American Psychiatric Association, DSM-IIIR, 1987; Fairburn, & Garner, 1987) was supported by the factor analysis since it emerged as the second strongest factor in the analysis. Based on the factor analysis, self-induced vomiting, one of the cardinal features of bulimia (Dykens & Gerrard, 1986; Grace, Jacobson, & Fullager, 1985), may not be the only method chosen to compensate for overeating. Exercise may emerge in the future as a more frequently used method of compensation because of the positive value placed on it by our society; exercise may be regarded as an acceptable method of counteracting a binge episode as compared to self-induced vomiting which is aberrant and unnatural (Johnson, Lewis, & Hagman, 1984).
A final illustration of the sound measurement qualities of the BSSS was the differences on the subscales as a function of eating disturbance group. The eating disturbance groups were distinguishable by the subscales and by their profiles across the subscales. Since the BULIT does not address the differences between the bulimic subtypes (scoring is based on a cut-off point for bulimic versus nonbulimic symptomatology instead of points for different bulimic subtypes; Thelen, et al., 1987), it would appear that the BSSS may evaluate bulimia in a more comprehensive manner than does the BULIT. The differentiating utility of the subscales varied according to the group comparisons, but evidenced profile patterns for each group. The Affective Components subscale was the most discriminating of the subscales. It distinguished between the bulimic and nonbulimic groups and between the subtypes of bulimia. Likewise, the Self-Concept, Sociocultural Attitudes, and Purge subscales also distinguished between the bulimic and nonbulimic groups. The Exercise subscale differentiated between the bulimic subtypes but not between the bulimic and nonbulimic groups. Because exercise is an acceptable behavior it may have been endorsed by all respondents (bulimic and nonbulimic), thus, no differences between groups on the exercise subscale would be apparent. On the other hand, the sensitivity of the Exercise subscale to the subtle differences between the bulimic subtypes could have been due to the fact that exercise appeared to be used most often by the less severe bulimic subtypes and used least often by the more severe subtypes (e.g., treatment sample). The proposition that exercise may be used more frequently in the less
severe bulimic subtypes supports the notion that movement along the continuum is associated with more psychological distress and harmful symptomatology (e.g., exercise is found in less severe bulimic subtypes versus self-induced vomiting found more frequently in clinical samples of bulimics) (Katzman, & Wolchik, 1984; Ousley, 1986; Striegel-Moore, Silberstein, & Rodin, 1986).

The profile patterns of the eating disturbance groups were consonant with the predictions of the bulimic subtypes. It was predicted that the subtypes of bulimia would evidence a specific order of symptom severity based on their scores on the subscales of the BSSS. The predicted profile order was supported by the data from this study, specifically, the Treatment group consistently scored the highest on each of the subscales followed by the Bulimic, the Subthreshold, the Binger, and the Nonbulimic groups. One exception to the order was noted; on the Exercise subscale the Subthreshold group scored highest followed by the Bulimic, the Treatment, the Nonbulimic and the Binger groups. Once again, this finding may be explained by the more frequent use of exercise as a compensation method by the less severe bulimic subtypes. Because exercise is an acceptable behavior it may be chosen more frequently in the future as a compensating method instead of some of the more damaging compensating behaviors, such as self-induced vomiting (Lacey, 1985).

The subscales of the BSSS appear to be good discriminators of bulimic subtypes, especially when they are considered collectively as a profile of symptoms.
The use of profile scores is one way to address two of the main purposes of this study, an exploration of the utility of the BSSS for assessing the features of bulimia in a comprehensive manner and for differentiating subtypes of bulimia. Because the profiles illuminate more of the symptom features of bulimia by addressing the differences between the bulimic subtypes on their symptomatology, a clearer understanding of what comprises each disturbance is provided. The BSSS profiles allow for specific measures of each subtype's characteristic symptoms. In comparison to scales that evaluate bulimia through the use of one symptom assessments (the Binge Scale, or the BITE scale), the BSSS provides a more comprehensive assessment of bulimia, because it addresses more of the symptoms.

Additional Interesting Findings

The incidence rates of the bulimic subtypes were other important findings of this investigation. The incidence rates were consistent with the ranges reported for bulimia but were lower than those reported for binge eating groups on college campuses (Cooper, Waterman, & Fairburn, 1984; Hart & Ollendick, 1985; Healy, Conroy, & Walsh, 1985). According to Hart and Ollendick (1985), the incidence rate for bulimia is approximately 5% or less and for binge eating the incidence rates range from 60% to 79% for college samples and from 10% to 30% for noncollege samples. The incidence rate for the bulimic group in this study was 3% and was 15% and 7% for the binge eating categories (Subthreshold and Binger groups, respectively). One explanation for the discrepancy between the incidence of the binge eating groups in this study and that of other
studies could have been the lack of accuracy of the classification procedure. Fewer respondents may have been categorized as having a problem with binge eating due to the reliance on self-report measures than were actually present in the sample. Another possible explanation is that the incidence rates reported in other studies may be overestimates of the true rate.

The demographic information collected on the samples yielded some interesting and surprising data. First, an unexpected finding involved the poverty level family income class of the Treatment and Bulimic. This finding conflicts with the proposition that eating disorders in general and bulimia, specifically, are upper class disturbances (Boskind-White & White, 1983; Kog & Vandereycken, 1985; Strober & Humphrey, 1987). However, Pope, Champoux, and Hudson (1987) found that bulimia was significantly more common in lower income women than in upper income women, when socioeconomic class was investigated directly. The reported income level of bulimic women in this study may illustrate that bulimia is not confined to upper middle and upper class families, and that it may be more common in other socioeconomic groups than has been suggested.

Two of the descriptive data items, weight perception and weight satisfaction, were strongly associated with the BSSS and with the BULIT providing support for the notion that women with eating disturbances are not satisfied with their bodies (Katzman & Wolchik, 1984; Mintz, 1987; Ruff & Barrios, 1986; Striegel-Moore, et al., 1986). Both descriptive items were related to the scales in the
expected directions: weight perception was positively correlated to the scales, and weight satisfaction was negatively correlated to the BSSS and to the BULIT. It appears that dissatisfaction with weight and a negative perception of body size and weight may be important components of the attitudinal features of bulimia.

Limitations of the Investigation

Several limitations are important to consider when interpreting the results of this study. First, the clinical sample size was small (n=17). One explanation for the small sample size was the strict criteria used to define the bulimic clinical sample: DSM-IIIR criteria for bulimia. It has been the experience of the author that individuals who are in treatment for bulimia often do not meet the DSM-IIIR criteria and are diagnosed with a subtype disturbance instead of as bulimic. Although the sample size compares with other clinical samples used in research on bulimia ranging from 15-30 (Katzman, & Wolchik, 1984; Henderson, & Freeman, 1987; Johnson, & Larson, 1982; Smith, & Thelen, 1984), it was on the lower end of the range and raises questions of generalizability. Another consequence of a small sample size is the possibility of nonnormally distributed data which could have affected the group comparison results.

A second limitation of the study was the use of nonclinical bulimic subtype groups in the comparisons. Instead of using clinically diagnosed samples of Subthreshold and Binger subtypes, respondents were classified by the investigator on the basis of their self-reported behaviors. Using comparison groups that were clinically diagnosed would have provided more accurate representations of the bulimic
subtypes than the use of comparison groups that were classified on the basis of self-reported behaviors alone. Because the subtype groups utilized in the study were classified by general symptom criteria and were therefore less accurate representations of the bulimic subtypes, the incidence rates may have been overestimated. Despite the use of a categorizing method similar to that used in other studies of bulimia (Mintz, 1987; Ousley, 1986; Post & Crowther, 1985), the accuracy of the defined comparison groups of representing clinical samples of bulimic subtypes is untested and suggests a question that is important to address empirically.

A third and related limitation concerns the subjective definition of a binge. The self-reported behavior, binge eating, was a primary symptom feature utilized in the classification of bulimic subtypes. Although respondents were told that a binge was defined as "consuming large amounts of food in short periods of time," different interpretations of that definition could have resulted in misclassification of respondents. The binge eating episode is a subjective experience that varies from individual to individual. For example, Harvill (1984) defined binge eating as "the amount of food that would elicit the desire to purge" and found that varying quantities of food were considered a binge: some reported that large quantities, such as a dozen donuts and a quart of ice cream were considered a binge while others reported smaller quantities, such as four cookies to be a binge. Other definitions of a binge are not based solely on the quantity of food consumed but rather are based on the loss of control feeling experienced during the binge eating episode (Boskind-White &
White, 1983; Pyle, Mitchell, & Eckert, 1981). The subjective nature of the binge eating behaviors warrants more specific criteria for what constitutes a binge. In future research, a binge eating episode could be more clearly defined as the consumption of larger than usual amounts of food and the experience of losing control over one's eating habits.

The use of self-report measures in this investigation was another limitation of the study. A question is raised about the accuracy of the responses to the questionnaires, especially since some of the eating disturbance information is associated with shame (Pyle, et al., 1981). The incidence rates found in this study of the bulimic subtype may have been lower than what actually existed in the sample because of the use of self-report measures. Even if the confidentiality allowed the respondents to provide accurate representations of their behaviors, other concerns about self-report measures could have affected the data collected. Ortega, et al., (1987) discussed problems with using self-report measures in bulimia research: (a) there has been poor agreement between self-monitored and externally monitored data, and (b) accuracy of self-reports has been influenced by a number of variables, such as motivation of the respondent, trust in the confidentiality of the study, and external monitoring (p. 305). Despite these criticisms of self-report measures, they are typically used to assess bulimia without additional cross validation of the reported behaviors (Crowther & Chernyk, 1986; Gray & Ford, 1984; Halmi, et al., 1981; Hart & Ollendick,, 1985; Healy, Conroy, & Walsh, 1985; Katzman & Wolchik, 1985). Only a few studies have used nonself-
report additional indicators of bulimia, such as structured interviews and clinical impressions, in their investigations of bulimia (Fairburn & Cooper, 1984; Garner, Olmsted, & Garfinkel, 1985). In both the Fairburn and Cooper (1984) and the Garner, et al., (1985) studies agreement was found between the self-reported data and the other measures of bulimia. The question of whether self-report measures are an accurate representation of bulimic behaviors has not been resolved and will continue to be an issue until more studies are completed that directly investigate the utility of different methods of evaluating bulimia.

A final limitation of the study is the generalizability of the findings. Despite the generalizability of the clinical sample based on the diverse geographic samples, the remaining respondents were drawn from a large midwestern university sample which limits the comparisons that can be made to other studies. It may be that there are different social and environmental pressures on women in different regions of the country and at small versus, large universities that would variously influence the incidence rates of eating disturbances. A test of the generalizability of the results would be replication studies at other universities and with other segments of the population of women (e.g., working women and women of various ages).

Further Research

Since this investigation was a preliminary step in validating the BSSS, much research remains to be done. First, replication studies using clinical samples of bulimic subtypes are indicated to replicate the results of the group comparisons. Further, investigations using
clinical samples will begin to establish normative data and will address
the validity of the descriptive profiles of the bulimic subtypes.
Replication studies also are necessary for further exploration of
appropriate scoring cut-off points for the various subtypes of bulimia.
According to Tinsley and Tinsley (1987), replication studies are
required to establish stable factors. Therefore, replication studies are
indicated to test the stability of the factor structure of the BSSS..

In addition to replication studies, more validation studies are
needed. One area of validity not addressed in this study is predictive
validity. The utility of the BSSS for predicting classification into eating
disturbed groups needs to be addressed in future research projects.
Additional investigations of criterion-related validity are also indicated.
For example, direct comparisons of the BSSS to other measures of
bulimia, such as the BULIT to test for superior discriminating
competencies. Discriminant validity is another area of unexplored
validity concerning the BSSS. Investigations that would explore the
relationship of the BSSS to measures of healthy eating attitudes and
behaviors, for example, would provide estimates of the discriminant
validity of the BSSS.

A final area of validity that should be explored through future
research is construct validity. Construct validity is determined by
clear and accurate definitions of the psychological construct being
measured and by the relationship of the test data, which is assumed to
be a representative example of the psychological construct, to behavior
that is hypothesized to be related to the psychological construct
(Aiken, 1984). Future investigations of the construct validity of the
BSSS would involve explorations of the relationship of bulimia, as measured by the BSSS, to other behaviors and psychological constructs that have proposed associations with bulimia. For example, it has been hypothesized that bulimia is associated with sex-role stereotyping (Lewis & Johnson, 1985), with substance abuse (Post & Crowther, 1985), with endorsement of sociocultural attitudes concerning thinness and attractiveness (Boskind-White & White, 1983), and with depression (Walsh, Roose, Glassman, & Sadik, 1985). Investigations exploring the relationship of bulimia with any of those behaviors would provide estimates of the construct validity of the BSSS.

Finally, the BSSS was developed for use with women, and its application to male bulimics is of empirical interest. Although bulimia is predominantly found in women (Pope & Hudson, 1984), some theorist predict that an increase in the incidence rates of bulimia in men will occur (Pope, Hudson, & Jonas, 1986). The BSSS would have to be modified to accommodate the male perspective; for example the removal and replacement of wording that assumes the gender of the respondent to be female. A form could be developed for men and then tested; however, it seems more appropriate to develop a separate scale for men since the dynamics of bulimia may be manifested differently in males than in females (Pope, et al., 1986).

Implications for Counselors

The implications of this investigation for counselors are focused in the areas of education and understanding bulimia, and diagnosing bulimia. It is important for counselors to have a clear understanding
and informed awareness of bulimia, in order for them to effectively intervene with individuals who have bulimia (Halmi, 1982). An awareness of the bulimic symptom features is an important component of educating counselors about bulimia (Schlesier-Stroop, 1984). According to Root et al. (1986), there is a need to develop a more complete understanding of bulimia, and one way to accomplish that comprehensive understanding is by attending to the various symptom features. The BSSS could be used in the process of educating counselors about the prominent features of bulimia because it assesses bulimia in a comprehensive manner. Because the BSSS provides measures of the behavioral, affective, cognitive, and sociocultural attitude features of bulimia, it could facilitate an expanded understanding of the components of bulimia. Thus, one possible use of the BSSS may be to provide a description of bulimic symptomatology for increasing the awareness of counselors working with bulimic clients.

A related area of concern for counselors working with bulimic clients is accurate diagnosis. Based on a thorough understanding of the symptom features of bulimia, an accurate diagnosis can be made. In order for counselors to effectively treat bulimia they have to have valid and reliable methods of diagnosing bulimia and the subtypes of bulimia. The use of the BSSS for assessing bulimia and serving as a diagnostic measure is predicated on the reliability and validity estimates found in this study. Also, the utility of the BSSS for discriminating between bulimic and nonbulimic groups has been
supported. Therefore, the BSSS could be employed to diagnose bulimia.

A further diagnostic use of the BSSS may be applying the profile scores obtained from the five subscales to differentiate bulimic subtypes. An aspect of the discriminating properties of the BSSS is based on the accuracy of the subscales for providing different scores for the separate bulimic subtypes. Since the data from this study supported the predictions that the BSSS subscales would differentiate between subtypes, and that different profiles for each subtype would emerge, the BSSS may be utilized for discriminating between bulimic subtypes. Accurately diagnosing the subtypes of bulimia may be an important aspect of reducing the prevalence of bulimia, and the BSSS may be an appropriate method of diagnosing the subtypes.

Assessment of bulimia is an important aspect of increasing counselor awareness about the symptom features of bulimia. Further, valid and comprehensive evaluations of bulimic symptomatology is needed for accurate diagnosis of bulimic subtypes. The reliability and validity of the BSSS has gained confirmatory support through this investigation, thus, suggesting its validity as a legitimate bulimic assessment instrument. Use of the BSSS to increase counselor awareness of bulimic symptom features is grounded in the five subscales of the BSSS and in the descriptions of the bulimic symptoms that are provided by the profile scores. Likewise, the utility of the BSSS for diagnosing bulimia is based on the discriminating properties of the BSSS. The BSSS can provide descriptive information concerning bulimic symptomatology and, thus, may be useful for
increasing the understanding of bulimia and may be a useful diagnostic tool.

Summary

The results of this study indicate that the BSSS is a reliable and valid assessment instrument. Its underlying structure includes five subscales that also are highly reliable. The BSSS could be used to discriminate between bulimic subtypes, between bulimic and nonbulimic samples, and is related to another measure of bulimia, suggesting that it measures the symptom features of bulimia. The need for increased awareness concerning the symptoms of bulimia could be addressed through assessment instruments that evaluate bulimia as a syndrome including behavioral, attitudinal, affective, and cognitive symptom features. The BSSS is one assessment instrument that could increase the understanding and awareness of bulimia by assessing it in a comprehensive manner. Despite the good reliability and validity estimates of the BSSS, more validation work remains. This study was only the beginning phase in a long process of developing an efficacious instrument that assesses bulimia, the syndrome.
References


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Appendix A

Demographic Data Sheet
Demographic Data

140. What is your racial or ethnic background?
   A. White (Caucasian)
   B. Black (African American)
   C. Hispanic
   D. Asian
   E. Other (Specify)

141. In your opinion, you are:
   A. extremely underweight
   B. underweight
   C. average weight
   D. overweight
   E. extremely overweight

142. To what extent are you satisfied with your weight?
   A. extremely dissatisfied
   B. dissatisfied
   C. satisfied
   D. extremely satisfied

143. My income level is: (note this refers to the income level of the family in which you grew up)
   A. poverty (8,000---below)
   B. low (8,000-15,000)
   C. middle (15,000-35,000)
   D. upper middle (35,000-50,000)
   E. upper (50,000-and above)

144. I am currently:
   A. 15-20 years of age
   B. 21-25 years of age
   C. 26-34 years of age
   D. 35-44 years of age
   E. 45 years of age or older

145. My education level is (note, this refers to the level of education that you have completed)
   A. high school
   B. 1-3 years of college
   C. college graduate
D. 1-3 years of graduate level education
E. graduate degree

146. I am currently
A. single
B. divorced
C. married
D. separated
E. partnered
Appendix B

The Bulimic Symptom Severity Scale
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These consist of pages:

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Appendix C

Inclusion Criteria for Comparison Groups
I. Bulimia Nervosa Group
A. Bingeing Behavior:
   1. Individual indicated a problem with binge eating and reported bingeing 8 or more times in the last month, AND
B. Purging Behavior:
   1. Individual indicated usage of any one of the following to reduce and/or control her weight once a month or more: laxatives, diuretics, or self-induced vomiting OR
C. Restricting Behavior:
   1. Individual indicated that she fasted or used appetite control pills once a week or more to reduce and/or control her weight, OR
   2. Individual indicated that she had engaged in exercise to reduce and/or control her weight 58 hours or more per month, OR
   3. Individual indicated that she had eaten on a special diet once a week or more to reduce and/or control her weight.

II. Subthreshold Group
All of the features of Bulimia Nervosa except the frequency of the bingeing and compensating behaviors is less than that delineated for inclusion into the bulimic group.
A. Bingeing Behavior:
   1. Individual reported a problem with binge eating and reported bingeing less than 8 times per month.
   AND
B. Purging Behavior:
   1. Individual indicated usage of any one of the following to reduce and/or control her weight less than once a month: laxatives, diuretics, or self-induced vomiting.
   OR
C. Restricting Behavior:
   1. Individual indicated that she had fasted or used appetite control pills less than once a week to reduce and/or control her weight.
   OR
   2. Individual indicated that she had engaged in exercise to reduce and/or control her weight less than 58 hours per month.
   OR
   3. Individual indicated that she ate on a special diet less than once a week to reduce and/or control her weight.

III. Binger
A. Bingeing Behavior:
   1. Individuals indicated a problem with binge eating AND
B. Purging Behavior:
1. Individual did not use any one of the following to reduce and/or control her weight: laxatives, diuretics, or self-induced vomiting.
   AND
C. Restricting Behavior:
   1. Individual did not fast or use appetite control pills to reduce and/or control her weight.
      AND
   2. Individual did not engaged in exercise less than 58 hours per month.
      AND
   3. Individual ate on a special diet less than once a month to reduce and/or control her weight.
IV. Nonbulimic
A. Bingeing Behavior:
   1. Individual indicated no problem with binge eating.
   AND
B. Purging Behavior:
   1. Individual did not use any one of the following to reduce and/or control her weight: laxatives, diuretics, or self-induced vomiting.
      AND
C. Restricting Behavior:
   1. Individual did not fast or use appetite control pills to reduce and/or control her weight.
      AND
   2. Individual engaged in exercise less than 58 hours per month.
      AND
   3. Individual ate on a special diet less than once a month to reduce and/or control her weight.
Appendix D

Weight Management, Eating, and Exercise Habits Questionnaire
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These consist of pages:

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107-111, Appendix E
APPENDIX E

THE BULIT

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APPENDIX F

INSTRUCTIONS AND DEBRIEFING INFORMATION
Instructions and Debriefing Information

This is a study about the eating attitudes and behaviors of women. The purpose of this study is to investigate the types of attitudes and behavioral patterns that exist in a college (in a clinical) population concerning eating patterns, dieting, and body image. In order to better assess eating attitudes and behaviors, I have created an instrument that is proposed to describe these attitudes and behaviors accurately. You are a part of the development of that instrument. It is important that you answer all of the questions completely and honestly. Your answers will be totally anonymous. At the top of each questionnaire there is a set of instructions. Please read them before answering the items. Generally speaking, for each questionnaire you are to respond to the items as they pertain to you and as they describe how you feel and behave. Please respond to the questionnaires in the order in which they are give to you.

Upon completion of the instruments, the subjects will be debriefed by a written statement. The statement will be as follows:

Thank you for your participation and your honesty. As stated earlier, you have been a part of a development of an instrument that assesses eating attitudes and behaviors. Specifically, the instrument is to assess bulimia. If any of you have questions or want to discuss bulimia or any other concerns that you may have about eating habits, yours or someone else’s, please feel free to ask me before you leave or contact me at the address listed. I will provide a list of resources about eating disorders and treatment for everyone who has participated in the study.
APPENDIX G

BULIMIC SUBJECT INCLUSION CRITERIA
BULIMIC SUBJECT INCLUSION CRITERIA

I. BEHAVIORAL FACTORS

A. Bingeing Behavior:

1. Subject indicated a problem with binge eating and reported
   bingeing two or more times per week, for the past 3 months or
   longer.

   AND one or more of the following compensatory methods

B. Purging Behavior:

1. On the average, subject used one or more of the following to
   reduce and/or control her weight once a week or more:
   laxatives, diuretics, and self-induced vomiting.

   OR

C. Restricting Behavior:

1. On the average, subjects fasted or used appetite control pills
   once a week or more to reduce and/or control her weight.

   OR

2. On the average, subject engaged in exercise to reduce and/or
   control her weight 2 hours or more per day.

   OR

3. On the average, subject ate on a special diet once a week or
   more to reduce and/or control her weight

II. DISORDERED THOUGHTS & FEELINGS

A. Control:

1. Subject experiences a lack of control over her eating behavior
   during the eating binges.

   AND

B. Body Image:

1. Subject is overly concerned with her body shape and weight.
INSTRUCTIONS FOR COUNSELORS: Please read the criteria for including your clients in this study (see attached criteria) and determine if any of your clients fit the criteria. If they do, please request their participation in the study and explain the study requirements to them by reading the script provided. Thank you for helping me complete this important task.

Script for Counselors: "I want to describe a study to you that is being conducted at Ohio State University that may concern you and may interest you. This study is part of the work being done to increase the understanding of eating disorders, especially bulimia. The investigator is in the process of developing a questionnaire that may be used to describe bulimia and bulimic symptoms. If you are willing to participate in this study, you will be asked to answer 3 questionnaires and some demographic questions. The questionnaires inquire about your eating habits, attitudes, and feelings about your eating concerns. It should take approximately 40 min. to complete the questionnaires. All of your responses will be kept completely confidential, even from me, unless you otherwise indicate that it would be appropriate for me to read your responses. You will not include your name or any other type of identity either. If you agree to participate, I will give you a packet of materials and you can take it home with you to complete. Upon completion, you will return the packet and its contents to the investigator of the study in the self-addressed envelope provided for you by the investigator. You are by no means obligated to participate and participation is not contingent upon your receiving services at the center. Participation is, however, greatly appreciated and will add to our knowledge and therefore, our ability to treat eating disorders."
Instructions for Participants

Thank you for agreeing to participate in this study. As your therapist discussed with you, you will be responding to 3 questionnaires and it will take you approximately 30-45 minutes to complete this task.

Please respond to the Bulimic Symptom Severity Scale, the BULIT, and to the Demographic data sheet right on the answer sheet provided.

Place your responses to the Bulimic Symptom Severity Scale on the answer sheet items numbered 1-8 8 and your responses to the BULIT on the answer sheet items numbered 100-131. Please use a pencil when placing your responses on the answer sheet and place your responses to the demographic data sheet on items numbered 140-146. When answering the third questionnaire, the Weight Management, Eating, and Exercise Habits Questionnaire, please place your responses directly on the questionnaire itself. Please do not put your name or any other identifying information on the answer sheet to ensure your anonymity.

When you have completed the questionnaires, please return them to the investigator. As a reminder, make sure you put all of your responses in the correct place on the answer sheet (i.e., for the Bulimic Symptom Severity Scale place your responses on the answer sheet items 1-88, for the BULIT place responses on items 100-131, and for the demographic data questions on answer sheet items 140-146). Please only mark on the Weight Management, Eating and Exercise Habits Questionnaire and return all questionnaires in the packet. Once again, thank you for your participation in this study and if you wish to receive study results please include your name and address on a separate piece of paper and return it with the packet content in the self-addressed envelope provided by the investigator.
Appendix H
Factor Matrix
PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

119–125, Appendix H
127, Appendix I
129–132, Appendix J
APPENDIX I

ITEMS DELETED VIA FACTOR ANALYSES AND ITEM ANALYSES
APPENDIX J

BSSS BROKEN DOWN BY SUBSCALES BASED ON FACTOR STRUCTURE THAT RESULTED IN FIVE FACTORS