

An Investigation of the Physical Complications
Checklist as a Screening Device for Bulimia

by


Sarah Ann Samaan

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Dr. Jeffrey M. Kern, Ph.D.

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Abstract

The purpose of this paper is to examine the efficiency of Barrios and Pennebaker's (1983a) Physical Complications Checklist (PCC) in separating bulimics from non-bulimics in a population of female college students enrolled in introductory psychology classes. In a sample of 557 subjects, the 47 highest scorers were predicted to be bulimic. On the basis of an oral and written interview in which 34 of the predicted bulimics and 30 members of a stratified control group participated, it was determined that 10 of the 34 predicted to be bulimic were indeed bulimic, while none of the 30 subjects in a stratified control group were bulimic ($\chi^2 = 10.24$). Further, the 10 bulimics' answers to a questionnaire were compared to the answers of the 54 non-bulimics in an attempt to assess the significant variables which distinguish bulimics from non-bulimics. Significant differences were found between the two groups in responses to questions concerning food, family characteristics, importance of appearance before others, degree of daily stress, and relationships with males. Finally, implications for treatment are discussed.

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Introduction

In a fast-paced society where "thin is in" and food is abundant, many young women already weighed down with the complexities of growing up and fitting into society find themselves locked into the bulimic cycle of binging and purging. Indeed, the public awareness of bulimia and other eating disorders has increased to such an extent that Schwartz, Thompson, and Johnson (1982) have called them the "pet mental disturbances" (p. 21) of contemporary American culture. The reasons behind this phenomenon are unclear, and seem to involve several intertwining factors.

The most obvious factor is the increased western ideal of slimness, concomitant with improved nutrition, which has contributed to an increase in weight norms (Schwartz, Thompson, and Johnson, 1982). Caspar (1983) noted that not until the 1940's did weight become a significant concern, yet by the 1950's, thinness was recognized as a social ideal. In the 1960's, Caspar asserted, thinness became "a symbol for independence, autonomy, innocence, vigor, frugality, and moral excellence, instead of merely reflecting admirable and enviable slenderness" (p. 10). On the other hand, being overweight was viewed as a statement that one lacked self-control, and was the negation of all the desirable qualities implied by slimness. Concurrent with this observation, Schwartz, Thompson, and Johnson (1982) have noted that over the last twenty years, data from Playboy centerfolds and Miss America contestants have trended significantly towards thinness. At the same time, popular women's magazines have shown a significant increase in articles concerning diet.

Unlike anorexia nervosa, which has received much popular attention as of late, bulimics do not starve themselves to a life-threatening emaciation. Actually, bulimics are often slightly overweight, some to the point of obesity (Caspar, Eckert, Halmi, Goldberg, and Davis, 1980). The DSM-III (APA, 1980), lists the following diagnostic criteria for bulimia:

- A. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time, usually less than two hours).
- B. At least three of the following:
 - 1. Consumption of high-caloric, easily ingested food during a binge
 - 2. Inconspicuous eating during a binge
 - 3. Termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting
 - 4. Repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or use of cathartics or diuretics
 - 5. Frequent weight fluctuations greater than ten pounds due to alternating binges and fasts
- C. Awareness that the eating pattern is abnormal and fear of not being able to stop voluntarily
- D. Depressed mood and self-deprecating thoughts following eating binges
- E. The bulimic episodes are not due to anorexia nervosa or any known physical disorder.

There are several problems with these criteria. First, binge eating seems to be a fairly common activity among college students. Hawkins and Clement (1980), in a survey of 247 college psychology students, found that 79% of the females and 49% of the males reported engaging in binge-eating. In addition, Halmi, Falk, and Schwartz (1980) reported that in a questionnaire given to 335 summer-school students, 19% of the females and 5% of the males reported having experienced all of the major symptoms of bulimia as defined by DSM-III. These figures seem exceptionally high. In another attempt to assess the prevalence of bulimia in a university student population, Pyle,

Mitchell, Eckert, Halvorson, Neuman, and Goff (1983) developed a 43-item questionnaire which they gave to 1355 college students, using criteria A, B, and D of the DSM-III definition to designate what they term "bulimics". (Criterion C was omitted since the authors did not believe it would be of value in identifying bulimics.) They found that 4.5% of the females and 0.4% of the males participating in the study met their criteria, and could be termed "bulimics." However, when compared to a clinical population of bulimics, the "bulimics" differed in some respects. For the most part, the "bulimics" tended to use fasting as a frequent means of controlling weight, rather than vomiting or laxative abuse. In addition, fewer "bulimics" had sought treatment for depression than had clinical bulimics. The researchers found that those "bulimics" who admitted to at least weekly self-induced vomiting or purging and at least weekly binge eating more closely resembled the clinical population. Pyle et al. concluded that the DSM-III criteria "are not effective criteria for identifying a group of people who closely resemble the patients we have evaluated and diagnosed as bulimic" (p. 84).

Other researchers have questioned the theoretical separation of bulimia from anorexia nervosa. Johnson, Stuckey, Lewis, and Schwartz (1982) reported that the symptoms of bulimia occur in the obese, in anorectics, and in individuals with no history of weight disorders. Mitchell and Pyle (1982) too, noted that the DSM-III criteria can include anorexia and obesity. According to Holmgren, Humble, Norring, Roos, Rosmark, and Sohlberg (1983), "within the confines of descriptive diagnostics and the experiences provided by an adult psychiatric

population, the division into two separate syndromes in the DSM-III seems unwieldy and is of very little use in planning treatment or predicting the course of the disorder" (p. 8). Instead, Holmgren *et al.* suggested the adoption of the Anorectic-Bulimic Conflict (ABC) model, which combines these patients into one group. Russell (1979) preferred to describe the syndrome as "bulimia nervosa: an ominous variant of anorexia nervosa," based in part on his findings that over half (17/30) of his psychiatric patients described as bulimics had a previous history of anorexia nervosa. He described bulimia nervosa as the irresistible urge to overeat, although his patient population displayed, in addition, self-induced vomiting or purging and a "morbid fear of becoming fat" (p. 429). In partial agreement with Russell, Fairburn (1980) noted that the psychopathology of those who overeat and induce vomiting is similar to that of anorectics. Schwartz, Thompson, and Johnson (1982) also reported that both vomiters and anorectics "speak the same way of their bodies, their food worries, their exhausting battles with the impulse to eat" (p. 35).

Clearly, there is considerable debate regarding the definition and classification of bulimics. According to Mitchell and Pyle (1982) the term "bulimia" describes both a symptom, binge eating, and a syndrome. They pointed out that the DSM-III criteria were drafted before much work was done on the subject. Because of the ambiguities and controversy concerning the DSM-III definition, for our study, a subject who engaged in self-induced vomiting or laxative abuse was defined as a bulimic.

The questions surrounding the definition of bulimia are perhaps

due in part to the lack of agreement concerning the etiology of this disorder. Several psychoanalytic explanations have been put forward including the more recent theories of Sugarman and Kurash (1982) and Boskind-Lodahl (1976). Sugarman and Kurash's thesis is that bulimia is a reflection of "the failure to adequately separate both physically and cognitively from the practicing subphase [of transitional object development]" (p. 58). The body, Sugarman and Kurash claimed, is the first transitional object for the infant, and in normal development, the infant moves from this experience to external transitional objects, which require more cognitive complexity. This complexity derives from the symbolization of these objects as a "merged maternal-infant representations" (p. 60), while at the same time remaining external objects. However, in the child that will later become bulimic, Sugarman and Kurash cited "violations of transitional boundaries," together with "parental under- or over-involvement" (p. 60) and other factors which lead to "inhibitions of normal strivings for autonomy associated with the practicing subphase" (p. 60). Deprived of this autonomy, the infant turns her urges to discriminate toward, and against, her body, instead of toward the external world. The future bulimic's reliance on the body to "evoke a representation of herself or her mother indicates an arrest at a stage of tenuous self-other differentiation and a very concrete symbolic level" (p. 61). Thus, concrete body action, in this case gorging, becomes the necessary means to regain the experience of the needed object, which is the mother. Sugarman and Kurash put forward "the dread of fusion and other psychodynamics mobilized by the experience of the symbiotic mother" (p. 61) as the impetus for vomiting, itself a bodily action. This fear of fusion with the mother is magnified by the onset of puberty, during

which the body, whose biological development is out of the control of the adolescent, becomes increasingly like the mother's. Adolescent bulimics, having never developed the capacity for "symbolization in the arena of object relations" (p. 62), and faced with a need to explore conceptual areas as well as to effect separation, turn to their bodies as "the arena for the concrete interplay of separation issues" (p. 62). Thus the bulimic dilemma, according to Sugarman and Kurash, is two-fold. First, the bulimic "lacks the cognitive capacity to symbolize the maternal object which would allow her to give up the use of her body as a transitional object" (p. 62). Second, "her body as a transitional object is actually experienced as her mother To feed her body is to lose herself in the experience of being one with mother" (p. 62). The body becomes the focus for the bulimic, as she clings to it while at the same time tries to bring it under submission. Sugarman and Kurash's theory is provocative, and they cited a case study through which they backed up their arguments, but the utility of this theory is sometimes questionable. One must wonder if perhaps this is merely one of many ways in which bulimia may arise.

Boskind-Lodahl's (1976) discussion of the psychodynamics of bulimarexia (her term for the characteristic combination of bingeing and starving) is rather different from that of Sugarman and Kurash. Unlike anorexia, which she characterized by a rejection of femininity, she described bulimarexia as an exaggerated striving to achieve the ideals of "wifeness, motherhood, and intimacy with men" -- the "fundamental components of femininity" (p. 346). The binge is seen as a release in reaction to the strict, unrealistic goals imposed upon the body

by the mind. In a sense, it is a union between the mind and the body. During the purge, however, the bulimarexic relives the past, which held rewards for passivity and beauty and punishments for assertion and rejection. Contemplating the future, she regards the possibility of a fat body, which will bring with it "inevitable" male rejection. Here, the mind again separates from the body "by focusing on the shame of being out of control" (p. 352). Boskind-Lodahl's model appears less stringent than that of Sugarman and Kurash, yet it remains to be seen whether her assertions are indeed valid across the range of bulimarexics.

Unlike Sugarman and Kurash and Boskind-Lodahl, Russell (1979) made no systematic attempt to investigate the premorbid personalities of his bulimic patients, but noted that "no characteristic type of personality could be said to have preceded the illness" (p. 442). As previously mentioned, Russell described bulimia nervosa as a variant of anorexia nervosa, but added that it includes an overwhelming desire to eat which is not associated with hunger. He suggested that the discrepancy between the desired weights of the bulimics, which they constantly struggle to achieve, and the weights which would be medically acceptable may "trigger off physiological responses which find expression in the powerful urges to overeat" (p. 443). However, these physiological responses are not detailed, nor are the desired weights of normal individuals as compared to those of bulimic, suggesting that more research is necessary before this can be used as a sufficient explanation. Too, Klesges (1983) noted that in a college student population, 58% of the normal weight females regarded themselves as overweight, while 70% of the underweight students perceived their weight as normal and 20%

believed they were overweight. Barrios and Pennebaker (1982a), too, contested Russell's explanation, stating that "the theoretical framework . . . does not adequately address the multiple environmental, cognitive, and physiological variables which appear to be implicated in the development and perpetuation of bulimia nervosa" (p. 18). They noted social factors and "a history of self-regulatory failure" (p. 18) as important contributors to the bulimic syndrome. In their proposed three-systems model, Barrios and Pennebaker described three classes of responses -- cognitive/subjective, overt motoric, and physiological. Indeed, Barrios and Pennebaker's more holistic approach seems to approximate more closely the actualities of the life of the bulimic, which is enmeshed in a world of almost innumerable variables.

It seems apparent that bulimia is a complex disorder involving a constellation of factors, but whether bulimia is a cause or a product of these factors remains unclear. However, many physical complications are known to evolve out of the bulimic syndrome. While not always obvious to psychological personnel, these manifestations are potentially dangerous and should be recognized and treated along with the bulimia itself.

In our study, we sought to identify some of the common factors which may differentiate female bulimics from female non-bulimics, while at the same time evaluating Barrios and Pennebaker's (1983b) Physical Complications Checklist (see Appendix A). Thus we proposed to approach bulimia in terms of its physical manifestations as well as its psychological implications. The subject completes the Physical

Complications Checklist (PCC) by noting the occurrence or absence of each symptom listed. Among the physical complications listed are swollen salivary glands, urinary infections, sore throat, chronic fatigue, hoarseness, potassium depletion, excessive urination, weight loss, amenorrhea, and trouble passing food from the throat to the stomach. As Barrios and Pennebaker (1983a) pointed out, the physical manifestations of bulimia are often what bring bulimics to the attention of health-care personnel. With the PCC, it may be possible to identify bulimics and thus to treat the problem itself, instead of merely the symptoms. According to Ruff and Barrios (1983), the PCC "appears to adequately discriminate bulimics from normals" (p. 2). Our study, unlike Ruff and Barrios', began with a population of students whose eating patterns were unknown to us. From the distribution of scores on the PCC, we attempted to separate the bulimics from the non-bulimics.

In order to determine the efficacy of the PCC, it was necessary to establish a cut-off point, above which scores would be considered high and thus potentially predictive of bulimia. Previous estimates of the occurrence of bulimia differ considerably. Pyle et al. (1983), as mentioned earlier, found that 1% of the female college students they surveyed engaged in at least weekly self-induced vomiting or laxative abuse, as well as at least weekly binge eating. However, Halmi, Falk, and Schwartz (1981) reported that 12% of a female college population enrolled in summer school had engaged in self-induced vomiting. Hawkins and Clement (1980) found an incidence of self-induced vomiting in a college sample of females of 3.5%. Finally, Schwartz, Thompson, and Johnson (1982) concluded that 10% of the women at a private

college controlled their weight by self-induced vomiting and that 3% controlled their weight through laxative abuse. Obviously, estimates of the incidence of bulimia differ widely, perhaps due to differences in estimation methods or, possibly, because of differential social factors among various groups of college females. For our purposes, we chose the subjects who had scored in the top 8.5% on the PCC as the group we predicted to be bulimic. This percentage was chosen because it is close to the average estimate of the incidence of bulimia. To test the usefulness of this cutoff, these subjects and a stratified control group were interviewed (See Appendix C), and the operationally defined bulimics then compared to the nonbulimics.

From a study of the literature regarding the characteristics of bulimics, we developed ten a priori hypotheses:

First, Barrios and Pennebaker (1982b) have implied that birth order may be of importance in the development of bulimia. They reported that out of 22 bulimics studied, all of whom engaged in self-induced vomiting or purging, ten were youngest children and five were first born. However, they offered no statistical evidence to back up the significance of this finding. Johnson, Stuckey, Lewis, and Schwartz's (1982) data do not support this postulation; however, their definition of bulimia differed from that of Barrios and Pennebaker. They found a fairly even distribution of birth order among 316 bulimics, defined as women who reported having problems with binge eating, with 30.3% being first born, 30.3% middle children, and 35.8% youngest children. 2.4% of their sample were only children, and 1.2% were twins. Thus, we wished to test the suggestion implicit in Barrios and

Pennebaker's findings that bulimics may tend to be the youngest children in their families.

Secondly, we postulated that bulimics would have experienced a greater degree of weight fluctuation than the nonbulimics. Specifically, we wished to compare their answers to the question: "What has been your maximum weight loss in a month?" Lacey (1982), who suggested that bulimics represent a subgroup of the massively obese, noted that bulimic patients seem to have "always fluctuated around their mean-matched population weight", p. 60, but the amount of deviation is not specified.

Related to this question is the subjective importance of achieving the subjective ideal weight, whatever that weight might be. We predicted that the bulimics would rate this variable higher, on a scale of 1-7, than the non-bulimics. Barrios and Pennebaker's (1982a) bulimics rated this variable an average of 6.45, but they did not offer a control group to which this score could be compared. Lacey's (1982) comment that the bulimic's feeling of failure as a woman is projected onto her body shape, in a struggle "to achieve a perfect, yet stereotyped, feminine role" (p. 64), adds additional support to this contention. This stereotypical view of femininity was also pointed out by Norman and Herzog (1983).

Next, we hypothesized that bulimics would be more likely to set strict limits on the amounts and types of food they allow themselves to eat. This question referred solely to the setting of limits, not necessarily to obedience to these limits. Russell (1979) reported an "all-or-none" pattern to the eating habits of bulimics, such that very

strict limits are set, but once broken, eating is essentially out of control.

Fifth, we compared the bulimics' and the nonbulimics' answers to a question concerning the devotion of too much time and thought to food. Holmgren et al. (1983) declared that the condition of bulimia implies a "permanent preoccupation with thoughts and actions concerning food and eating" (p. 10). Russell (1979), too, noted that among his bulimic patients, some reported that their thoughts were so dominated by food that they were unable to concentrate in school or work.

Because of such a preoccupation with food, we also predicted that bulimics would reply more accurately to a question asking them to estimate the caloric content of six common foods.

Our seventh hypothesis was that bulimics would experience a greater increase in thoughts related to food when under stress. Barrios and Pennebaker (1982a) remarked that gorging episodes in bulimics seem to be preceded by social stressors. However, Lacey (1982), who divided his clinical sample into neurotic bulimics, personality disordered bulimics, and epileptiform bulimics, reported that the 20% of his sample who were personally disordered bulimics ate in response to stress. Thus, the role of stress as a precursor to gorging episodes is somewhat unclear, as are the bulimics' evaluations of their own thoughts when under stress.

Many researchers have suggested that bulimics tend to be academic or occupational over-achievers (Boskind-Lodahl, 1976; Lacey, 1982; Russell, 1979). Since many of our subjects were first-semester freshmen and had not yet received their first grades, we used subjects' SAT

scores as an objective measure of this variable, predicting that the bulimics would have scored higher overall than the non-bulimics.

Another factor that appears to be fairly common in bulimics is depression. Johnson et al. (1982) reported that among their 316 bulimics, 40% noted that the onset of bulimia was precipitated by difficulty with emotions of depression, loneliness, boredom, and anger. The binge episodes only increase the incidence of these emotions, for Johnson et al. reported that following a binge, depression, guilt, and panic may arise from a sense of lost control and a fear of gaining weight. Wardle and Beinart (1981), too, made note of this occurrence, adding that after a binge, bulimics may engage in self-condemnation. Russell (1979), while reporting that the bulimics he studied did not seem to exhibit a primary depressive illness, noted that bulimics often experience depression and recurrent thoughts of suicide. Furthermore, Barrios and Pennebaker (1982b) remarked that the vomiting itself may lead to depression. It is apparent that depression is both a cause and a consequence of vomiting. Therefore, we predicted that on a scale of 1-7, bulimics would report a greater degree of depression on the average day than non-bulimics.

Finally, female bulimics appear to have more difficulty in their relationships with men. Boskind-Lodahl (1976) asserts that bulimia may have its roots in a rejection by a man, leading to either extremely dependent behavior, which may perpetuate the cycle, or extreme criticism of men. Lacey (1982), too, found that in the neurotic bulimics, the largest class of bulimics, abnormal eating "usually starts within the context of the failure of the patient's first major

sexual relationship, or following a series of brief, but abortive, relationships" (p. 64). In addition, he pointed out that an unsureness of femininity and difficulties with interpersonal relationships were common across all three classes of bulimics. Boskind-Lodahl (1976) indicated that eventually difficulties with men become an excuse to binge, and the anger against the imagined rejector is thus directed inwards. We reasoned, then, that bulimics would report fewer and shorter-lived steady relationships with males.

Method

Subjects were drawn from a pool of 557 female college students enrolled in introductory psychology classes in the fall semester who had completed Barrios and Pennebaker's (1983a) Physical Complications Checklist. Those scoring in the 91.5 percentile were designated "high scorers;" all of these subjects had obtained a score of 20 or above, with the highest score being 32 (see Appendix B). Thirty-four of the 47 women receiving high scores agreed to participate in an interview in which they would be asked questions concerning family, social, eating, scholastic, and personal variables. A stratified sample of 30 subjects who were not high scorers were interviewed as a control group, with the interviewers being blind to the subjects' scores.

The interview consisted of a series of questions received from B. A. Barrios (personal communication, September, 1983) regarding eating patterns, family relationships, scholastic experiences, and social life, as well as demographic information (see Appendix C). Each interview lasted approximately 45 minutes and included oral and written questions. Two interviewers were used, with one interviewing twelve subjects and the other interviewing fifty-two.

Once the interviews were scored, subjects were again divided into two groups. In the group designated as bulimic were subjects who indicated either verbally or in the written questionnaire that they either currently or, as in the case of two women, had sometime in the past three years forced themselves to vomit or abuse laxatives after breaking some personally prescribed rule regarding eating habits.

Results

Demographic Characteristics

The average score of the members of the bulimic group on the PCC was 24.9, while that of the non-bulimics was 16.5. The average age of both groups was 19, with approximately 90% of both groups either freshmen or sophomores (bulimics: 60% freshmen, 30% sophomores, 10% juniors; non-bulimics: 57% freshmen, 31% sophomores, 7% juniors, 4% seniors). Nearly all subjects were single, with only two, one a bulimic and one a non-bulimic, being married.

In both groups, the fathers were predominantly college graduates (70% bulimics, 69% non-bulimics). The mothers of the bulimics tended to be well educated, with 40% being college graduates and 30% having either attended college or trade school. Among the nonbulimics, 28% of the mothers were college graduates and 37% had attended college or trade school. While 74% of the nonbulimics' parents were still married, with 22% divorced and 4% widowed, 50% of the bulimics' parents were still married, 40% divorced, and 10% widowed. However, this difference was not significant (parents still married vs parents not married, $\chi^2 = 2.34$).

There was a tendency for all subjects to perceive themselves as weighing slightly more than what they considered appropriate for their height to weight ratio. On a scale of 1-7, with 1 being a subjective evaluation of oneself as extremely underweight and 7 as extremely overweight, bulimics averaged 4.4 and nonbulimics averaged 4.7. However, according to the Metropolitan Life Insurance Company chart

of optimal weights for specified heights, both groups seemed to weigh less than desirable. This, however, must be qualified, in that the tables referred to weights for women over 25 years of age.

Effectiveness of the Physical Complications Checklist in Separating Bulimics from Non-Bulimics

As shown in Table 1, on the basis of subjects' scores on the PCC, we predicted that 34 of the 64 subjects interviewed would be bulimic and that 30 would be non-bulimics. 10 of the 34 predicted to be bulimic confirmed the prediction, while none of those subjects predicted to be non-bulimic were bulimic. The value of the phi coefficient based on Table 1 is 0.40, which translates into a chi-square of 10.24 ($p < .01$). Critical values for significance at the .01 and .001 levels, respectively, are 6.64 and 10.83.

Insert Table 1 about here

A Priori Hypotheses

From the literature, we predicted that the following variables would show significant differences between bulimics non-bulimics (see Table 2):

Insert Table 2 about here

Place in family. This variable proved to be insignificant in differentiating the two groups. The percentage of youngest children

was about equal in both classes, with 30% of the bulimics and 29.6% of the nonbulimics being youngest children ($\chi^2 = .00056$). Fifty percent of the bulimics and 31.5% of the non-bulimics were middle children ($\chi^2 = .7215$); 10% of the bulimics and 37.0% of the non-bulimics were oldest children ($\chi^2 = 2.86$); and 10% of the bulimics and 1.9% of the non-bulimics were only children ($\chi^2 = 1.85$).

Percent of correct calorie estimations of some common foods. There was no difference between the groups in percentage of correct responses to questions regarding caloric content of six common foods (a teaspoon of sugar, a 12-oz can of Coke, an average apple, a slice of white bread, 1 ounce of cheese, and a 12-ounce milkshake). Estimations were scored as correct when subjects came within 20% of the correct answer. Both groups, on the average, scored about 25% correct.

Setting strict limits on amounts and/or types of foods consumed. While the average answer to this question by the bulimic group was "five or more times per month" (the maximum answer), non-bulimics generally reported that they set strict limits on their diet approximately two times per month. Although this variable yielded a significant difference between the two groups, the F-value was 48.96, indicating that the variances differed considerably.

Maximum weight loss in a month. Here, although there was a slight tendency for bulimics to have lost more weight in a month, both groups reported an average maximum weight loss of 10-14 pounds in a month.

Steady dating. The non-bulimics reported significantly more current steady relationships, with the average girl currently involved in a relationship of 3-5 months duration. The bulimics, on the other

hand, reported less steady dating, with the average bulimic having dated a current boyfriend three months or less.

Importance of achieving desired weight. On a scale of 1-7, bulimics rated this variable an average of 6.1, while the non-bulimics rated it significantly lower, at 4.7.

SAT scores. No significant difference was found between the SAT scores of the two groups. The non-bulimics averaged 1026, while bulimics averaged 1004.

Change in thoughts concerning food when under stress. This variable yielded no significant difference between groups. Both indicated that their thoughts of food showed little change when under stress.

Feelings of depression on an average day. On a scale of 1-7, the bulimics rated this variable significantly higher, at 4.1, than the non-bulimics, at 3.1.

Frequency of spending too much time and thought on food. For this variable, there was a slight tendency for bulimics to report that they often devoted too much time and thought to food, while non-bulimics were more likely to reply that they rarely gave too much time or thought to food.

Other Results

Several other variables yielded significant differences between bulimics and non-bulimics (see Appendix D).

Subject's estimation of closeness of family. On a scale of 1-7, where 1 indicated little or no degree of closeness and 7 indicated

extreme closeness of family, the nonbulimics averaged significantly higher, at 5.5185, than the bulimics, at 4.3000.

Subject's feeling of personal responsibility to reduce family conflict. Again a scale of 1-7, the non-bulimics on the average indicated that they felt significantly less responsible to reduce family conflict ($\bar{x} = 4.0741$) than the bulimics, ($\bar{x} = 5.5000$).

Subject's estimation of frequency of thoughts about food. On a scale of 1-7, bulimics reported considerably more thoughts concerning food ($\bar{x} = 5.2000$) than non-bulimics ($\bar{x} = 3.8704$).

Number of episodes of 24 hours or more without food in the past year. While the average bulimic answered that she had fasted two to five times in the past year, non-bulimics on the average had only spent one day out of the past year in fasting.

Subject's evaluation of the effects of a weight fluctuation of five pounds on her lifestyle. Non-bulimics reported that such a fluctuation would have a slight to moderate effect on their lifestyles, while bulimics reported expecting an effect slightly more than moderate.

Frequency of eating sensibly in front of others and splurging alone. Nonbulimics, on the average, reported that they rarely engaged in this behavior, while bulimics were more likely to respond that this was often descriptive of their eating habits.

Degree of feelings of guilt following overeating. Nonbulimics tended to report slight feelings of guilt after overeating, while bulimics reported their feelings of guilt following overeating as moderate.

Subject's evaluation of degree of consciousness of what she is eating. Nonbulimics reported moderate consciousness of what they were eating, while bulimics reported moderate to extreme consciousness of their food intake.

Subject's estimation of degree of importance to family of eating meals together. On a scale of 1-7, bulimics rated this variable as significantly less important ($\bar{x} = 3.3000$) than did nonbulimics ($\bar{x}=5.2407$).

Subject's estimation of the importance of being physically attractive. On a scale of 1-7, bulimics rated the importance of being physically attractive as significantly higher ($\bar{x} = 6.3000$) than did nonbulimics ($\bar{x} = 5.2593$).

Number of visits to the doctor in the past year due to illness. Nonbulimics reported significantly more visits to a doctor in the past year due to illness ($\bar{x} = 5.2222$) than did bulimics ($\bar{x} = 1.6000$).

Subject's estimation of degree of stress experienced on an average day. On a 1-7 scale, bulimics reported considerably more daily stress, at 4.9000, than did nonbulimics, at 3.6296.

Subject's estimation of degree of fatigue experienced on an average day. On a 1-7 scale, bulimics indicated a considerably greater amount of fatigue ($\bar{x} = 5.5000$) than did nonbulimics ($\bar{x} = 4.5556$).

Subject's estimation of the degree of stomach upset experienced on an average day. Bulimics reported a greater amount of stomach upset on a 1-7 scale ($\bar{x} = 4.5000$) than did nonbulimics ($\bar{x} = 2.4259$).

Subject's estimation of the degree of anxiety experienced on an average day. On a 1-7 scale, bulimics reported experiencing significantly more anxiety ($\bar{x} = 5.2000$) than nonbulimics ($\bar{x} = 4.000$).

Subject's estimation of the degree of contentment experienced on an average day. On a 1-7 scale, bulimics indicated significantly less contentment ($\bar{x} = 3.2000$) than non-bulimics ($\bar{x} = 4.3529$).

Subject's estimation of the degree of light-headedness experienced on an average day. On a scale of 1-7, bulimics reported a greater degree of light-headedness in an average day, at 3.4000, than nonbulimics at 2.3889.

Other Variables

Four other variables showed marginal significance ($p > .075$). They are as follows:

Degree to which eating habits were watched by mother. On a scale of 1-7, bulimics tended to indicate that their mothers watched their eating habits somewhat less ($\bar{x} = 3.4000$) than the mothers of the nonbulimics ($\bar{x} = 4.9815$).

Number of date partners in the past month. Bulimics, on the average, reported having dated 3 different partners in the past month, while nonbulimics tended to report having dated 2 different partners.

Number of visits to a doctor for check-ups. Bulimics reported an average of 2.000 visits to the doctor for checkups in the past year, while nonbulimics reported an average of 0.6604 visits for checkups.

Subject's estimate of degree of bloat experienced on an average day. On a scale of 107, the average bulimic rating for this variable was 3.8000, while the average nonbulimic rated this 2.6111.

Discussion

The Physical Complications Checklist As a Tool in the Detection of Bulimia

While the statistical significance of the PCC is considerable, its clinical utility is somewhat questionable. Since only 10 of the 34 predicted bulimics were, in fact, bulimic according to our loose definition, it cannot be considered a precise screening device. Certainly, the fact that the bulimics in our survey obtained scores ranging from 20 to 32, while none of those subjects receiving a score less than 20 admitted to bulimia, indicates that our delineation was reasonable. Thus it appears that the PCC itself should be revised.

I propose a systematic refinement of the PCC, such that definite constellations of symptoms are identified and items regarding symptoms which do not adequately aid in the differentiation of bulimics from nonbulimics be discarded. These constellations may include the direct physical effects of vomiting, symptoms resulting from nutritional deficiencies, stress-related symptoms, and endocrinological problems, among others. Obviously, this must be done with a large group of known bulimics and known nonbulimics. Further, the scoring system should be revised, such that weights are differentially assigned to symptoms according to their efficiency in distinguishing bulimics from nonbulimics. A measure as potentially useful as the PCC in detecting bulimia among college students should not be ignored.

Our results indicated that while bulimics reported significantly fewer visits to the doctor due to illness, they reported significantly

more visits for checkups. This may well have been the result of the many minor symptoms to which bulimics are prone. In addition, they indicated a significantly greater degree of fatigue, stomach upset, and light-headedness, and slightly more bloating than nonbulimics. Frightened and ashamed of their problem, bulimics may not be willing to openly reveal their secrets to health-care personnel; however, if approached in a sympathetic and professional manner, they may be receptive to offers of help and thus rid themselves of the physiological and psychological dilemma of bulimia. Anecdotally, I found that several of the bulimics that I interviewed, far from resenting my intrusion into their personal lives, expressed considerable interest in learning about their problem and in consulting a psychologist at the university who specializes in eating disorders.

Common Characteristics of Bulimics

Overall, those characteristics which differed between bulimics and nonbulimics fell into five major groups: family characteristics, thoughts concerning food, importance of appearance before others, degree of daily stress, and sexual relationships.

Family Characteristics

While the bulimics rated the degree of family closeness significantly less than did nonbulimics, they also indicated significantly greater feelings of responsibility to reduce family conflict. Whether this may be the product of a greater number of family conflicts in the families of bulimics is questionable, yet the feeling of responsibility to a family in which the bulimic reports relatively less

closeness is intriguing. Also interesting is the trend, as reported by the bulimics, for the mothers of the bulimics to watch less closely the eating habits of their daughters, together with the reports of relatively less family emphasis on eating meals together. Such a trend brings to mind Sugarman and Kurash's (1982) hypothesis of parental under-involvement leading to inhibitions of the striving for autonomy in the practicing sub-phase of transitional object development. It is also possible that the mothers, in exercising less control over the eating habits of their daughters, never taught them to moderate their eating patterns. This is supported by Barrios and Pennebaker's (1982b) description of the bulimic as plagued by a "history of self-regulatory failures" (p. 18), and by Normal and Herzog's (1983) association of bulimia with poor impulse control.

Thoughts Concerning Food.

Although there was only a slight tendency for bulimics to report that they devoted too much time and thought to food, their responses to other questions seem to belie this, and to support Holmgren et al's (1983) contention that bulimics experience a continuous preoccupation with food. Possibly they do not consider the time and thought they spend on food to be excessive. This is supported by the greater frequency of thoughts concerning food reported by the bulimics, as compared to the nonbulimics. In addition, that they fast more frequently and are more likely to strictly limit their diet seem to bear this out. As Russell (1979) suggested, bulimics exhibit an "all-or-none" pattern of eating, setting extremely restrictive limits, but losing control of their eating once these self-imposed rules are broken.

They also report a greater degree of consciousness of what they are eating, as well as more guilt after over-eating, indicating a greater sensitivity to their eating patterns. However, it is interesting that they did not fare any better than the nonbulimics in estimating the caloric content of six every-day foods. For women so conscious of their food intake, they appear to be fairly uninformed or perhaps uninterested in this vital aspect of weight control. Additionally, although weight loss seemed to be a primary goal of the bulimics, they had fared little better than the nonbulimics in losing weight, as evaluated by their estimation of their maximum weight losses in a month. This seems to contradict Russell's (1979) contention that bulimia is a subset of anorexia nervosa. Possibly, a clinical population is not an adequate reflection of the total bulimic population.

Importance of Appearance Before Others.

The opinion of other people seems to hold considerable importance for the bulimic. Certainly, if as Boskind-Lodahl (1976), Lacey (1983), and Norman and Herzog (1983) suggested, bulimia involves a struggle to achieve stereotyped femininity, one would expect this to be the case. Both physical attractiveness and reaching the subjectively desired weight were rated significantly more important by the bulimics than by the nonbulimics. In addition, they reported expecting a greater disruption of lifestyle in the case of a 5 pound weight fluctuation than the nonbulimics, although the exact extent of this change is not specified. Finally, bulimics are more likely to eat sensibly in front of others and splurge alone, in accordance with DSM-III criteria. It seems to be extremely important that the bulimic maintain a slender,

controlled image in the face of others, while, according to Holmgren et al. (1983), under her facade, she is continually struggling with thoughts of food.

Degree of Daily Stress

Such a psychological struggle itself can lead to symptoms of stress, and combined with the physical complications ensuing from bulimia, the stress can only be magnified. Bulimics reported considerably higher rates of stress, depression, anxiety, fatigue, stomach upset, light-headedness, and bloating in an average day, and considerably less contentment than the average nonbulimic. Mitchell and Pyle (1982), too, have noted that bulimia appears to be related to stress, and have even suggested that there may be a relationship between eating disorders and primary affective disorders. Norman and Herzog (1983) and Russell (1979) have also associated bulimia with depression, with Norman and Herzog adding that bulimics seem to show a low tolerance for depression. Whether, as suggested by Johnson et al. (1983), some of these symptoms were precursors to the bulimia, or whether they evolved out of the problem cannot be determined. Regardless, in a college environment, these conditions are especially dangerous and detrimental. It is also likely that they serve to perpetuate the bulimia (Barrios and Pennebaker, 1982a; Johnson et al., 1983), thereby magnifying themselves.

It is noteworthy that bulimics did not report a significant increase in thoughts concerning foods when under stress, as compared to the nonbulimics. In fact, none of the questions concerning reactions to stress yielded any significant differences between bulimics and

nonbulimics. Since bulimics seem to be under a daily degree of stress greater than that of the nonbulimics, it is possible that an increase in an already elevated stress level is hardly noticeable.

Relationships with Males.

While tending to have dated more men in the past month than nonbulimics, bulimics reported significantly fewer long-lived steady relationships with men. Perhaps, as Boskind-Lodahl (1976) and Lacey (1982) suggested, the bulimia is related to failures of sexual relationships and difficulties in interpersonal relationships. Combined with their emphasis upon appearances before others, perhaps bulimics fear lasting relationships because they imply an opening up of oneself before the other.

Discussion of Unsubstantiated Hypotheses

Much has been written about the bulimic as an academic or occupational over-achiever (Boskind-Lodahl, 1976; Lacey, 1983; Russell, 1979). However, we found no difference between the SAT scores of bulimics and nonbulimics, nor between their grade point averages. Most research has focused on bulimics from clinical populations, while our subjects were drawn from the population at large. It is possible that over-achievement is a selective factor; that is, that those bulimics who are over-achievers are more conscientious in seeking professional help than those who are not.

Birth order, too, has been alluded to by Barrios and Pennebaker (1982a) as being of possible importance in the etiology of bulimia. However, we found no significant differences in birth order between

bulimics and nonbulimics.

Conclusion

It seems clear that bulimia, far from being a mere symptom, is indicative of a syndrome characterized by a constellation of symptoms both physiological and psychological. For a young woman going through the rigors of college life and the stress concomitant with a change in lifestyle, together with a change in status from adolescence to womanhood, the additional burden of bulimia may perpetuate the daily stress. This in turn may lead to dangerous physical and psychological symptomatology.

In a university health center, conditions are often such that medical personnel have little time to devote attention to anything but the symptoms expressly noted by the patient. If the use of the PCC can expediate the diagnosis of bulimia, treatment may be initiated which would focus on both the physical and psychological aspects of this disorder. The potential usefulness of the PCC is exciting, and its further investigation is strongly urged.

Among the psychological difficulties experienced by bulimics, it is obvious that the daily level of stress is considerable. Treatment should take this factor into consideration, perhaps through teaching of progressive relaxation and coping skills. It is also apparent that bulimics, while preoccupied with thoughts relating to food, are quite uneducated about caloric values and, most likely, about the nutritive value of their diets. To help them develop a more realistic concept of their diet and food intake, bulimics should be educated about

their nutritive needs, including an emphasis on the relationship between health and appearance. Perhaps a program of exercise could be incorporated into their lifestyles. This would both improve their general health and give them a realistic notion of the workings of their bodies, while at the same time providing a means of reducing stress. Finally, bulimics seem to demonstrate a lack of confidence in themselves, which is manifested through their emphasis on appearance before others. Assertiveness training may provide a needed boost in this area. Regardless of the means chosen, any treatment must be undertaken with the awareness that bulimia involves multiple factors, and should proceed accordingly. Bulimia touches many aspects of a young woman's life, and if continued unchecked, may destroy those years which common thought holds to be the most dynamic and potentially rewarding.

Table 1. Efficiency of the PCC in Separating Bulimics from Non-bulimics.

		Predicted		
		Bulimic	Nonbulimic	
Actual	Bulimic	$\frac{10}{64} = .15$	0	.15
	Nonbulimic	$\frac{24}{64} = .38$	$\frac{30}{64} = .47$.85
		.53	.47	

$$\phi = 0.40$$

$$\chi^2 = 10.24$$

Table 2
A Priori Hypotheses

	<u>Mean</u>	<u>SD</u>	<u>F-value</u>	<u>One-tail probability</u>
Percent of correct estimates of caloric content of some common foods				
Bulimics	25.1000%	17.935	3.30	0.455
Nonbulimics	25.9259	32.591		
a Frequency of setting strict limits on amounts/types of food consumed				
Bulimics	5.9000	0.316	48.96	0.000
Nonbulimics	3.1667	2.213		
b Maximum weight loss in a month				
Bulimics	3.2000	1.476	2.14	0.192
Nonbulimics	2.7593	1.008		
c Frequency of spending too much time/thought on food				
Bulimics	2.6000	1.075	1.93	0.084
Nonbulimics	2.0741	0.773		
d Steady dating				
Bulimics	1.7500	1.165	2.97	0.019
Nonbulimics	2.8868	2.006		
e. Importance of achieving desired weight				
Bulimics	6.1000	1.853	1.24	0.023
Nonbulimics	4.7037	1.667		
SAT score				
Bulimics	1003.5000	149.630	1.81	0.331
Nonbulimics	1025.8491	111.333		

Table 2. Continued

	<u>Mean</u>	<u>SD</u>	<u>F-value</u>	<u>One-tail probability</u>
f Change in thoughts of food when under stress				
Bulimics	4.3000	2.359	1.70	0.306
Nonbulimics	3.889	1.808		
g Feelings of depression on an average day				
Bulimics	4.1000	1.370	1.01	0.026
Nonbulimics	3.0926	1.364		

NOTE:

One-tailed probability refers to separate variance estimates

^a₁ = never, 2 = 1/mo or less, 3 = 2/mo, 4 = 3/mo, 5 = 4/mo, 6 = 5 or more/mo

^b₁ = 0-4 lbs, 2 = 5-9 lbs, 3 = 10-14 lbs, 4 = 15-19 lbs, 5 = 20 or more lbs

^c₁ = never, 2 = rarely, 3 = often, 4 = always

^d₁ = no current boyfriend, 2 = currently involved in a relationship of less than three months' duration, 3 = 3-5 mo., 4 = 6-11 mo., 5 = 1 yr, 6 = 2 yrs

^e₀ on a scale of 1-7, 1 = not at all, 7 = very much

^f₀ on a scale of 1-7, 1 = decreases greatly, 7 = increases greatly

^g₀ on a scale of 1-7, 1 = never, 7 = always

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APPENDIX A

PHYSICAL COMPLICATIONS CHECKLIST

- A. Please indicate how many times over the last year you have experienced each of the following. Respond with one of the following: A) One B) 2-5 times C) Monthly D) Weekly E) Daily F) Never.

- _____ 1. Swollen salivary glands
- _____ 2. Sore throat
- _____ 3. Blurred vision
- _____ 4. Dizziness
- _____ 5. Ringing in the ears
- _____ 6. Loss of voice or hoarseness
- _____ 7. Urinary infection
- _____ 8. Renal (kidney) failure
- _____ 9. Epileptic seizures
- _____ 10. Tingling in the extremities (hands and feet)
- _____ 11. Blood in urine

- B. Please indicate with a yes or no response whether or not you have experienced any of the following in the last year.

- _____ 1. Chronic fatigue
- _____ 2. Calluses on the back of the dominant hand
- _____ 3. Abrasions or redness on the back of the dominant hand
- _____ 4. Potassium depletion
- _____ 5. Persistent sharp pain in the area of the kidneys
- _____ 6. Excessive urination
- _____ 7. Amenorrhea (absence of menstruation)
- _____ 8. Weight loss
- _____ 9. Purple or greenish bruises
- _____ 10. Trouble passing food from throat to stomach

Note: To score the Physical Complications Checklist:

Part A: A = 1, B = 2, C = 3, D = 4, E = 5, F = 0

Part B: No = 0, Yes = 1

The two scores are added to compute the total score.

APPENDIX B

Distribution of Scores on the PCC

score	# subjects	percent
0	1	0.2
1	3	0.5
2	12	2.2
3	19	3.4
4	13	2.3
5	33	5.9
6	33	5.9
7	33	5.9
8	35	6.3
9	35	6.3
10	41	7.4
11	37	6.6
12	40	7.2
13	38	6.8
14	23	4.1
15	35	6.3
16	26	4.7
17	12	2.2
18	18	3.2
19	23	4.1
20	10	1.8
21	5	0.9
22	11	2.0

(table continues)

score	# subjects	percent
23	4	0.7
24	2	0.4
25	3	0.5
26	5	0.9
27	0	0.0
28	0	0.0
29	5	0.9
30	0	0.0
31	1	0.2
32	1	0.2

APPENDIX C
QUESTIONNAIRE

Before the interview, written questionnaire A (see below) was given

The following was presented as an oral interview:

1. Age
2. Year in school
3. Major
4. Marital status
5. Height/weight -- 1 = below optimal, 2 = within range, 3 = over-weight according to Metropolitan Life Insurance Co. Chart.
6. Marital status of parents
7. Parent(s) lived with
8. Father's age
9. Father's occupation
10. Father's education
11. Father's height/weight (see #5)
12. Mother's age
13. Mother's occupation
14. Mother's education
15. Mother's height/weight (see #5)
16. Number of siblings
17. Place in family
18. Closeness of family when growing up - 1 = not at all, to 7 = extremely close

How well do you get along with:

19. Mother - 1 = not at all to 7 = very well
20. Father
21. Brothers
22. Sisters
23. How well do parents get along with each other?

For the next 7 items, 1 = mother, 4 = equal, 7 = father

24. Which parent do you identify with more?
25. Which parent governs the family more?
26. Which parent was responsible for discipline?
27. Which parent was more emotionally supportive?
28. Which parent has been more influential in your life?
29. Which parent has been more concerned with your weight or eating habits?
30. Which parent is more emotionally stable?

To what degree do you view your mother as:

31. Warm - 1 = not at all, 7 = very much
32. Emotionally expressive
33. A perfectionist

34. Possessive
35. Over-indulgent
36. Flexible
37. Dependent
38. Predictable
39. Demanding
40. Verbally or physically abusive

To what degree do you view your father as:

41. Warm
42. Emotionally expressive
43. A perfectionist
44. Possessive
45. Over-indulgent
46. Flexible
47. Dependent
48. Predictable
49. Demanding
50. Verbally or physically abusive
51. If there is conflict within your family, to what degree do you feel personally responsible to reduce it -- 1 = not at all to 7 = completely responsible
52. To what degree do you feel that you are the peace-maker in your family? -- 1 = not at all to 7 = very much
53. # meals/day
54. Frequency of eating breakfast -- 1 = never, 2 = sometimes, 3 = always
55. Presently dieting? -- 0 = no, 1 = yes
56. Frequency of taking vitamins (see #54)
57. Overall, how balanced is your diet? -- 1 = not at all to 7 = extremely
58. How often do you snack between meals? 1 = not at all to 7 = always
59. How often do you think about food? -- (see #54)
60. How often do you eat dessert? -- (see #54)
61. How many calories are in each of the following foods? - teaspoon of sugar (15), 12-oz can of coke (150), average size apple (80), slice of white bread (60), 1-oz of cheese (110), 12-oz milkshake (600) -- score was based on percentage estimated correctly, within a 20% range.
62. How many times within the last year have you gone for 24 hours or more without solid food? Do not count times when you were extremely sick -- 1 = never, 2 = once, 3 = 2-5 times, 4 = monthly, 5 = weekly, 6 = daily
63. Do you ever binge? A binge is defined as "uncontrolled eating of a large amount of food, which takes place at times other than planned meal times and exceeds the amount of food that you consider appropriate for a snack." About how many times a month? -- 1 = no, 2 = 1/month, 3 = 2/month, 4 = 3/month, 5 = 4/month, 6 = more than 4x/month.

64. Do you overeat such that you feel stuffed or bloated? (see #63)
65. Do you ever set strict limits on the amounts and types of foods which you allow yourself to eat? (see #63)
66. How often do you diet? 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always.
67. What is the maximum amount of weight in pounds that you have ever lost in a month? 1 = 0-4 lbs, 2 = 5-9 lbs, 3 = 10-14 lbs, 4 = 15-19 lbs, 5 = 20+
68. What is your maximum weight gain within a week? 1 = 0-1 lb, 2 = 1.1-2 lbs, 3 = 2.1-3 lbs, 4 = 2.1-5 lbs, 5 = 5.1+
69. In a typical week, how much does your weight fluctuate? (see #68)
70. Would a weight fluctuation of five pounds affect the way you live your life? -- 1 = not at all, 2 = slightly, 3 = moderately, 4 = very much
71. Do you eat sensibly in front of others and splurge alone? -- 1 = never, 2 = rarely, 3 = often, 4 = always
72. Do you give too much time and thought to food? (see #71)
73. Do you have feelings of guilt after over-eating? 1 = not at all, 2 = slightly, 3 = moderately, 4 = extremely
74. How conscious are you of what you're eating? (see #73)
75. How many pounds over your desired weight were you at your maximum - 1 = 0-1 lb, 2 = 1-5 lbs, 3 = 6-10 lbs, 4 = 11-20 lbs, 5 = 21+
76. When you either binge, go over the limit that you allow yourself to take in, or eat foods that you do not allow yourself to eat, do you ever induce vomiting or take laxatives?
77. Have you ever sought out any professional assistance in changing any aspect of your eating pattern? 0 = no, 1 = yes
78. On the average, how many calories of food do you eat per day, keeping in mind that the average woman eats 1800 -- using a range of 1440-2160 calories, 1 = less, 2 = within range, 3 = over
79. Were eating meals together an important aspect of your family life? -- 1 = not at all to 7 = very much
80. Were your eating habits closely watched by your mother? (see #79)
81. Were your eating habits closely watched by your father? (see #79)
82. When you were a child, were you required to clean your plate? 1 = never to 7 = always
83. When you were growing up, how much freedom did you have to eat between meals? 1 = no freedom to 7 = complete freedom
84. How often did your parents use food as a reward for good behavior? 1 = never to 7 = very frequently
85. How frequently do you exercise? 1 = never to 7 = daily

Here, written questionnaire B was given (see below):

Compared to your peers, how much time do you devote to the following activities?

86. Academic work -- 1 = much less time to 7 = much more time
87. Athletic activities
88. Social activities

Compared to your peers, how successful do you feel you are in the following?

89. Academic activities -- 1 = much less successful to 7 = much more successful
90. Physical activities and abilities
91. Social activities or abilities
92. How many very close male friends to you have?
93. How many very close female friends to you have?
94. Male friend -- 1 = not at all likely to 7 = extremely likely
95. Female friend
96. Mother
97. Father
98. Professional - like a counselor, physician, priest or teacher
99. No one

To what degree would you like to do each of the following?

100. Live alone -- 1 = not at all to 7 = very much
101. Go to a party with a group of strangers
102. Ride on a long bus trip with your classmates
103. Initiate a conversation with an opposite-sex stranger
104. Go to an eating or drinking establishment by yourself
105. Go out on a blind date
106. Host a party
107. Talk to strangers in a waiting room
108. How many dates (prearranged or scheduled activity) have you had in the last month?
109. How many partners have you been on a date with in the last month?
110. Are you currently going steady or dating someone steadily?
1 = no, 2 = 3 mo or less, 3 = 3-5 mo, 4 = 6-11 mo, 5 = 1 year+,
6 = 2 yrs+
111. How many sexual partners have you had? 1 = none, 2 = one, 3 = 2-4,
4 = 5 or more
112. Whether or not you have engaged in sex, to what degree do you view it as an enjoyable activity? 1 = not at all to 7 = very enjoyable
113. To what degree do thoughts about sexual encounters make you nervous or anxious? 1 = not at all to 7 = very nervous
114. How frequently do you have sexual desires? 1 = almost never to 7 = very frequently
115. To what degree would you like to engage in sexual activity with very little emotional involvement? 1 = not at all to 7 = almost always
116. What percentage of your sexual relationship also involved strong intimacy with men? - do not answer if response to #110 was "none"
117. Prior to the age of 17, did you ever have a particularly traumatic sexual experience?
118. To what extent do you consider yourself to be the appropriate weight? 1 = extremely underweight to 7 = extremely overweight
119. To what degree do other people consider you to be the appropriate weight? (see #118)
120. Given your height, what would you ideally want to weigh?
According to Metropolitan Life Insurance Chart, 1 = less than optimal, 2 = within range, 3 = overweight
121. How important is it to you to achieve or maintain this ideal weight

122. How physically attractive do you consider yourself to be?
1 = not at all to 7 = very attractive
123. How physically attractive do others consider you? (see #122)
124. How important is it to you to be physically attractive?
1 = not at all to 7 = extremely important

In the past year, how many times have you been to the Health Center or to a private physician for?

125. Illness
126. Checkup
127. Other
128. During an average month, how many times do you take aspirin?
129. What is your grade point average (on a 4.0 scale)?
130. What was your SAT score?

WRITTEN QUESTIONNAIRE A

ID# _____

For the following items, rate the degree to which your habits change when you are under stress (for example during exams, interpersonal conflict, etc.).

When under stress, do you:

- | | | | | | | |
|------|----------------------------------|-------|-----------------------|-------|-------|----------------------------------|
| 131. | _____ | _____ | _____ | _____ | _____ | _____ |
| | eat less | | eat about
the same | | | eat more |
| 132. | _____ | _____ | _____ | _____ | _____ | _____ |
| | exercise
less | | about same | | | exercise
more |
| 133. | _____ | _____ | _____ | _____ | _____ | _____ |
| | drink
less
alcohol | | about same | | | drink more
alcohol |
| 134. | _____ | _____ | _____ | _____ | _____ | _____ |
| | consume
less
caffeine | | about same | | | consume
more
caffeine |
| 135. | _____ | _____ | _____ | _____ | _____ | _____ |
| | decrease
drug use | | about same | | | increase
drug use |
| 136. | _____ | _____ | _____ | _____ | _____ | _____ |
| | decreased
sexual
interests | | about same | | | increased
sexual
interests |

137.	_____	_____	_____	_____	_____	_____
	sleep less		about same			sleep more
138.	_____	_____	_____	_____	_____	_____
	become less critical		about same			become more self critical
139.	_____	_____	_____	_____	_____	_____
	become less depressed		about same			become more depressed
140.	_____	_____	_____	_____	_____	_____
	become less angry/ irritable		about same			become more angry/ irritable
141.	_____	_____	_____	_____	_____	_____
	seek less social inter- action		about same			seek more social inter- action
142.	_____	_____	_____	_____	_____	_____
	think about food less		about same			think about food more

On the average day, to what degree do you experience each of the following:

	<u>Never</u>						
143.	stress;	_____	_____	_____	_____	_____	_____
144.	guilt:	_____	_____	_____	_____	_____	_____
145.	anger:	_____	_____	_____	_____	_____	_____
146.	depression:	_____	_____	_____	_____	_____	_____
147.	cheerfulness:	_____	_____	_____	_____	_____	_____
148.	boredom:	_____	_____	_____	_____	_____	_____
149.	excitement:	_____	_____	_____	_____	_____	_____

ID# _____

Never

- | | | | | | | | |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|
| 150. fatigue: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 151. hunger: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 152. upset stomach: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 153. tense muscles: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 154. racing heart: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 155. light headed: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 156. responsible: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 157. affectionate: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 158. isolated: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 159. anxious: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 160. bloated: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 161. sexually
aroused: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 162. content: | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

NOTE: These items were rated on a 1-7 scale.

Written Questionnaire B

Please answer the following questions:

163. How much do you like each of the following items, where 1 is not all and 7 is very much (one of your favorites).

- | | | | |
|----------------|-------|----------------|-------|
| french fries | _____ | cottage cheese | _____ |
| cheddar cheese | _____ | brownies | _____ |
| celery | _____ | roast beef | _____ |
| beer | _____ | mixed drinks | _____ |
| salad | _____ | bread | _____ |
| noodles | _____ | chicken broth | _____ |
| green beans | _____ | water | _____ |

ID # _____

coffee	_____	cigarettes	_____
diet pills	_____	regular soft drinks	_____
wine	_____	diet soft drinks	_____

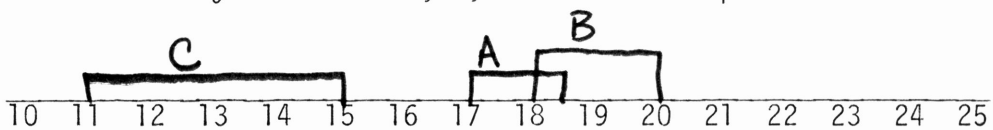
For the following questions, keep these definitions in mind:

Class A: A person who is at least 20% under normal weight and is on a very strict diet for extended periods (or simply doesn't eat for extended periods). For females, have stopped menstruating for at least two months.

Class B: A person who regularly eats large amounts of food and then voluntarily vomits or takes laxatives in order to get rid of food.

Class C: A person who often eats large amounts of food and is at least 15% above normal weight.

The line below lists a person's ages from 10 to 25. For each class (A, B, or C), indicate the age periods -- if any -- during which you would have classified yourself as A, B, or C behavior pattern.

Example: 

Complete the following line for yourself during the appropriate ages:

_____ 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

At this point in your life, to what degree could you consider yourself to be a:

Class A person: definitely not _____ maybe or occasionally _____ yes _____

Class B person: definitely not _____ maybe or occasionally _____ yes _____

Class C person: definitely not _____ maybe or occasionally _____ yes _____

NOTE: For question 163, the recorded answer was the percentage of relatively high-calorie foods (i.e., french fries, cheddar cheese, beer, noodles, wine, brownies, roast beef, mixed drinks, bread, and regular softdrinks) they rated as favorites.

ID # _____

For question 164, the recorded answer was the percentage of relatively low-calorie foods (i.e., celery, salad, green beans, coffee, diet pills, cottage cheese, chicken broth, water, cigarettes, and diet soft drinks) they rated as favorites.

APPENDIX D

T-Test of Post Hoc Analyses

question #		mean	SD	F-value	two-tailed probability
1	B	18.9000	0.994	1.04	0.649
	N	18.7407	0.975		
5	B	1.3000	0.483	1.39	0.474
	N	1.4259	0.570		
8	B	44.6000	13.201	2.44	0.772
	N	45.8889	8.458		
11	B	1.9000	0.876	2.38	0.108
	N	2.4074	0.567		
12	B	39.7778	14.498	8.32	0.441
	N	43.7358	5.027		
15	B	2.2000	0.789	2.32	0.544
	N	2.0377	0.517		
16	B	2.7000	2.406	2.17	0.736
	N	2.4259	1.632		
18	B	4.3000	1.636	1.40	*0.047
	N	5.5185	1.384		
19	B	5.7000	1.889	2.16	0.723
	N	5.9259	1.286		
20	B	4.9000	1.449	1.66	0.180
	N	5.5926	1.125		
21	B	6.0000	1.528	1.88	0.569
	N	5.6364	1.113		

(table continues)

question #		mean	SD	F-value	two-tailed probability
22	B	6.0000	1.0000	1.81	0.233
	N	5.4524	1.347		
23	B	4.5000	1.900	1.44	0.107
	N	5.6226	1.584		
24	B	2.5000	2.550	1.34	0.916
	N	2.5926	2.202		
25	B	3.4000	2.366	1.05	0.103
	N	4.8333	2.305		
26	B	3.7000	2.111	1.05	0.634
	N	4.0556	2.167		
27	B	2.0000	2.160	1.51	0.746
	N	2.2407	1.758		
28	B	3.6000	2.633	1.56	0.768
	N	3.3333	2.110		
29	B	3.1000	2.025	1.08	0.478
	N	2.5926	1.948		
30	B	4.3000	2.983	2.38	0.716
	N	4.6667	1.933		
31	B	6.2000	1.619	1.31	0.771
	N	6.0370	1.414		
32	B	5.8000	1.229	1.17	0.446
	N	5.4630	1.328		

(table continues)

question #		mean	SD	F-value	two-tailed probability
33	B	4.6000	2.011	1.66	0.675
	N	4.8889	1.562		
34	B	4.2000	2.098	1.97	0.933
	N	4.2593	1.494		
35	B	4.8000	1.932	1.21	0.145
	N	3.7778	1.755		
36	B	5.3000	1.636	1.26	0.576
	N	4.9815	1.460		
37	B	5.2000	2.530	2.22	0.765
	N	4.9444	1.698		
38	B	5.3000	1.947	1.26	0.738
	N	5.0741	1.736		
39	B	4.1000	2.283	2.34	0.912
	N	4.1852	1.493		
40	B	2.2000	1.814	1.53	0.539
	N	1.8148	1.468		
41	B	5.4000	1.174	1.47	0.377
	N	5.0185	1.421		
42	B	4.4000	1.713	1.08	0.474
	N	3.9630	1.780		
43	B	4.8000	2.251	2.21	0.365
	N	5.5000	1.514		

(table continues)

question #		mean	SD	F-value	two-tailed probability
44	B	5.300	2.214	1.61	0.243
	N	4.3889	1.742		
45	B	3.7000	2.003	1.62	0.974
	N	3.7222	1.571		
46	B	4.4000	1.955	1.36	0.573
	N	4.0185	1.677		
47	B	4.4000	2.119	1.02	0.214
	N	3.4444	2.098		
48	B	4.4000	1.897	1.03	0.097
	N	4.5741	1.869		
49	B	4.8000	2.150	1.51	0.825
	N	4.9630	1.748		
50	B	3.2000	2.616	2.83	0.296
	N	2.2593	1.556		
51	B	5.5000	1.509	1.06	*0.017
	N	4.0741	1.552		
52	B	3.4000	1.897	1.44	0.964
	N	3.3704	1.582		
53	B	2.3000	0.949	1.74	0.577
	N	2.4815	0.720		
54	B	2.1000	0.738	1.35	0.632
	N	2.2222	0.634		

(table continues)

question #		mean	SD	F-value	two-tailed probability
55	B	0.6000	0.516		
	N	0.3704	0.525	1.03	0.220
56	B	2.2000	0.789		
	N	2.0556	0.856	1.18	0.609
57	B	4.6000	1.506		
	N	4.5741	1.395	1.16	0.960
58	B	3.5000	2.014		
	N	4.5370	1.645	1.50	0.153
59	B	5.2000	1.229		
	N	3.8704	1.401	1.30	*0.008
60	B	1.8000	0.632		
	N	1.9630	0.513	1.52	0.458
61	B	25.1000	17.953		
	N	25.9259	32.591	3.30	0.910
62	B	3.1000	1.449		
	N	2.0370	1.243	1.36	*0.050
63	B	3.5000	2.068		
	N	2.4259	1.678	1.52	0.149
64	B	4.1000	1.969		
	N	3.1296	1.738	1.28	0.171
65	B	5.9000	0.316		
	N	3.1667	2.213	48.96	*0.000

(table continues)

question #		mean	SD	F-value	two-tailed probability
66	B	3.5000	1.354	1.17	0.210
	N	2.8889	1.254		
67	B	3.2000	1.476	2.14	0.384
	N	2.7593	1.008		
68	B	3.3000	1.160	1.00	0.723
	N	3.4444	1.160		
69	B	2.8000	1.317	1.94	0.432
	N	2.4444	0.945		
70	B	3.2000	0.919	1.06	*0.037
	N	2.4630	0.946		
71	B	2.6000	0.966	1.92	*0.048
	N	1.8868	0.698		
72	B	2.6000	1.075	1.93	0.167
	N	2.0741	0.773		
73	B	3.1000	1.101	1.12	*0.038
	N	2.2222	1.040		
74	B	3.6000	0.516	2.26	*0.006
	N	3.0000	0.777		
75	B	3.5000	1.179	1.42	0.396
	N	3.1509	0.988		
77	B	0.5000	0.707	4.97	0.119
	N	0.1111	0.317		

(table continues)

question #		mean	SD	F-value	two-tailed probability
78	B	1.5000	0.527		
	N	1.7778	0.538	1.04	0.151
79	B	3.3000	2.111		
	N	5.2407	1.790	1.39	*0.018
80	B	3.4000	2.319		
	N	4.9815	1.642	1.99	**0.064
81	B	4.4000	2.413		
	N	3.9074	1.955	1.52	0.555
82	B	3.9000	2.183		
	N	4.7222	2.032	1.15	0.291
83	B	5.5000	1.841		
	N	4.4259	1.474	1.56	0.109
84	B	3.1000	2.079		
	N	2.5185	1.501	1.92	0.416
85	B	5.8000	1.398		
	N	5.0926	1.557	1.24	0.173
86	B	5.1000	1.101		
	N	4.9259	1.257	1.30	0.660
87	B	4.8000	1.549		
	N	4.2222	1.355	1.31	0.291
88	B	4.4000	1.265		
	N	3.9630	1.258	1.01	0.334

(table continues)

question #		mean	SD	F-value	two-tailed probability
89	B	4.4000	1.506	1.88	0.487
	N	4.7593	1.098		
90	B	5.0000	1.700	1.64	0.240
	N	4.2963	1.327		
91	B	4.8000	1.229	1.01	0.148
	N	4.1481	1.235		
92	B	5.8000	3.011	1.54	0.318
	N	4.6852	3.736		
93	B	3.9000	2.424	2.96	0.180
	N	5.2264	4.172		
94	B	4.9000	1.792	1.55	0.581
	N	5.2407	1.440		
95	B	5.4000	2.011	2.23	0.544
	N	5.8148	1.347		
96	B	5.6000	1.647	1.05	0.693
	N	5.3704	1.686		
97	B	4.1000	1.912	1.50	0.456
	N	3.6038	1.561		
98	B	3.8000	2.150	1.55	0.371
	N	3.1296	1.727		
99	B	3.6000	2.221	1.10	0.532
	N	3.1111	2.116		

(table continues)

question #		mean	SD	F-value	two-tailed probability
100	B	3.9000	1.969	1.06	0.257
	N	3.0926	2.031		
101	B	2.3000	1.829	2.00	0.529
	N	1.9074	1.292		
102	B	4.7000	1.636	1.10	0.876
	N	4.6111	1.559		
103	B	5.2000	1.619	1.01	0.129
	N	4.2963	1.609		
104	B	2.3000	1.889	1.56	0.995
	N	2.2963	1.513		
105	B	2.8000	1.932	1.22	0.402
	N	3.3704	1.752		
106	B	4.4000	2.319	2.44	0.462
	N	4.9815	1.486		
107	B	5.2000	1.398	1.42	0.085
	N	4.2778	1.664		
108	B	6.4444	5.637	1.11	0.909
	N	6.2075	5.343		
109	B	3.0000	1.155	1.23	**0.063
	N	1.9792	1.280		
110	B	1.7500	1.165	2.97	0.038
	N	2.8868	2.006		

(table continues)

question #		mean	SD	F-value	two-tailed probability
111	B	1.1000	1.595	2.95	0.542
	N	0.7708	0.928		
112	B	5.6000	1.955	2.37	0.713
	N	5.8431	1.271		
113	B	4.1000	1.370	1.21	0.498
	N	3.7647	1.505		
114	B	4.2000	1.398	1.42	0.804
	N	4.0800	1.175		
115	B	1.5000	1.269	10.20	0.391
	N	1.1346	0.397		
116	B	95.0000	11.180	4.25	0.460
	N	89.9655	23.057		
117	B	0.3000	0.675	2.46	0.579
	N	0.1731	0.430		
118	B	4.4000	1.430	1.52	0.539
	N	4.7037	1.160		
119	B	3.6000	1.430	1.87	0.204
	N	4.2407	1.045		
120	B	1.0000	0.0	0.0	0.086
	N	1.2037	0.855		
121	B	6.1000	1.853	1.24	*0.046
	N	4.7037	1.667		

(table continues)

question #		mean	SD	F-value	two-tailed probability
122	B	4.5556	1.014	1.06	0.557
	N	4.3333	1.046		
123	B	4.6667	1.118	1.29	0.750
	N	4.5370	0.985		
124	B	6.3000	1.059	1.35	*0.015
	N	5.2593	1.231		
125	B	1.6000	1.713	29.66	*0.011
	N	5.2222	9.328		
126	B	2.0000	2.055	5.50	**0.070
	N	0.6604	0.876		
127	B	1.6000	1.897	2.07	0.092
	N	0.4423	1.320		
128	B	10.7000	13.425	6.22	0.184
	N	4.5556	5.382		
129	B	2.6600	0.664	1.13	0.464
	N	2.8327	0.625		
130	B	1003.5000	149.630	1.81	0.662
	N	1025.8491	111.333		
131	B	4.4000	2.221	1.29	0.839
	N	4.5556	1.959		
132	B	4.5000	1.780	1.44	0.856
	N	4.3889	1.485		

(table continues)

question #		mean	SD	F-value	two-tailed probability
133	B	3.8000	1.476	1.40	0.841
	N	3.6981	1.249		
134	B	4.5000	2.014	2.87	0.418
	N	5.0556	1.188		
135	B	4.0000	1.886	4.01	0.713
	N	3.7692	0.942		
136	B	3.6000	1.350	1.25	0.580
	N	3.3396	1.208		
137	B	1.7000	1.059	2.61	0.084
	N	2.4444	1.712		
138	B	5.8000	1.229	1.47	0.797
	N	5.6852	1.490		
139	B	5.9000	1.287	1.30	0.630
	N	5.6852	1.130		
140	B	6.3000	0.823	1.66	0.228
	N	5.9259	1.061		
141	B	2.8000	1.033	3.07	0.222
	N	3.3148	1.810		
142	B	4.3000	2.359	1.70	0.611
	N	3.8889	1.808		
143	B	4.9000	1.287	1.09	*0.014
	N	3.6296	1.233		

(table continues)

question #		mean	SD	F-value	two-tailed probability
144	B	2.7000	1.567	2.05	0.732
	N	2.5185	1.094		
145	B	2.4000	1.350	1.16	0.309
	N	2.8889	1.254		
146	B	4.1000	1.370	1.01	*0.052
	N	3.0926	1.364		
147	B	4.8000	1.814	3.04	0.491
	N	5.2222	1.040		
148	B	3.1000	1.287	1.42	0.918
	N	3.1481	1.535		
149	B	4.3000	1.059	1.15	0.852
	N	4.3704	1.138		
150	B	5.5000	0.850	3.22	*0.011
	N	4.5556	1.525		
151	B	4.6000	2.171	1.93	0.852
	N	4.4630	1.563		
152	B	4.5000	2.014	2.08	*0.010
	N	2.4259	1.395		
153	B	4.6000	1.776	1.09	0.102
	N	3.5185	1.850		
154	B	3.6000	1.955	1.50	0.152
	N	2.5926	1.596		

(table continues)

question #		mean	SD	F-value	two-tailed probability
155	B	3.4000	1.265	1.31	*0.040
	N	2.3889	1.446		
156	B	5.3000	1.767	1.77	0.897
	N	5.2222	1.327		
157	B	5.4000	1.506	1.62	0.820
	N	5.2830	1.183		
158	B	3.2000	1.874	1.34	0.736
	N	2.9815	1.619		
159	B	5.2000	1.549	1.18	*0.042
	N	4.0000	1.427		
160	B	3.8000	1.687	1.27	**0.059
	N	2.6111	1.497		
161	B	4.1000	1.287	1.02	0.347
	N	3.6667	1.274		
162	B	3.2000	1.229	1.58	*0.020
	N				
163	B	66.0000	17.127	1.32	0.542
	N	62.2222	19.683		
164	B	46.0000	15.055	1.46	0.140
	N	37.5926	18.216		

Note: Two-tailed probabilities refer to separate variance estimate;

B= bulimic; N= non-bulimic

*p < .05

**p < .075

APPENDIX E

Consent Form

You will be interviewed by a female experimenter and will be asked questions concerning your family relationships, eating habits, scholastic experiences, and social life. Your name will be held confidential. You may find that some of the questions cause you to feel uncomfortable, in which case you should feel free to notify the interviewer. Furthermore, if there are any questions during the interview that you do not wish to answer, simply state to the interviewer that you prefer not to answer, and the interviewer will skip the question.

With your permission, your interview may be videotaped so that my advisor, Dr. Jeffrey Kern, may observe the interview. However, if you do not wish to be videotaped, or you want the tape stopped at any point, the interviewer will comply with your request. Tapes will be held confidential and will be erased in the spring.

If at any time you do not wish to continue the interview, you may terminate your participation without prejudice or loss of credit. Regardless, you will receive one hour of credit towards your Psychology 107 experimental credit requirement.

APPENDIX F

Debriefing Form

Based on your answers to a Physical Complications Checklist given as a pretest early in September, you were chosen to be interviewed to determine whether or not your apparent physical condition indicated the presence of a particular eating pattern commonly known as bulimia. This pattern, which is estimated to occur in approximately eight percent of the college female population, involved a cycle of eating large amounts of food and then inducing vomiting or purging in order to rid oneself of the excessive calories which have been consumed. People who exhibit bulimia generally function quite well in day-to-day life, although their health may suffer. Problems such as potassium deficiency, cavities, bleeding around the throat, chronic fatigue, and urinary infections are fairly common. Additionally, they may view themselves negatively and experience a feeling of being out of control.

As an undergraduate, I am not qualified to diagnose this pattern or to offer more personal information, but my advisor, Dr. Jeffrey Kern, will be glad to speak to you further on the subject, if you so desire. Additionally, Dr. Kerry Hope of the TAMU counseling center is well acquainted with bulimia, and is also available to answer any questions you might have.