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LOCUS OF CONTROL AND NONVERBAL DECODING ACCURACY AMONG WOMEN WITH BULIMIA

The Ohio State University

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LOCUS OF CONTROL AND NONVERBAL DECODING ACCURACY
AMONG WOMEN WITH BULIMIA

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Norma J. Leclair, B.S., M.A.

* * * * *

The Ohio State University
1984

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CHAPTER I

INTRODUCTION

During the 1970's counselors and health professionals became aware of the rising prevalence of eating disturbances among teenage and young adult women. Professional and public attention was drawn toward women who practiced self-starvation as a means of achieving an exaggerated form of thinness. Numerous research investigations have contributed to the identification and treatment of anorexia nervosa and have provided clearly delineated diagnostic criteria that support the existence of this disturbance as a psychiatric disorder (Russell, 1979; Bruch, 1973).

In more recent years counselors have been confronted with clients who reveal an eating pattern of regularly gorging themselves with food. This gorging is succeeded by purging methods, such as vomiting or laxative abuse, to offset potential weight gains. Some individuals also resort to using amphetamines, diuretics, fasting, and exercise as further assurances against weight gain. While the American Psychiatric Association (1980) identifies this pattern as bulimia, several other terms are used in the media as labels for this behavior. These terms include bulimarexia, binge-vomiting, and gorge-purging. The variety of terms represent differences in opinion among
professionals as to the etiology and treatment of this eating disturbance, rather than to the nature of the disorder.

The diagnostic criteria for bulimia have provided a general description of the nature of the disorder. Bulimic individuals are aware of the abnormality of their eating patterns and express concern over not being able to cease eating voluntarily. They portray a sense of control and self-sufficiency, yet turn to food to escape stress and personal fears (Leclair and Berkowitz, 1983). Self-deprecating thoughts accompanied by depression are often experienced following the binge-purge episode. As the binge-purge episodes increase in frequency and duration, individuals become more and more isolated from personal relationships. The relationships which are retained are often defined by the dependency needs of the bulimic individual.

The emergence of binge-purge practices can be traced to the Romans, who invented vomitoriums where guests could empty their stomachs after overindulging in food at banquets. They were then able to return to the banquet for more feasting (Lucas, 1981). Cauwels (1983) notes that self-induced purging practices have occurred for thousands of years as both a medicinal and social practice. The ancient Egyptians purged monthly as a preventive measure against sickness. Purging was viewed as a purification rite by nineteenth century sportsmen. During the same period, people were turning to such weight-reducing methods as having their stomachs pumped and swallowing sterilized tapeworms.

Lucas (1981) suggests that the emergence of bulimia among women today coincides with the greater emphasis by society on the
desirability of thinness among women. Casper (1983) conducted a review of case studies and found that prior to the 1940's few comments were made concerning body size. After that time period, however, many references to body size were documented in clinical case notes. She hypothesized that changes in cultural and economic conditions promoted this new concern over body weight. Today many women have come to relate thinness with attractiveness and attractiveness with success. They believe that if a perfect figure is attained everything in life will be well. Boskind-White and White (1983) propose that women who strongly value a traditional female role may develop bulimia in response to experiencing conflicts between that role and the more liberated female role of today. Some researchers suggest that women with bulimia have addictive personalities, while others search for biochemical and neurological causes (Rua & Green, 1978).

Although various theories exist regarding the etiology of bulimia, concerned professionals do agree that this disorder affects the physical and psychological well-being of the victims. Family problems may also be intensified as a result of having to cope with this additional stressor. Finally, academic, social, and work functions are disrupted by the increased amount of time devoted to binging and purging.

Need for the Study

While the prevalence of bulimia is not known, binge-eating behavior is reported to be widespread among women and to a lesser degree among males, particularly on college campuses (Hawkins &
Clement, 1980). Boskind-White & White (1983) report a tremendous response from females across the nation to an article on bulimia which was written by them and published in a popular women's magazine. Domke (1981) suggests that a larger number of clients than previously suspected seek assistance for problems with bulimia at university counseling centers. Results of one survey of college students indicates that 13% of this population experience all of the major symptoms of bulimia (Halmi, Falk, & Schwartz, 1981).

Domke (1981) and Hawkins and Clement (1980) urge that counselors working with a similar out-patient population should be prepared to recognize and treat individuals experiencing bulimia. Preparation of this nature is best accomplished through the use of empirically substantiated information about the psychological, physical, and sociocultural factors that influence the development of this disorder. Hauserman and Lavin (1977) and Van Buskirk (1977) note that research investigations on anorexia nervosa have contributed to a more thorough understanding of the disorder. These efforts have provided support for alternative treatment strategies, contributed to increased professional and public awareness, aided in legitimizing the concerns of anorectic individuals and their families, and assisted in their search for treatment. Similar needs exist among the bulimic population.

Initial investigations on bulimia have been helpful in identifying a common profile of bulimic persons (Pyle, Mitchell, & Eckert, 1981) as well as determining the frequency and duration of binge-purge episodes (Mitchell, Pyle, & Eckert, 1981). Additionally,
some personality characteristics common to the person with bulimia have been discerned through research that compares this population with the anorexic population (Russell, 1979; Casper, Eckert, Halmi, Goldberg, & Davis, 1980; Beaumont, George, & Smart, 1976; Green & Rau, 1977; Garfinkel, Moldofsky, & Garner, 1980; Pyle et al., 1981). Identifying personality variables of bulimics through comparisons with anorexics has been useful, but it may be more helpful to determine underlying psychological dynamics by comparing samples of bulimic people with samples representing the general population.

A review of the literature on bulimia indicates that the personality construct, locus of control, may be a relevant area for examination. The theme of much of the literature seems to suggest that a bulimic person is externally oriented in locus of control. Boskind-Lodahl (1976) offers a model of the bulimic female that describes her as being an exaggeration of the traditional female role. This individual is passive, dependent, and compliant. From an early age the child conforms to parental wishes and values, and carries out this conformity by learning to perform a role rather than developing a sense of identity and personal worth. Bruch (1977) supports this notion of conformity to authority and lack of personal identity. She believes that this orientation is later generalized to other situations such as school and work. The woman comes to base her sense of self-worth on feedback from others.

Additional support for theorizing that bulimic persons have an external locus of control can be gleaned from the literature on internal-external expectancies and health-related behavior.
Strickland (1978) reviewed a number of research findings and concluded that individuals who hold internal as opposed to external expectancies are more likely to assume responsibility for their health. Internals practice health promoting behaviors and guard against accidents and diseases to a greater extent than do individuals who hold external expectancies. It would stand to reason that persons with bulimia are involved with adverse health practices, something that is more likely to occur among "externals" than "internals".

Increased understanding of the relationship between locus of control and bulimia would provide a useful contribution to the existing knowledge related to this disorder. The findings of a study which investigates this relationship might lead to a better understanding of a personality construct that may contribute to the emergence and/or maintenance of bulimia. Empirical support for developing counseling goals and treatment interventions may also be generated from the findings of such a study.

Another concept that may be useful in understanding bulimia is nonverbal decoding accuracy. It seems logical that since bulimics rely on others to validate their self-worth, examining information about their ability to identify and interpret the nonverbal expressions of others might lend insight into the potential causes of bulimia and needed counseling strategies.

Rosenthal, Hall, Archer, DiMatteo, and Rogers (1979) have examined the differences that exist among people in their ability to decode nonverbal expression. This group developed a standardized instrument, the Profile on Nonverbal Sensitivity (PONS), to measure
decoding accuracy. They have conducted numerous studies which examine the relationship between decoding accuracy and age, gender, cognitive ability, and selected personality variables. The research examining personality variables and nonverbal decoding sensitivity is most relevant to the present study.

The researchers suggest that the ability to accurately decode nonverbal expression may be related to confidence and social maturity. Those persons with a high need for social acceptance and approval may have difficulty in accurately perceiving others. Buck (1976) and Mehrabian (1972) also documented that those persons with a high need for social acceptance were poor at decoding nonverbal expression.

Such findings are relevant to this study because the literature on bulimia suggests that these persons have a high need for social acceptance and approval. The skill one has in decoding nonverbal expressions seems to mediate the reception of this information. Determining if there is a common inaccuracy among bulimics in nonverbal decoding ability has ramifications for treatment strategies. Improving decoding abilities may in turn bolster overall communication abilities. Improved communication may decrease the dependency and passivity of bulimics and enhance their ability to communicate needs to others.

Statement of the Problem

The intent of this study was to contribute to the existing knowledge of personality characteristics and communicative abilities of persons with bulimia. More specifically, the purpose was to
examine the similarities and differences that existed for the personality construct locus of control and nonverbal decoding accuracy among and between groups identified as: (a) bulimic women in counseling; (b) women in counseling; (c) women in a diet program; and (d) women representing a nontreatment comparison population. These comparisons were based on scores from: (a) the Adult Nowicki-Strickland Internal-External Scale; (b) the Profile on Nonverbal Sensitivity; (c) a Personal Data Sheet; and (d)) information gathering questionnaires.

A second purpose was to draw conclusions and make recommendations for counseling interventions in the treatment of individuals with bulimia based on the findings from this research.

Research Questions

The major research questions addressed in this investigation were:

1) Are females with bulimia more external in locus of control than females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a non-treatment comparison group?

2) Are females with bulimia as accurate in decoding nonverbal expression as females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?

3) What relationship exists between locus of control and nonverbal decoding ability among females with bulimia, females in
counseling, females in a diet program, and females representing a nontreatment comparison group?

4) What combination of personality and demographic variables under study best discriminates among the four groups?

Limitations

The population to be investigated in this study consisted of white females between the ages of 15 and 32. Females from ethnic minority groups and males were excluded from this investigation. This exclusion was made because the very low incidence of bulimia among these groups (usually less than 5% of the reported cases) precludes valid analysis (Casper et al., 1980). The selection of the age range was determined by the fact that this age group has the highest incidence of bulimia. However, setting an absolute age criterion for defining a patient group is arbitrary (Lucus, 1976).

A request for participation in the bulimia group and the counseling group was solicited from individuals currently involved in individual or group counseling on an outpatient basis. These individuals were informed of the study by their counselors. Those who participated in counseling were receiving treatment at either a private clinic, through community mental health centers, or through licensed private practitioners. They represent a broader range of individuals than if the subjects were selected from a single treatment setting. Participants for the diet group were solicited from a diet center specializing in individual diet consultation and from a program where diet consultation is given in a group format. These
participants were informed of the study by their diet consultants. The volunteers for the nontreatment comparison group were solicited by faculty involved in teaching at the university. These volunteers were drawn from nursing students enrolled in undergraduate and graduate programs. Because the study relied on volunteers, a self-selection factor exists. The sampling procedure was not random. The use of volunteers also excludes from the study individuals with bulimia who are denying the problem.

The socioeconomic level of the participants was limited to a range of middle to upper socioeconomic status. The selection of this range of socioeconomic status is based on previous research investigations which have documented the prevalence of bulimia among middle to upper class families (Beaumont et al., 1976; Pyle et al. 1981; Herzog, 1982). No attempt was made to control for religious affiliation because no significant differences have been found for religious preference among bulimics (Garfinkel et al., 1980; Herzog, 1982).

The identification of the subject's locus of control and nonverbal decoding accuracy was limited to self report data in this investigation. Specifically, the data was limited to scores from the Adult Nowicki-Strickland Internal-External Scale, the Profile on Nonverbal Sensitivity, Personal Data Sheets, and questionnaires specific to each group. Screening for undiagnosed eating disorders was limited to direct questioning on the part of the investigator. The rationales for selecting the instruments are presented in Chapter III.
Because this study was limited to a one-time intervention for data collection, influences attributable to an individual's developmental stage were not identified. In addition, the length of counseling intervention was controlled only in so far as all persons in counseling had had at least four sessions. The degree of severity of the bulimic disorder was defined by the number of binge-purge episodes per week. All subjects in this study were oriented to reality and able to carry out activities of daily living. No attempt was made to define individual characteristics which cause bulimia. The intent was to identify characteristics which differentiate females with bulimia from females in counseling, females participating in a diet program, and females representing a nontreatment comparison group.

Definition of Terms

The following definitions serve to clarify the meanings of terms used in this investigation.

Bulimia is defined by the following diagnostic criteria as outlined in the 1980 Diagnostic and Statistical Manual (APA, 1980):

A. Recurrent episodes of binge eating (rapid consumption 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 digested 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 eating 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

Internal–External Locus of Control - a set of beliefs governing the perceived location of reinforcement. Internal locus of control is typified by individuals who perceive an event as contingent upon their own behavior or their own relatively permanent characteristics. External locus of control refers to that set of beliefs where individuals perceive the reinforcement as following some action of theirs, but which is not entirely contingent upon that action. This reinforcement is perceived as the result of luck, chance, or fate; as under the control of powerful others; or as unpredictable because of the complex forces surrounding the individual (Rotter, 1966).
**Adult Nowicki-Strickland Internal External Scale** - a standardized 40-item, yes or no answer instrument that assesses an individual's locus of control of reinforcements. This instrument evolved from a children's form originally developed by Nowicki and Strickland (1973). The instrument can be completed in a relatively short period of time, and is keyed so that the higher the score, the more external the locus of control orientation (Nowicki & Duke, 1974).

**Communication** - "the transference of a thought or feeling from one person to another through gesture, posture, facial expression, tone and quality of voice, as well as by speech..." (Good, 1959, p. 113).

**Nonverbal Communication** - the "transmitting (of) a thought or feeling from one person to another through gesture, posture, facial expression, tone and quality of voice, or physical contact, as an auxillary function to speech, or without speech," (Galloway, 1962, p. 8).

**Profile on Nonverbal Sensitivity** - a standardized measure of nonverbal decoding accuracy developed by Rosenthal et al. (1979). The 47-minute, black and white, audio-visual videotape presents a series of 220 two-second, randomly ordered scenes. Respondents are asked to view each scene and then select one of two supplied descriptions that best describes the scene. Each scene is followed by a measured pause so that the respondent can make and record decisions.
Plan of the Study

The background of the study is presented in Chapter Two. The review of the literature covers bulimia, locus of control, and nonverbal decoding accuracy.

The methodology employed in this study is discussed in Chapter Three. Detailed descriptions of the subjects, conditions of testing, testing procedures, scoring of instruments and data entry are all included in this chapter. Information about the reliability and validity of the AN-SIE and the PONS instruments is presented. Finally, the statistical procedures chosen for the analysis of the hypotheses are discussed.

The results of the statistical analyses of the hypotheses along with the actual test statistics are presented in Chapter Four. A summary of the study, a discussion of the results, and implications for practice and future research are presented in Chapter Five.
CHAPTER II

REVIEW OF THE LITERATURE

This study was intended to expand our current understanding of the contribution of personality characteristics and communicative abilities to the development and maintenance of bulimia. Within this larger context, the focus of the investigation was on the personality construct locus of control and nonverbal decoding accuracy of females with bulimia.

The scholarly literature relevant to the planning and implementation of this investigation includes research in the area of bulimia, locus of control, and nonverbal decoding ability. This chapter is divided into three sections covering the pertinent literature in each of these areas.

Research on Bulimia

Overview of Bulimia

The term bulimia is used in the literature to describe both a symptom and a syndrome (Mitchell & Pyle, 1982). As a symptom it refers to the overeating and purging that occurs episodically in persons with anorexia nervosa. The syndrome of bulimia is characterized by abnormal eating and purging practices that occur in
normal weight and near normal weight individuals. People in this latter group are aware of their abnormal eating patterns and express concern over the inability to voluntarily cease eating. Binge eating episodes are conducted in private and are terminated by physical pain, social interruption, sleep, or vomiting. Bulimic clients are frequently depressed after gorging, express concern about their weight, and often demonstrate marked weight fluctuations (APA, 1980).

The etiology of bulimia is presently unknown, but various researchers suggest neurological, neuroendocrine, socio-cultural, and psychological causes. Rau and Green (1975, 1978) and Green and Rau (1974, 1977) examined the EEG patterns of persons with bulimia. They originally proposed that most bulimics present abnormal EEG patterns, but in a cumulative review of their data they found that only 64.4% of the bulimics studied actually had abnormal EEG's (Rau, Stuve, & Green, 1979). Greenway, Dahms, and Bray (1977) examined seven bulimic persons and found only one with an abnormal EEG. It is worth noting that the most frequently occurring abnormal EEG pattern in bulimics has been found to be unstable over time (Long & Johnson, 1968), is considered by some to be a normal variant (Wermuth, Davis, Hollister, & Stunkard, 1977), and is present in a high percentage of the adult psychiatric sample (Wegner & Stuve, 1977). The contribution of neurological factors to the development of bulimia is still currently under investigation.

Mitchell and Pyle (1982) note that a variety of neuroendocrine abnormalities have been identified among patients with anorexia nervosa. They suggest the possibility of underlying neuroendocrine
dysfunctions in bulimia. Boyer (1978) found abnormal gonadatropin secretory patterns in patients who experienced only mild weight loss due to binging and vomiting behaviors. Further research in the area of neuroendocrine dysfunction is also needed.

Lucas (1981), Boskind-Lodahl and White (1978), and Garfinkel et al., (1980) note that society places great emphasis on the desirability of thinness among women. Women are socialized to value their bodies primarily for physical attractiveness and may develop the belief that their lives would be successful if they were thin and pretty. This assumption becomes an overwhelming force contributing to the development of bulimic tendencies. These tendencies are also fostered by the pressures from societal expectations to excel in multiple areas.

Boskind-Lodahl (1976) suggests that certain psychological factors contribute to the development of bulimia in women. She describes the bulimic woman as having accepted an exaggerated traditional concept of femininity where the female is passive, accommodating, and dependent. The bulimic woman achieves this ideal by learning to performing a role rather than developing an underlying sense of personal identity. The child gains approval by performing a role in conformity with her parents' values. Bruch (1977) supports this notion of parental influence and suggests that the child is discouraged from developing a sense of self and expressing her own needs. These factors contribute to the lack of personal identity commonly found among females with eating disorders. An inadequate sense of personal power and value has led these women to depend upon others to validate their self-worth
Bulimic women establish unrealistic standards and strive for perfection. Impulsive binge eating provides temporary relief from pressures created by striving for the ideal. This respite is quickly replaced by feelings of shame and guilt which promote depression and low self-esteem (Russell, 1979; Pyle et al., 1981). The bulimic female turns to binging and purging as methods for coping with anxiety and stress, but discovers that these methods eventually escalate her stress.

Prior Research on the Classification of Bulimia

A review of research on bulimia reveals a lack of consensus on the classification of this disorder. The conflict surrounding the classification of bulimia has probably emerged, in part, from the various samples employed in studies. Initially, counselors working with anorectic groups observed that two different types of anorectic clients seem to exist. Beaumont et al. (1976) conducted a retrospective analysis of hospitalized anorexic and noted that there were two different methods used by subjects in this study to control weight. One group used stringent dieting while the other resorted to vomiting and purging as measures to control weight. These researchers contend that distinct subgroups exist within the anorectic population and conclude that there are certain characteristics that distinguished "dieters" from "vomites and purgers".

Garfinkel et al. (1980) raised the question of whether bulimia represents an end stage of chronic anorexia nervosa or a distinct
subgroup of that disorder. The results of his study strongly support the heterogeneity of anorexia nervosa. Casper et al. (1980) also examined inpatient anorexics and concluded that a subgroup experiencing bulimia does exist and that they are indeed different from those who severely limit food intake. These authors suggest that bulimia may not necessarily be confined to persons with anorexia nervosa.

Russell (1979) proposed that bulimia be considered a separate eating disorder. During his investigation he examined the patterns of behavior that proceed vomiting and noted a close relationship between binging and vomiting. Subjects with bulimia presented with episodes of overeating followed by self-induced vomiting or purgation. Those subjects with anorexia nervosa who were vomiting did so after ingesting even small amounts of food. Hsu (1978) and Crisp, Kalucy, Lacy, and Harding (1977) also noted that clients with anorexia nervosa vomit less frequently and less habitually than do persons with bulimia. Physical and psychological differences between bulimics and anorexics who vomit were documented. Russell urged that clearer diagnostic criteria be established for determining the presence of bulimia.

Findings from a study conducted by Pyle et al. (1981) confirmed that bulimia can exist as a chronic eating disorder not associated with anorexia nervosa. While many of the subjects involved in the study did demonstrate characteristics often ascribed to anorectic clients (preoccupation with food and an exaggerated fear of becoming obese), most had never experienced the marked weight loss common to
anorexics. Several other investigations (Boskind-Lodahl & White, 1978; Strangler & Printz, 1980; White & Boskind-White, 1981;) confirmed the existence of bulimia among normal weight and overweight persons. Data generated from these studies contributed to the decision by the American Psychiatric Association (1980) to classify bulimia as a distinct disorder from anorexia nervosa in the Diagnostic and Statistical Manual of Mental Disorders (3rd ed.). Additionally, the diagnostic criteria outlined in this manual have received validation from a number of studies (Halmi et al., 1981; Hudson, Laffer, & Pope, 1982; Herzog, 1982).

Incidence and Prevalence of Bulimia

Very little information is available on the incidence and prevalence of bulimia. Several researchers have examined the incidence of bulimia within the anorectic population and found that nearly half of that population exhibited symptoms congruent with bulimia (Hsu, Crisp, & Harding, 1979; Casper et al., 1980; Pyle et al., 1981). Russell (1979) noted that anorectic clients frequently developed bulimia after regaining normal weight.

Wermuth et al. (1977) report a very low incidence of bulimia among students attending a large west coast university. These findings, however, are based upon the number of students who specifically requested counseling for bulimia. Strangler and Printz (1980) examined the psychiatric diagnoses of 500 university student receiving counseling and determined that 3.8% of this sample were experiencing bulimia. These authors caution that their finding are a
conservative estimate because those cases of bulimia that were revealed during the process of therapy were not included in the study.

Hawkins and Clement (1980), Dombke (1981), and White and Boskind-White (1981) all note an increase in requests for treatment of bulimia among college students. Halmi et al. (1981), recognizing the need to document the prevalence of this disorder among the teenage and young adult population, conducted a survey of 355 students attending summer school at a suburban college. Summer session was chosen because the students were more representative of the community at large than were those students enrolled during the regular school year. Forty-three percent of the responding students indicated that they experienced episodes of binge-eating, while 13% responded affirmatively to binge-eating and vomiting or purging. Of the 13% who were binging and vomiting or purging, 87% were females and 13% were males. The findings of this survey indicate a larger number of young people experience some or all of the symptoms of bulimia than was previously suspected. These researchers add that this may be a conservative estimate because only 66% of the student population returned the questionnaires. Persons with bulimia are generally secretive about their problems (Mitchell, Pyle, & Eckert, 1981) so it would stand to reason that some of the bulimics may have been unwilling to respond.

**Frequency, Duration, and Physiological Effects**

Mitchell et al. (1981) determined the frequency and duration of binging episodes by surveying a newly diagnosed group of outpatient
bulimic clients. These authors caution that findings of this self-report survey are probably moderate estimates because of the tendency for bulimics to under-report their practices. On the average, 13.7 hours are spent weekly on binging behaviors, with each binge lasting from fifteen minutes to eight hours. Caloric consumption ranges from 1,200 to 11,500 calories per episode with carbohydrates as the primary foodstuff. Russell (1979) reports that some clients consume as much as 20,000 calories while binging.

These individuals have strong uncontrollable appetites, may crave certain foods, and have little awareness of the sensation of fullness (Casper et al., 1980; Pyle et al., 1981). Binge episodes are precipitated by stress and generally take place in the late afternoon or evening, although some clients report morning and nocturnal binges. Most binges are carried out in privacy. Vomiting is the usual pattern of terminating a binge, but clients may also vomit several times throughout the episode. Others resort to using laxatives, diuretics, amphetamines, or fasting as a means of offsetting the huge food intake.

Such abuse is detrimental to the physical well-being of the individual and contributes to a number of physical problems. Vomitus contains hydrochloric acid which erodes tooth enamel and produces dental caries (House, Grisius, & Bliziotes, 1981). Benign parotid enlargement has been documented among patients with bulimia (Levin, Falko, Dixon, Gallup, & Saunders, 1980). Frequent vomiting produces esophageal irritation, while gorging can result in gastric dilitation (Mitchell, Pyle, & Miner 1982; Bossingham, 1977; Brook, 1977).
Laxative abuse may also irritate the lower bowel, thus creating potential health risks. Amenorrhea and menstrual irregularities commonly occur among women with bulimia, especially if there is marked weight loss (Pyle et al., 1981; Russell, 1979).

Frequent vomiting and laxative abuse may precipitate electrolyte imbalances, particularly potassium deficiency (Russell, 1979; Pyle et al., 1981). Life-threatening cardiac arrhythmias are produced from such a deficiency. Urinary infections, renal failure, epileptic seizures, and tetany have also been documented among this population. Clearly, bulimia can produce potentially serious physical effects.

Composite Profile and Personality Characteristics

The person with bulimia is typically a white, single female who has been involved with binging and purging behaviors since her middle to late teens (Beaumont et al., 1976; Casper et al., 1980; Pyle et al., 1981). Although this female may be within a normal weight range, she is likely to have had a history of being overweight, experienced marked fluctuations in weight, and expressed a fear of becoming fat (Russell, 1979; Garfinkel et al., 1980; Pyle et al., 1981; Herzog, 1982). Boskind-Lodahl and White (1978) and Russell (1979) note that many bulimics complain of a constant preoccupation with food, making it difficult to concentrate on other tasks.

These females generally come from middle to upper socioeconomic families, and are in high school or have completed at least two years of education beyond secondary school (Beaumont et al., 1976; Pyle et al., 1981; Herzog, 1982). Garfinkel et al. (1980) and Herzog (1982)
report no significant differences in terms of religious preference. Garfinkel noted a slightly higher percentage of Protestants among the inpatients who participated in his study. Pyle et al. (1981), using data gathered from an outpatient population, suggest that religious affiliation is more likely to be Roman Catholic.

The personality characteristics common to persons with bulimia have often been discerned by comparing bulimics with anorexics. A markedly obsessional, socially withdrawn, highly competitive, achievement-oriented nature is characteristic of the anorexic individual (Bruch, 1973; Beaumont et al., 1976; Russell, 1979; Casper et al., 1980). This rigid, controlling behavior contrasts with the more socially interactive qualities of the bulimic individual. Beaumont et al. (1976) notes that "vomiters and purgers" are usually outgoing, somewhat histrionic, enjoy excitement, and need other people. Boskind-Lodahl (1976) suggests that the traditional female characteristics of passivity, dependency and accommodation typify the female with bulimia.

Casper et al. (1980), Pyle et al. (1981), and Norman and Herzog (1983) have documented the impulsive nature of bulimic persons on their MMPI score patterns. This impulsive behavior is expressed through binge eating, stealing, substance abuse and suicidal attempts (Rau and Green, 1977; Russell, 1979; Garfinkel et al., 1980;).

Boskind-Lodahl and White (1978), Russell (1979), Casper et al. (1980), Garfinkel et al. (1980), Pyle et al. (1981), and Herzog (1982) note that anxiety and depression are common among bulimic persons. The depressive symptoms parallel the severity of the bulimic behaviors and
are accompanied by feelings of shame and guilt. These individuals are
disgusted by their eating and purging behaviors. Many voice a sense
of hopelessness and feelings of being out of control, both of which
can contribute to suicidal ideation. Social isolation and
difficulties with interpersonal relationships may result from the
amount of time spent binging and from the effects of low self-esteem
and poor self-concept. Family members and friends often describe the
bulimic as depressed, worried, discouraged, and brooding in nature
(Casper et al. (1980).

Treatment of Persons with Bulimia

Due to the fact that bulimia has only recently been recognized as
a disorder, the treatment for bulimia is considered experimental in
nature. Treatment programs have been developed from a variety of
theoretical frameworks and involve individual, family, and group
counseling modalities. Behavioral, cognitive-behavioral,
experiential, and feminist theories are popular frameworks for
developing treatment strategies. Treatment outcome studies are
extremely limited in scope and in number (Boskind-Lodahl & White,
1978; Russell, 1979; Fairburn 1981; Rosen & Leitenburg, 1982; Cauwels,
1983). Factors contributing to this paucity of treatment outcome
studies include the lack of agreement over the definition of bulimia,
the uncertainty of the causes, the complex nature of the disorder, and
the difficulty in defining "cure".

While therapists may differ on their choice of treatment, most
agree that a primary aim of counseling is the interruption of the
binge-purge cycle and restoration of normal eating habits
(Boskind-Lodahl & White, 1978; Russell, 1979; Fairburn, 1981; Rosen & Leicenburg, 1982; Boskind-White & White, 1983). Consummatory patterns are examined for insight into how food is used by bulimics. Therapists also agree that the issues of distorted body image, low self-esteem, and feelings of guilt, shame, loneliness, and helplessness must be addressed. Clients are encouraged to accept responsibility for binging and to develop a sense of control over their lives.

Russell (1979) stresses the necessity for hospitalization in interrupting the binge-purge cycle and restoring normal weight. Subjects in his study are anorexic as well as bulimic and have experienced weight loss that if continued would be life threatening. His suggestions for monitoring electrolytes, assessing suicidal tendencies, and treating severe depression with tricyclic antidepressants are useful for the bulimic population in general. Several researchers have used Diphenylhydantoin to control binging behaviors, but the results are at best equivocal (Davis, Qualls, & Hollister, 1974; Green & Rau, 1974, 1977; Rau & Green, 1975, 1978; Weiss & Levitz, 1976; Greenway et al., 1977; Rau et al, 1979; Mitchell et al., 1981).

A cognitive-behavioral approach that focuses on interrupting the binge-purge cycle and restoring self-control is outlined by Fairburn (1981). This method involves establishing behavioral goals and developing effective problem-solving methods. The effectiveness of this approach has yet to be tested.
Rosen and Leitenberg (1982) view vomiting as an escape-avoidance response that is reinforced by anxiety reduction. They suggest that anxiety links binging to vomiting and that vomiting is the driving force in the cycle. Using a single subject design, these researchers demonstrated that it was possible to reduce the binge-vomiting cycle by exposing the subject to her typical binging foods and then preventing vomiting behavior. During this process the subject was encouraged to examine the anxiety that she was experiencing and to develop alternative ways to handle this anxiety. While this method may be useful to the binge-vomiter, it does not address those individuals who use laxatives or excessive exercise to offset binges.

Boskind-White and White (1983) stress the importance of challenging traditional feminine values of passivity, dependency, and helplessness. Clients are encouraged to develop assertive behaviors and to question the assumption that attractiveness guarantees success. These authors conducted a pilot study, using experimental and control groups, to assess the effects of a feminist perspective, experiential-behavioral group approach on improving body image and decreasing the binge-purge cycle (Boskind-Lodahl & White, 1978). Subjects were given the Body Cathexis scale and Cattell’s 16PF questionnaire prior to group participation and at the completion of group treatment.

Binge-purge behaviors were eliminated or markedly decreased in ten of the twelve experimental group participants. Changes in Body Cathexis scores documented the experimental subjects' greater acceptance of physical and sexual aspects of their bodies, while
scores on Cattell's 16PF questionnaire indicated greater self-sufficiency and ability to exert control over social behavior. These post-test data offer initial support for the effectiveness of this type of group approach. Three month follow-up testing revealed a tendency for subjects to drift back to pretest levels, indicating the extreme persistence of this disorder.

Review of Locus of Control

Overview Locus of Control

Locus of control is a personality construct that has emerged from Rotter's (1954) work on social learning theory. This theoretical viewpoint stresses that the occurrence of behavior within a specific situation is a function of both expectancy and reinforcement. The construct, locus of control, represents a learned generalized expectancy toward events and ranges along a continuum from internal to external. Expectancy is the "probability held by the individual that a particular reinforcement will occur as a function of a specific situation or situations" (Rotter, 1954, p. 107). This generalized expectancy develops from numerous personal experiences from which the individual formulates abstractions about similar experiences (Lefcount, 1972). These abstractions or generalizations are then used by the individual in responding to novel situations.

Individuals learn that events are contingent or noncontingent upon their behavior. Those persons who believe that the outcome of an event is contingent upon their behavior reflect an internal locus of
control. These individuals perceive a relationship between behaviors and outcomes, and are likely to take responsibility for their behavior (Rotter, 1954; Davis & Davis, 1972; Lefcount, 1972, 1976; Phares, 1976; Strickland, 1978). Individuals who believe that events are noncontingent upon their behavior are said to be external in locus of control. For these people, there is no perceived relationship between behavior and outcome, but rather a belief that fate, luck, or social influences control the outcome of behavior. An individual's locus of control affects the way in which that person handles life events, including aversive situations.

The locus of control construct has been the focus of numerous investigations. The popularity of this topic is demonstrated by several major review articles and books (Lefcount, 1966, 1972, 1976; Rotter, 1966; Joe, 1971; Phares, 1976; Strickland, 1978). The vast amount of information on this topic dictates the need to focus the review of locus of control literature on areas that seem pertinent to bulimia. These areas include characteristics of internal-external expectancies, antecedents of locus of control, and physical and psychological health issues related to locus of control.

**Characteristics of Internal-External Expectancy**

The basic characteristic of individuals with internal locus of control beliefs is the way in which they attain mastery over their environment. Lefcount (1976) describes internally oriented people as curious and calculating about choices and interactions with others. Maintenance of a generalized expectancy of internal control requires
successful experiences in overcoming obstacles and attaining goals.

Internals seem to be more cognitively active than externals in that they acquire, utilize, and retain more information. Seeman and Evans (1962) documented the difference between internals and externals in possessing information relevant to their personal conditions. Internals with tuberculosis had more information about their conditions than did externals with the same disease. Similar findings were obtained from reformatory inmates (Seeman, 1963). Davis and Phares (1967) and Phares (1968) determined that internals engage in the preliminary steps of data gathering to a greater degree than externals and are more likely to use this information in decision-making. Internals prefer and perform better on skill-determined tasks, often deliberating on decisions related to these tasks (Cherulnik and Citrin, 1974; Pittman and Pittman, 1979; Kahle, 1980). These behaviors are likely to enhance the probability of successfully completing a task and effectively negotiating the environment. Chance-type tasks and the rewards associated with them appeal to externally oriented people.

Internal and external people differ in their resistance to influence. Internals express confidence in their decision-making ability and rely on their judgements especially when the outcome of a situation is of value to them (Crowne and Liverant, 1963; Lefcount, 1976). Externals demonstrate a likelihood for conformity which is heightened by authoritarian statements and prestigious sources of influence (Ritchie and Phares, 1969). Externals have a strong desire for affiliation and dependence and may consider these needs as more
important than maintenance of moral standards (Johnson, Acherman, Frank and Fionda, 1968). Pines and Julian (1972) and Pines (1973) suggest that externally oriented persons are concerned with how others perceive them and may behave as they think others want them to behave.

Internally oriented persons are less likely to conform and at times may even act in a somewhat oppositional manner, withstanding pressure to act in certain ways. Both Getter (1966) and Strickland (1970) document resistance to verbal conditioning among internal subjects. Internals are more likely to produce the conditioned response during extinction trials and are less conditionable when they recognize experimenter manipulation. Internally oriented people will, however, conform under certain circumstances including reasoned arguments regardless of status or source (Getter, 1966; Strickland, 1970), directives that are congruent with their own attitudes and perceptions (Lefcount, 1967; Lefcount, Lewis and Silverman, 1968), and situations that allow for active participation in shifting attitudes and beliefs such as role playing (Platt, 1969). Heighlen and Nicholas (1978) investigated the effects of specific instruction and verbal conditioning procedures on self-reference affect in female clients who were classified as internal or external. Specific instructions and verbal conditioning proved to be superior to general instruction in increasing statements about personal affect for members of both groups. They reasoned that internally oriented individuals were willing to be "conditioned" because they valued the self-disclosure.
Phares (1976) notes that internals are active in controlling their worlds and demonstrate greater self-control than do externals. Piechowski and Millemot (1980) support this contention and add that persons with an internal locus of control expectancy believe that they can influence the behavior of others in many situations. Assor and O'Quin (1982) demonstrated that internality and dominance are positively correlated with toughness in bargaining situations. Externally oriented persons indicate that their influence over others occurs only when they perceive the others as being free to vary.

Hartwig, Dickson, and Anderson (1980) and Lefevre and West (1981) examined the relationship between locus of control beliefs and assertiveness. Both groups of researchers found internality positively correlated with assertiveness. The latter group also documented the relationship between levels of self-esteem, assertiveness, and locus of control. Persons with external locus of control beliefs experience interpersonal anxiety, fear of disapproval, and limited assertive behavior. The opposite behaviors are documented for persons with internalized beliefs.

Individuals with internal vs. external locus of control beliefs differ in their reactions to success and failure. Since internals relate outcome to behavior, they feel responsible for tasks and are able to experience pride in successfully completing them. They are likely to attribute success and failure to their behaviors rather than to environmental factors (Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum, 1971; Karbenick, 1972; Davis and Davis, 1972; Krovetz, 1974; Miller, 1976; Kupier, 1978). Persons with external locus of
control beliefs relate outcomes to environmental factors or fate and therefore are less likely to experience pride upon successfully completing tasks. McNeil and Jacobs (1980) suggest that gender may also affect causal attribution. Males who are internal in locus of control are more likely than internal females to attribute causes for success and failure to internal sources. External females are more likely than external males to attribute causality to external sources.

Lefcount (1972) points out that externals seem less able to use past experiences in preparing for the future. Gilmor and Reid (1978) examined the ability of internals and externals to estimate exam scores and final grades. No significant difference in ability to predict scores was found, but the estimates and actual outcome of the internal group was higher than the external group. Internal individuals also used their first exam scores to adjust their second exam and final grade predictions. This finding is consistent with Feather's (1968) earlier findings in which internals adjust aspirations upward after success and downward following failure. Externals typically do just the opposite.

Internality and externality have also been correlated with achievement behaviors. Gilmor (1978) notes that the bulk of research investigating locus of control and achievement consistently substantiates internal control expectancies as mediating achievement behavior. Initial investigations relate achievement effort and persistance to "inner-directedness" (Crandall, Katkosky, and Preston, 1962; Battle, 1965). Internals frequently earn better grades than
Externals (Boltinelli and Weizmann, 1973; Nowicki and Roundtree, 1971; Powell, 1971) and are likely to have higher achievement test scores (Chance, 1972; Clifford and Cleary, 1972; Nowicki and Walker, 1974). Internals are better able to adapt to changes in the classroom structure and use available resources more effectively than externals (Johnson, Johnson, and Bryant, 1973; Chabassol, 1973). Externals improve performance when praised by an outside source such as experimenter or teacher, while internals improve performance with self-reinforcement (Lintner and DuCette, 1974). Internally oriented persons are also willing to delay gratification for later attainment of more valued rewards (Strickland, 1972, 1973; Walls and Smith, 1970; Erikson and Roberts, 1974).

In summary, persons with internal locus of control expectancies are more cognitively active, are more resistant to influence, likely to assert themselves, and feel more in control of situations than are people with external locus of control beliefs. Internals assume responsibility for success and failure while externals attribute success and failure to environmental factors or fate. Achievement behaviors are mediated by locus of control beliefs, with internals out performing externals. Finally, internal individuals are able to delay gratification whereas externals favor immediate rewards.

**Antecedants of Locus of Control Beliefs**

Both family and social origins have been examined for their impact on the development of locus of control beliefs. Many of the investigations have been retrospective and/or correlational in nature.
In general, parental attitudes characterized as nurturing, approving, and accepting contribute to the development of internality in children (Phares, 1968; Katkosky, Crandall, and Good, 1967).

Two similar studies, one involving junior high school students (Shore, 1967) and the other college freshmen (Davis and Phares, 1969), investigated children's perceptions of parents' childbearing practices. Parents who were less rejecting, exhibited less hostile control, and withdrew less frequently from relationships were likely to have children with internalized beliefs. Congruent locus of control beliefs were more common in parent/child relationships characterized as indulgent and permissive.

Mothers of children with internal expectancies are typically willing to allow their children to work independently and are highly supportive of their children's efforts. Children with external beliefs have mothers who are characterized as hostile, over-protective, rejecting, critical, and authoritarian (Tolar and Jalowiec, 1968; MacDonald, 1971; Gorden, Nowicki, and Wichern, 1981; Barling, 1982). Levenson (1973) reports that subjects who describe parents as punishing and controlling have greater expectations of being controlled by powerful others. Consistent, supportive parental behavior contributes to the development of internal locus of control beliefs, while inconsistent parental behavior is commonly reported among externally oriented children (Scheck, 1978).

Social antecedents such as culture and socioeconomic status have also been explored for their potential influence on the development of locus of control orientation. Investigators reason that persons in
groups with restricted access to significant power or material advantages develop external orientations (Battle and Rotter, 1963; Zytoskee, Strickland, and Watson, 1971; Strickland, 1972). Phares (1976) cautions that many internal-external scales are designed for white, middle class norms and values and may not accurately assess minority cultures.

Garza and Ames (1974) demonstrated that outcomes of these studies may differ when age and socioeconomic status variables are controlled. Alvarez and Pader (1978) documented the effects of age and socioeconomic status on locus of control orientation in an investigation comparing middle class Anglo-Americans and Cuban-Americans. No differences were evidenced between cultural groups, but when age was considered, older Cuban-Americans were significantly more internal in locus of control than were younger Cuban-Americans.

Maraldo and Flachmeier (1978) compared West German and American coeds on several measures including locus of control. Both groups were attending Lutheran Colleges in similar sized communities. Control was exerted over age, gender, and socioeconomic status. West German female college students proved to be more external in locus of control than American female college students. These researchers suggest that differences are probably the result of childbearing practices and political attitudes toward women. Supportive, predictable family and social environments tend to influence the development of internality. External locus of control beliefs typically emerge from environments that are perceived as inconsistent
and critical.

**Physical and Psychological Health and Locus of Control**

Strickland (1978) proposes that internal-external expectancies may have significant impact on health maintenance. She reasons that individuals who are perceptually alert, take responsibility for their own actions, and gather and use information for decision-making are likely to take action to ensure personal health. These people are cognitively and emotionally prepared to exert control over their environment. Persons believing in fate or luck generally feel powerless to change the course of events. Baliff (1976) speculates that people who relate behaviors to outcome (internals) would be more motivated to change than would people who do not relate behavior to outcome (externals). Thus, externals are not likely to practice health promotion activities.

Several investigators have examined the impact of internal-external expectancies on health knowledge and health promotion behaviors. Internally oriented persons are more likely to collect health information and take action to improve physical functioning when given evidence or information about needed health changes (Wallston, Maides, and Wallston, 1976; Wallston, Wallston, Kaplan and Maides, 1976; Danaher, 1977). Dabbs and Kirsht (1971) demonstrated that persons who say they are motivated to exert control over health seek immunization against communicable disease. Internal students are more likely than externals to wear seat belts in vehicles (Williams, 1972a), engage in preventive dentistry (Williams, 1972b),
and participate in voluntary physical exercise (Sonstroem and Walker, 1973). Females with internal beliefs practice birth control more frequently and effectively than do external females, particularly if the goals and rationale for family planning are explained (Lundy, 1972: Harvey, 1976).

The findings examining internal-external expectancies and weight loss have been inconsistent. Some researchers have not been able to relate internal-external beliefs to weight loss (Bellack, Rozensky, and Schwartz, 1974; Manno and Marson, 1972; Tobias and McDonald, 1977). Other investigators, however, report internal beliefs to be predictive of successful weight loss (Balch and Ross, 1975) and related to satisfaction with the weight loss program (Wallston et al., 1976). Kincey (1983) reports that internals and externals do not differ in amount of weight loss during the early stages of treatment, but over time internals experience greater weight loss. Variables common to internals such as persistence, target-setting, self-reinforcement, and reactions to success and failure may contribute to this long-term success.

Differences exist between internals and externals in their reactions to physical disabilities and medical intervention. Internals with spinal cord injuries are better adjusted and have stronger self-concepts than do externals (Dinardo, 1972). Weaver (1972) notes that internals with severe renal disease are compliant with diet restrictions and medical appointments. Externally oriented persons experience greater levels of anxiety preoperatively (Lowery, Jacobson, and Keane, 1975) and are disturbed by specific information
about their future surgical procedure (Auerback, Kendall, Cutter, and Levitt, 1976). Internally oriented patients show good adjustment to surgical procedures when given specific rather than general information about their surgery. Internality is also associated with cooperative behavior and shorter hospital stays among coronary patients (Cromwell, Butterfield, Brayfield, and Curry, 1977).

The impact of internal-external expectancies on psychological disturbances has been explored in a number of investigations. Internals are significantly more likely than externals to report themselves as content with life situations (Felton and Kahana, 1974; Wolk and Kurtz, 1975; Naditch, Gargan, and Michael, 1975). Individuals with internal locus of control expectancies are more likely than externally oriented persons to take action toward changing adverse life situations (Levenson and Miller, 1976; Pawlicki and Almquist, 1973; Sanger and Alker, 1972; Strickland, 1965). Externality has been associated with debilitating anxiety (Watson, 1967; Finch and Nelson, 1974), irrational beliefs (MacDonald and Games, 1972), and mood disturbance (Kilpatrick, Dublin, and Marcotte, 1974). Several researchers report a relationship between externality and severity of psychiatric diagnosis (Cash and Stack, 1973; Levenson, 1973; Croft, Johnson, and Fox, 1975). These studies, however, are correlational in nature so there is no way of knowing if externality accompanies a predisposition to psychological difficulties or if locus of control beliefs occur as a function of the disturbance.

Studies examining the relationship between locus of control and depression have provided inconsistent findings. Phares (1972)
suggests that depression is associated with people who possess a strong generalized belief that outcomes are their responsibility. He reasons that the guilt and self-punitiveness which is often experienced by depressed persons would be expected to occur only if the individuals actually believe that they can influence life occurrences. Lefcount (1976) counters this proposal by pointing out that many depressives report themselves as powerless over life events, experience loss of control, and feel helpless about influencing events. This line of reasoning is supported by empirical evidence (Abramowitz, 1969; Calhoun, Cheney, and Dawes, 1974; Emmelkamp and Cohen-Kettenis, 1975; Procuik, Breen, and Lussier, 1976; Moyal, 1977).

Many of the empirical results reported in psychological literature suggest a relationship between beliefs about external control and psychopathology. This finding, however, does not hold for some selected samples of people who function in a maladaptive manner such as substance abusers and persons with anorexia nervosa. Some investigators report externality among alcoholics (Butts and Chotlos, 1973; Naditch, 1975; Nowicki and Hopper, 1974; Obitz and Swanson, 1976), while others found alcoholics to have internal beliefs (Goss and Morosco, 1970; Oziel, Obitz, and Keyson, 1972). Strober (1982), using the Adult Nowicki-Strickland Internal-External Scale, documented internality among female adolescents with anorexia nervosa. He proposes that the anorectic process promotes the development of internal control beliefs by affirming the effectiveness of controlling reinforcements that are peculiar to this group. The individual experiences an exaggerated sense of power, personal control, and
self-sufficiency. Anorexics possess internal generalized expectancies, but have a broader pattern of causal attributions that are maladaptively rigid and undifferentiated.

Reactions to counseling intervention varies with locus of control and kind of intervention, but in general individuals in therapy or self-improvement groups do become more internal (Dua, 1970; Diamond and Shapiro, 1973; Eitzen, 1974; Lewis, Dawes, and Cheney, 1974; Kilmann and Howell, 1974; Lynch, Ogg, and Christensen, 1975; Schallow, 1975). Connolly (1980) suggests that counselors might find the client's locus of control an important variable in facilitating change. Persons with external locus of control beliefs may initially need counseling intervention strategies that enhance feelings of personal control.

Penk (1969) notes that internal control typically increases with the age of a child. The increased ability to care for oneself and the ability to influence surroundings heightens feelings of control. Brecker and Denmark (1969) suggest that verbal fluency expands one's capacity for controlling the environment. As children's verbal skills increase, they are better able to gather information needed to handle situations and to convey their needs.

Several researchers document the effectiveness of behavioral counseling techniques in altering locus of control beliefs (Reimanis, 1974; Eitzen, 1974; Matheny and Edwards, 1974). Smith (1970) found that clients who resolve acute life crises by learning new coping skills decrease significantly in externality. Personal growth experiences (Foulds, 1971) and self-evaluation rather than peer
evaluations both contribute to the development of internalized expectancies. Chandler (1975) used tutoring as a method for increasing internal locus of control. When underachievers in junior high school tutored second and third grade underachievers, the tutors increased in their own internal control scores.

Helwig (1971), Jacobsen (1971), and Wilson (1973) determined that externally oriented clients express a preference for directive styles of counseling, while internals value psychotherapeutic approaches that allow the client to actively participate in the counseling sessions. Strickland (1978) reviewed a number of studies that examined psychological intervention and concluded that internals prefer more client control while externals like structured approaches. Congruence between locus of control expectancies and therapeutic approaches leads to the most pervasive changes.

Review of Nonverbal Decoding Accuracy

Overview of Nonverbal Decoding Research

Nonverbal communication has received increased research attention from various disciplines in recent years. These areas of study include psychology, psychiatry, anthropology, ethology, sociology, education, and communication. Some of these disciplines focus on the nonverbal behaviors of the individual while others are concerned with interactions (Scherer & Ekman, 1982). Each group examines nonverbal communication within the context of its theoretical and methodological perspectives (Seigman & Feldstein, 1978). While philosophical
differences exist among these disciplines, most groups would agree that the history of empirical research on nonverbal encoding and decoding accuracy begins with Darwin's 1872 study (Scherer & Ekman, 1982; Weitz, 1979; Knapp, 1978; Harper, Wiens, & Matarazzo, 1978). This study examined the emotional expression of humans and animals, and is noteworthy in that Darwin introduced several major substantive and theoretical issues that continue to influence nonverbal research today (Scherer & Ekman, 1982).

While Darwin was convinced that facial expressions are biologically determined, he did not deny the effect of cultural and social structures on nonverbal behaviors. Through systematic observations he made comparisons of expressions among many animals including humans. These expressions were spontaneously displayed, experimentally elicited, or sometimes portrayed by actors. These methods continue to be employed by researchers today. Drawings and photographs were used to obtain permanent images of the expression.

Darwin initiated the functional analysis of behavior, commonly used in modern ethology, by examining the communicative use of expressive signs. These expressive signs or symbolic gestures represent culturally shared codes that are voluntarily and consciously used by members of a given culture. He is also the first investigator to study observers and their judgements of facial expressions, noting that observers are able to identify expressions without benefit of context. This judgement method continues to be employed in studies of nonverbal encoding and decoding behaviors (Rosenthal et al., 1979).

Methodologies typically employed in these investigations involve the presentation of samples of nonverbal behavior (photographs, videotapes, or audiotapes) to judges for their evaluation of the emotional expressions. Rating scales, multiple choice questionnaires, and free flowing descriptions are all used to document the judges' evaluative responses. The criteria for assessing the reliability or accuracy of these responses varies with the method used to elicit emotional expressions (Rosenthal et al., 1979; Harper et al., 1978). The criterion for spontaneously or experimentally elicited emotions is established a priori by the nature of the situation that elicited the emotional display. When actors portray an emotional expression, the accuracy of judging is determined by whether or not the judge agreed with the emotion intended by the actor. Most studies of nonverbal emotional expression have focused on one channel of emotional display.
Those investigators examining combined channels of nonverbal expression are generally concerned with determining which channel has dominance in a judgement task.

Duncan (1969) reviewed a number of studies on nonverbal communication and identified two commonly used research strategies. Within the structural approach nonverbal communication is likened to language in that it is tightly organized and operates according to a definite set of rules. Structuralists such as Birdwhistell (1970) and Schefflen (1972) attempt to determine the rules and units governing nonverbal communication. These researchers believe that nonverbal language is culturally determined and that examining the interactions between people will aid in discovering these rules. This approach is descriptive in nature, relying upon observational rather than experimental data (Rosenthal et al., 1979).

Followers of the external variable approach such as Exline (1972) and Ekman and Elsworth (1972) investigate the relationships among nonverbal expression, psychological states, and perception of meaning. These investigators determine what meanings are conveyed by certain expressions, how accurate observers are in interpreting nonverbal expression, and whether the meaning of nonverbal expressions vary across cultures.

Rosenthal et al. (1979) have recently initiated a third approach to the study of nonverbal expression. This approach is primarily concerned with how individuals differ in their encoding and decoding of nonverbal expression. Person to person regularities in nonverbal expressions across are also investigated. These researchers developed
the Profile on Nonverbal Sensitivity, a standardized instrument assessing nonverbal decoding accuracy.

These distinctions in approaches are based on research interests, conceptual preferences, and choices of research methodology. Scherer and Ekman (1982) caution that while such distinctions are useful in organizing a review of literature, they are arbitrary distinctions. Such distinctions imply differences in scientific interests, conceptual schemes, disciplinary orientations, fundamental units of inquiry, preferred methodology, and research priorities. These authors stress that research decisions on any of the dimensions should be independent of one another.

Nonverbal Research on Face, Voice, and Body

Nonverbal Research – Face. Many researchers have continued with Darwin's interest in facial expressions. These investigations have frequently involved the identification of facial expressions depicted in still photographs. Rosenthal et al. (1979) note that this method has several limitations. With photographs judges are unable to determine how long an emotion lasts and may confuse permanent facial expressions with temporary emotional expressions. There is an absence of successions or blends of emotions as they would occur in real life. Gitter, Kozel, and Mostofsky (1972) compared decoding accuracy for still and moving faces and found films and videotapes produce higher levels of decoding accuracy.

From 1920 to 1940 research on facial expression flourished yet little consistent data were found to document the accuracy of
information provided by facial expression (Taquiri, 1969). Over the next twenty years comparatively few studies were conducted. Tomkins (1962) demonstrated that high levels of agreement in judging emotions can be obtained from observers when facial expressions reflect what he terms "innate facial affect".

Ekman and Oster (1979) drew several conclusions from their analysis of numerous investigations on facial affect decoding. Observers, regardless of culture, label certain facial expressions in the same way. Happiness, anger, disgust, and combined fear/surprise are universally recognized. Judges from various cultures can accurately distinguish pleasant and unpleasant emotions from facial expressions alone. These researchers also note that the same facial expression is displayed by members of different cultures when they experience the same emotion unless the culture has display rules that interfere with that expression. Ekman and Friesen (1971) purport that socially learned display rules for facial expression account for some of the cultural variations in facial expression. Individuals differ in their facial expressiveness (encoding ability) and in their ability to accurately judge facial expressions (decoding ability). The face is the most accurately judged channel of nonverbal expression and plays an important role in conveying nonverbal communication (Burns & Beier, 1973; DePaulo, Rosenthal, Eisenstat, Finkelstein, & Rogers, 1978; Zaidel & Mehrabian, 1969).

**Nonverbal Research - Voice.** The study of paralinguistic aspects of speech has also advanced nonverbal communication theory. There are inherent methodological problems in this area of study due to the
close link between words and the way they are spoken (Davitz, 1964; Moses, 1954; Scherer, 1971; Rogers et al., 1971; Harper et al., 1978). Three major research strategies have been employed in investigating this aspect of vocal communication: (a) standard or constant content; (b) electronically filtered content; and (c) randomized content filtering.

The standard or constant content method involves professional or amateur actors who portray different emotional expressions while repeatedly reciting a passage, phrase, sequence of meaningless words, or portions of the alphabet. Researchers employing this method believe that repetition will result in the subject attending to the nonverbal aspects of the voice rather than to the words (Davitz, 1964; Scherer, 1971; Rogers et al., 1971). A variation of this approach involves the reading of a passage in a foreign language unfamiliar to the subject. This approach diminishes the potential for biased responses that result from recognizing words. It is, however, unclear as to whether or not emotions are conveyed in the same way in all languages. Inconsistent results have been obtained from investigations using this approach (Scherer, 1971).

Davitz (1964) reviewed a series of standard content investigations and concludes that: (a) emotions can be judged by decoders at well above the chance level; (b) all emotions portrayed by actors are not equally easy for decoders to identify; and (c) considerable variation exists among decoders in their ability to accurately judge emotions. These conclusions are also supported by Harper et al. (1978).
Electronic filtering and amplitude controlling devices are used to remove certain key frequencies of the voice so words can no longer be recognized. The sequence and rhythm of words are retained, while the pitch and intensity of the vocal pattern is removed (Rogers et al., 1971). Soskin and Kauffman (1961) found significant agreement between ratings of emotional content in normal tape recordings and electronically filtered recordings. Similar results were found when ratings of normal, electronically filtered and, randomly spliced speech were compared.

Rosenthal et al. (1979) notes that judges involved in research employing the electronic content filtering approach were able to accurately predict: (a) how a doctor's voice affected the willingness of alcoholic patients to enter treatment; (b) how a mother's voice affected the subsequent behaviors of her baby; and (c) what emotions were expressed in recordings of the 1954 Army-McCarthy hearings.

The randomized content splicing method was developed by Scherer (1971) and involves cutting and randomly splicing a predetermined number of small sections of a specified length of audio tape. This method complements the electronically filtered approach since the intensity and pitch of the original vocal pattern is maintained while the natural rhythm and sequence of the spoken word is destroyed (Scherer Koivumaki, & Rosenthal, 1972).

Scherer (1971) analyzed a number of studies employing the randomized content splicing method in investigating paralinguistic expressions and personality. Judges consistently agreed on ratings of speakers' personality traits and voice qualities. These judges'
ratings of the speaker's personality consistently correlated with ratings obtained from the speaker's peers. Bugenthal, Henkes, and Walens (1976) documented that individuals with internal locus of control beliefs convey their assertiveness through vocal intonation, while externally oriented subjects express their assertiveness through verbal content. These authors suggest that verbal content reflects individuals' beliefs in the amount of assertiveness required to be effective, but it is the vocal intonation that conveys the effectiveness of the individual. Scherer (1971) notes that speech samples masked by randomized splicing may carry relevant information about stable personality traits as well as transitory emotional states.

Nonverbal Research — Body. The role of the body in transmitting nonverbal communication of emotional expression has received less research attention than voice and face. Researchers have investigated the effects of touching behaviors, hand and arm gestures, body positions and postures, interpersonal space, and body movements on communicative aspects of the body.

Morris (1977), Knapp (1978), and Henley (1977) studied the importance of the power of touch on nonverbal communication of emotions. Patterns of touching are dependent on sex, age, status, and relationship. The role of the body in emotional expression independent from these factors remains unclear. Researchers studying body posture, position, and movement typically focus on patterns of movement and areas of muscular contraction in their analysis of emotional expression (Weitz, 1979; Jones, 1976; Lowen, 1958, 1975;
Townsend, 1976; Feldenkrais, 1972, 1979). These researchers purport that the body communicates the emotional state of the person.

The difference in interpersonal space and the importance that distancing has in understanding emotional communication has been delineated by Hall (1959, 1966, 1976). Scheflen (1972) describes the characteristic patterns of bodily communication in social settings and such specific places as the psychotherapist's office. Mahl (cited in Weitz, 1979) documents the relationship between nonverbal gestures and psychological states in psychotherapeutic settings.

Birdwhistell (1970) has conducted extensive studies of body communication using anthropologically based research methods. Minute details of interpersonal interaction in natural settings are captured on film. The analysis of short film segments has convinced Birdwhistell that rules govern nonverbal expression much in the same way that rules govern language. Additionally, film data gathered from a variety of cultures lends support to his notion that nonverbal behavior is culture specific with few expressions being universally shared and used.

Ekman and Friesen (1969), conducting research on the use of hands and arms, developed five categories of body movement. Emblems are movements that are substituted for words. Movements that occur with speech patterns and modify, accent, or punctuate speech activities are illustrations. Regulator movements signal a change or maintain listening/speaking roles. Affect displays are such movements as facial expression while adaptors are self or object manipulations related to individual needs or emotional states.
Using these five categories, Ekman and Friesen (1975) examined judges' evaluative responses to pictures of the face only, body only, and face and body. They found that the face is the primary channel decoded for the evaluation of the emotion being expressed. The intensity of the emotional expression is determined by decoding the movements of the body. Rosenthal et al. (1979), in a similar study, noted that judges are more accurate in decoding negative emotions from facial expressions than from the body.

Zuckerman et al. (1975) reviewed a number of nonverbal decoding studies and drew four conclusions based on consistent research findings on several nonverbal channels. These researchers concluded that: (a) some emotions can be accurately decoded from pictures or films of the face and/or body as well as from audio recordings; (b) the various nonverbal channels are not equally easy to decode, with consistent evidence that the face is easier to decode than the body; (c) the range of emotions are not equally easy to decode; and (d) individual differences in their ability to encode and decode nonverbal expressions of emotions.

Nonverbal Decoding:

Gender, Cognitive, Psychosocial Variables

Nonverbal Decoding - Gender. In the study of nonverbal communication, gender has always been considered to be an important variable. This importance stems from the possibility of formulating predictions based on gender role stereotypes and folk beliefs about women's intuition (Hall, 1978). Numerous studies examining the
relationship between nonverbal decoding ability and gender have provided inconsistent findings (Weisgerber, 1956; Davitz, 1964; Taguiri, 1969; Gitter, Kozel, & Mostofsky, 1972).

Hall (1978), cognizant of the incongruent nature of the findings on gender and decoding ability, conducted a meta-analysis of all known research dealing with this topic. Studies involving the PONS were excluded from her analysis. In 80 percent of the studies where direction of differences could be determined, females were more accurate than males in decoding tasks. The sex of the encoder had little effect on decoding ability as females were more accurate than males in 81 percent of the studies using encoders of both sexes. Females were also more accurate than males in 78 percent of the studies with female encoders and 80 percent with male encoders. When specific channel accuracy was examined, females were more accurate than males in 82 percent of the studies involving visual cues only, in 57 percent of studies presenting audio cues only, and in 100 percent of the studies using both audio and visual cues.

Rosenthal et al. (1979), using the PONS, supported the findings of Hall's meta-analysis. Females were consistently more accurate than males on all channels of the PONS regardless of age levels. Both sexes experience the largest gains in nonverbal decoding skills between the ages of eight and twenty-five. These skills appear to level off between twenty and thirty years of age and decline slightly in persons aged thirty or more. Eighty percent of the PONS studies indicate that females have consistently higher channel and total scores than males. This is comparable to Hall's (1978) earlier
findings of non-PONS decoding investigations. Fujita, Harper, and Wiens (1980) examined male and female decoding of spontaneous and enacted nonverbal behavior using a slide-viewing paradigm developed by Buck (1979). Once again females proved to be superior decoders.

Hall and Halberstadt (1981) attempted to explain the difference in the decoding ability of males and females sexes by examining sex role variables. Their analysis of eleven studies on the relationship between nonverbal decoding ability and sex roles revealed that more "masculine" people tended to be better decoders. Those women who were more "liberated" according to several indices were better decoders than traditional women. It would seem that the determinants of female overall superiority at nonverbal decoding rests not with sex role variables, but with other variables which have yet to be determined.

Nonverbal Decoding - Cognition. The relationship between nonverbal decoding accuracy and cognitive variables such as general intellectual ability and cognitive styles has received limited attention in nonverbal decoding investigations. In the past researchers found a positive, but nonsignificant relationship between the ability to correctly judge nonverbal cues and various measures of intelligence (Guilford, 1929; Kanner, 1931; Weisgerber, 1956; Davitz, 1964). More recently Rosenthal et al. (1979) examined the relationship between PONS total scores and scores on measures of IQ, SAT, school achievement, and vocabulary. From their findings they concluded that general intelligence does not directly influence nonverbal decoding ability.
This group of researchers also investigated the impact of cognitive styles on decoding accuracy. Using a measure of cognitive complexity (that aspect of an individual's personality that might be expected to influence his or her ability to discriminate behavioral information), they reasoned that people who use more complex cognitive styles would be better able to integrate a number of nonverbal cues to arrive at an accurate perception of the affect displayed by an encoder. An overall tendency for more cognitively complex subjects to score higher on the PONS total was demonstrated.

**Nonverbal Research - Psychosocial.** The effect of psychosocial variables on nonverbal decoding accuracy have been documented by Rosenthal et al. (1979). Several findings were documented from comparisons of responses to the PONS and the following psychosocial measures: (a) California Psychological Inventory; (b) Personality Research Form; (c) the Marlowe-Crowne Social Desirability Scale; (d) the Dogmatism Scale; (e) Feidler's Least Preferred Co-Worker Test; (f) the Minnesota Teacher Attitude Inventory; and (g) the Study of Values.

In examining the relationship between responses to the PONS and such measures as the CPI, the Personality Research Form, and the Marlowe-Crown Social Desirability Scale several interesting findings emerge. When the PONS and CPI scores were examined the results indicated that those who scored high on the PONS (i.e. demonstrating a high degree of decoding ability) also scored high on sense of well being, socialization, and communality scales. The ability to accurately decode nonverbal expression may thus be related to confidence and social maturity (Rosenthal et al., 1979).
Work with the Personality Research Form demonstrated that people with a high need for social approval and acceptability scored low on the PONS. This suggests that these people may not perceive others accurately, therefore they rarely satisfy their need for approval. These results confirm earlier findings by Buck (1976) and Mehrabian (1972) who, using the Marlowe-Crowne Social Desirability Scale and measures of nonverbal decoding ability other than the PONS, found that those persons with a high need for social acceptance were poor at decoding nonverbal expressions. Rosenthal et al. (1979), however, found no consistent relationship between scores on the PONS and scores on the MCSDS.

Comparisons made between the PONS and the Dogmatism Scale indicate that higher scores on the PONS were obtained by individuals who scored low in dogmatism. The PONS total score was found to have an inverse relationship with the Least Preferred Co-Worker Scale, suggesting that subjects whose leadership style is task oriented tend to score higher on the PONS total. High scores on democratic attitudes toward children as measured by the Minnesota Teacher Attitude Inventory were associated with high PONS total scores. Comparisons were drawn between scores on the PONS and the Study of Values. High PONS total scores were related to high scores on the scales of Religious and Social Values, while low scores on the PONS total were associated with high scores on Theoretical Values.

Harmon (1982) examined the relationship between the PONS and the Meyers-Briggs Type Indicator. His findings indicate that three of the four psychological types (extroversion-introversion,
sensing-intuition, and judging-perceiving) are not related to nonverbal sensitivity. The fourth aspect of psychological type, thinking-feeling, does appear to be related to nonverbal sensitivity. Females scored higher on the PONS as their strength toward feeling on the MBTI T-F scale increased. Males, who scored higher on the PONS, tended to score higher in the thinking direction of the T-F scale.

**Summary of Chapter Two**

The background of this study has been presented in Chapter Two. The first section consisted of literature related to bulimia and included an overview of the concept of bulimia and research on the classification, incidence, prevalence, frequency, duration, and physiological effects of the disorder. A composite profile and personality characteristics common to persons with bulimia were outlined along with a discussion of treatment strategies.

In the second section a synopsis of the locus of control literature was discussed beginning with an overview of the concept of locus of control. Characteristics of internal-external expectancies, antecedents of locus of control beliefs, and the relationship of locus of control to physical and psychological health were subsequently reviewed.

The third section included an overview of nonverbal decoding research; nonverbal research related to face, voice, and body; and the effects of gender, and cognitive and psychosocial variables on nonverbal decoding.
CHAPTER III

METHODOLOGY OF THE STUDY

This investigation examined the personality construct locus of control and nonverbal decoding accuracy among bulimic females in an out-patient setting. Two instruments, the Adult Nowicki-Strickland Internal-External Scale and the Profile on Nonverbal Sensitivity, were administered to four groups of 30 females. These groups included bulimic women in outpatient counseling and the following three comparison groups: (a) women in counseling for concerns other than eating disorders; (b) women involved in a diet program; and (c) women representing a nontreatment comparison group.

The following research questions were addressed in the investigation:

1) Are females with bulimia more external in locus of control than females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?

2) Are females with bulimia as accurate in decoding nonverbal expression as females in counseling for problems other than eating disorders, females participating in a
diet program, and females representing a nontreatment comparison group?

3) What relationship exists between locus of control and nonverbal decoding ability among females with bulimia, females in counseling, females in a diet program, and females representing a nontreatment comparison group?

4) What combination of personality and demographic characteristics under study best discriminates among the four groups?

The focus of this chapter is on the selection and description of subjects, the conditions and procedures of testing, scoring and data entry, the instruments, and the statistical procedures employed in the testing of the research questions.

Selection of Subjects

The investigation took place in a large midwestern city where a major university and several small colleges are located. One hundred and twenty white females ranging in age from 15 to 32 participated in the study on a volunteer basis. Only white females were included because of the very low incidence of bulimia among ethnic minority groups such as Blacks and Orientals. Males were also excluded because few males are currently seeking counseling for problems with bulimia. All participants indicated that their families of origin were of middle to upper socioeconomic status. Each woman included in the study met certain criteria for inclusion in one of four groups.
Group I was composed of females currently receiving counseling on an outpatient basis for treatment of bulimia. Subjects received their counseling services from a clinic specializing in the treatment of eating disorders, a community mental health center, or private practitioners. These services consisted of either individual or group counseling. Subjects had participated in at least four counseling sessions prior to their involvement in the study.

Members of Group II represented females who were in counseling for problems other than eating disturbances. These problems included alcohol abuse, anxiety, depression, marital and family problems, and personal adjustment concerns. The subjects had been in individual, group, or family counseling for at least four weeks with counselors at community mental health centers or with private practitioners.

Subjects in Group III were actively participating in formal diet programs and expressed concern about their weight. The weight-control programs consisted of reducing diets which were nutritionally sound and well-balanced. Dieters were able to receive daily to weekly nutrition counseling and education from individuals trained in providing such consultation. These consultations were either on an individual or group basis.

Group IV participants were solicited from students enrolled in a university's baccalaureate and master's degree programs in nursing. Those subjects younger than 19 were sisters of nursing students. When younger sisters agreed to participate in the study, their older sisters were excluded. All subjects indicated that they were not concerned about their weight, were free of any problems related to
anorexia nervosa and bulimia, and denied any past or present clinical counseling experiences.

Description of Subjects

Group I – Bulimic Women.

The Group I sample was comprised of females whose average age was 20.7 (s = 2.88). These individuals came from families where the number of siblings varied from one to seven. The average number of brothers was 1.5 (s = 1.01) and sisters was 1.0 (s = 1.07). When asked about religious affiliation, 60% identified their faith as Protestant, 33.3% as Roman Catholic, and 6.6% as other or none. Responses to marital status inquiries indicated that 90% of these females were single, 6.7% were married, and 3.3% were divorced.

Inquiries concerning educational level revealed that 73% of the sample reported a minimum of "some" college. Those who had graduated from a four year program comprised 13.3% of this group. The remaining 26.7% reflected that portion of the sample still young enough to be attending high school. Information solicited about roles indicated that 83.4% of the sample reported their role as student or wage earner and student, while the remaining subjects identified their role as wage earner or wage earner and homemaker. Questions about living arrangements revealed that 90% of these subjects lived with at least one other person. The remainder lived alone.

The majority of the subjects began binging and purging in their adolescent years, particularly between the ages of 14 and 18. The
most frequently reported number of binges per week was seven, but the number of binge-purge episodes ranged from 1 to 28. This estimate may be less than the actual number of binges because most bulimics under-report the number of binge-purge incidences (Mitchell et al., 1980). For 27 of the subjects, vomiting was used either alone or in conjunction with laxative abuse, excessive exercise, and sleep as methods for terminating a binge. The remaining three resorted to laxative abuse and excessive exercise to offset weight gain from binging. The average weight of this group was 119.6 lb. (s = 15.48), while the average height was 63.3 in. (s = 2.47). The length of counseling varied from 4 to 78 weeks with an average length of 21.6 weeks. Eight of the 30 subjects were previously diagnosed as having anorexia nervosa but were no longer anorexic. All subjects participated in individual or group counseling.

Thus, the typical bulimic participating in this study could be characterized as a white, single, college-educated individual, in her early twenties who comes from a middle to upper class family with more than one child. The majority began binging and purging during their middle teens and most rely on vomiting as a method for terminating binges and countering weight gain.

**Group II - Women in Counseling.**

The sample of females comprising Group II were on the average 27.2 years of age (s = 4.18). Their families varied in size from one to nine siblings. The average number of brothers was 1.3 (s = 1.24) and sisters was 1.9 (s = 1.77). Inquiries about religious affiliation
revealed that 50% of the subjects were Protestant, 40% were Roman Catholic, and 10% indicated no religious affiliation. Information gathered on marital status revealed that 66.7% of these females were single, 13.3% were married, and 20% were divorced.

When asked about educational level, 90% of the subjects reported "some" college. Of that 90%, 36.7% had graduated from a four year program. The remaining 10% were either in high school or had graduated from high school. Responses to questions about role indicated that 73.3% identified their role as wage earner or wage earner and homemaker. The rest described their role as student, student and wage earner, or student, wage earner, and homemaker. When questioned about living arrangements, 54.3% revealed that they lived with at least one other person, while the remaining 46.7% lived alone. The average weight of the sample was 132.1 lb. (s = 27.40), and the average height was 64.6 in. (s = 2.41).

Nine of the subjects indicated they had entered counseling for treatment of depression. Fifteen were receiving counseling for depression and anxiety or other adjustment reactions to a life event such as a death, divorce, or dissatisfaction with a career. The other six subjects identified their reason for counseling as anxiety, alcohol dependency, personal development, or family problems. Twenty-six subjects were involved in individual counseling, four of whom were also participating in group counseling. The remaining four were involved in marital or family counseling. The length of counseling ranged from 4 to 152 weeks, with an average of 41.4 weeks.
Group III - Women in Diet Program.

Group III was composed of females whose average age was 25.2 (s = 4.18). Their families ranged in size from one to eight siblings. The average number of brothers was 1.20 (s = 1.35) and sisters was 1.6 (s = 1.36). Responses to questions about religious affiliation revealed that 50% of the subjects were Roman Catholic, 46.7% were Protestant, and 3.3% were Jewish. Information solicited about marital status indicated that 73.3% of these females were single, 23.3% were married, and 3.3% were divorced.

Inquiries about educational level revealed that 77.7% had a minimum of "some" college, with 33.4% having graduated from a four year program. The remaining 23.3% were either still in high school or had graduated from high school. When questioned about roles 56.6% indicated their role was student or student and wage earner. Those who identified wage earner or wage earner and homemaker as their role comprised 36.7% of the sample, while the other 6.7% were homemakers. Approximately 93% of the group lived with at least one other individual, while 7% lived alone.

The average weight of this group was 149.4 lb. (s = 25.70), and the average height was 64.2 in. (s = 4.93). The age of the onset of the weight problem ranged from 1 to 31 years of age and the length of the problem varied from 1 to 31 years. The desired amount of weight loss ranged from 5 to 120 pounds. All subjects were involved in a diet program where balanced nutrition, calorie restriction, and exercise were stressed. Twenty-two of the individuals received individual guidance in dieting, while eight participated in a group
support format. Twenty-four of the individuals had been involved in at least one other diet program prior to the current diet program.

**Group IV - Nontreatment Comparison.**

The average age of subjects comprising Group IV was 21.8 (s = 3.32). They came from families where the number of siblings varied from one to five, and where there was an average of 1.2 brothers (s = 1.06) and 1.4 sisters (s = 1.04). Approximately 67% of these subjects were Protestant, 31% were Roman Catholic, and 3% were Jewish. Inquiries about marital status revealed that 86.7% were single and 13.3% were married. Approximately 87% of this sample indicated they had a minimum of "some" college, with 36.7% having graduated from a four year program. The remaining 13% were still in high school or had graduated. Sixty percent of the subjects were students and 33.3% were wage earners and students, and 3.3% were wage earners and homemakers. The large percentage of students is accounted for by the fact that this sample was obtained from students who were enrolled in a baccalaureate or master's program in nursing. When questioned about living arrangements, 97% indicated they lived with at least one other person. The average weight of the sample was 130.2 lb. (s = 15.97), and the average height was 65.0 in. (s = 15.97). A full description of the group characteristics, including chi-square and ANOVA results, can be found in Tables 10 through 22 in Appendix B.
Comparison of Groups.

Similarities and differences among the four groups were determined through the use of chi-square analysis and one-way analysis of variance. There were no significant differences among the groups on such personal and demographic variables as religion, educational level, birth order, number of brothers, number of sisters, and height. Chi-square analysis revealed significant differences existed among the groups for marital status, income, living arrangements, and role. An examination of the findings for marital status revealed that Groups II and III had a higher incidence of being married or having been married than did Groups I and IV. Group II had the highest rate of divorce among the four groups. Findings for living arrangements indicated that members of Groups I, III, and IV were more likely to live with at least one other person, while a significant portion of Group II lived alone. Group I and Group II were similar in defining their roles as student or wage earner and student. Group III frequently identified wage earner, student, or wage earner and student as their role. Group II subjects most frequently selected wage earner. Significant differences existed between Group II and Groups I, III, and IV on income level. Only 20% of Group II indicated an income level of $30,000 or more, while 60% of Group III, 70% of Group I, and 83.3% of Group IV reported annual incomes equal to or greater than $30,000. This difference can be explained by the fact that Groups I, III, and IV reported family incomes of parents or spouses, while a large portion of Group II members reported solely their own income.
Differences were found to exist for the age and weight variables among the four groups as determined by one-way analysis of variance. Duncan's Multiple Range follow-up procedures revealed a significant difference in age between Groups I and IV and Groups II and III. Members of Group I and IV tended to be in their early 20's, while subjects in Groups II and III were generally in their middle to late 20's. The Duncan follow-up procedure was also employed in examining the differences among the groups on the weight variable. The average weight of Group I was significantly less than the three other groups, while the average weight for Group III was significantly greater than the other three groups. There was no significant difference in weight for Groups II and IV. The smaller weight of Group I is explained by the vigilant attention given to weight by most bulimics. This population generally uses purging and calorie restriction to offset weight gain from binging. The significantly larger weight of Group III is accounted for by the fact that this group is composed of women who are overweight and dieting.

Conditions of Testing

All rooms used in the data collection were of adequate size to allow small groups of subjects to complete the data sheets and view the videotape. The groups ranged in size from two to five people. Members of Group I and Group II participated in the study at the counseling centers where they receive counseling. Data was gathered from Group III participants at their particular diet center or at the counseling center closest to their home.
seminars was selected as the site for gathering data from Group IV members. This room more closely approximated the type of rooms used at the counseling and diet centers than did a regular classroom.

All rooms were properly ventilated and seating arrangements were flexible enough to allow subjects to adjust their seating for optimal viewing of the television monitor. Full lighting was used during the administration of the Personal Data Sheet, Questionnaires A, B, or C, and the Adult Nowicki-Strickland Internal-External Scale. Lights were dimmed for the administration of the PONS. This facilitated viewing the television monitor while still allowing for adequate lighting for paper and pencil responses. All settings were quiet, and there were no interruptions during the data gathering procedures.

The PONS was purchased from Irving Publishers on Beta II videotape, and transferred to a U-Matic three-quarter inch 60 minute videocassette and a VHS 60 minute videocassette by the University's Learning Resource Center. Groups I, II, and III viewed the PONS with a Sony videocassette recorder and a 19-inch MGA television. Group IV viewed the PONS with a Panasonic Videocassette Recorder and a 19 inch RCA television. Volume settings for monitors were placed at approximately the same volume for all administrations. All subjects verbally indicated that the volume was at a level easy to hear.

Testing Procedures

At the time of data collection the subjects received a standard presentation summarizing their involvement in this study. Subjects were then asked to read and sign their consent forms. These forms
were witnessed and collected by the investigator who conducted the data gathering for each of the one hundred and twenty subjects. All subjects were given data packets enclosed in manilla portfolios. Each portfolio had an assigned number indicating a specific group and subject number. Participants were instructed to remember that number when requesting the results of their responses to the instruments as no master copy of names and numbers was kept. This method insured confidentiality of subjects' responses.

Subjects were then asked to complete the Personal Data Sheet and the appropriate group questionnaire soliciting specific descriptive information. Subjects in Group I responded to a questionnaire about their history with bulimia and their counseling experience. The questionnaire for Group II was designed to gather information about the counseling experiences of members of this group. Subjects in Group III were asked to provide information about their weight loss history and their experiences with weight loss programs. No additional questionnaire was given to the nontreatment comparison subjects in Group IV as the Personal Data Sheet provided all needed information.

Following the completion of these questionnaires all groups were asked to complete the AN-SIE. Subjects were read instructions for completing the AN-SIE instrument and asked to complete this instrument at their own pace. This task was generally completed within ten minutes.

Finally, subjects were asked to respond to the PONS. Following procedures outlined in the PONS manual (Rosenthal et al., 1979b), the
standardized test instructions were read to the subjects. The PONS was then administered in an uninterrupted manner. Participants were instructed to return their data to their manilla portfolios at the completion of the data gathering. These portfolios were collected by the investigator. Subjects were then given a more detailed explanation of the investigation.

Scoring and Data Entry

The Adult Nowicki-Strickland Internal-External Scale was hand scored by the investigator following procedures outlined in a handout that accompanied the instrument. All scores were double checked by a second individual trained to score the AN-SIE. The Profile on Nonverbal Sensitivity was computer scored by the Educational Computer Service, Inc. in Trenton, New Jersey. Information gathered from the Personal Data Sheets and Questionnaires was compiled by the investigator. Data from the AN-SIE, the PONS, Personal Data Sheets, and Questionnaires were coded and transferred to computer cards in a format amenable to SPSS analysis.

Instruments

Both the Adult Nowicki-Strickland Internal-External Scale and the Profile on Nonverbal Sensitivity are described in this section. The reliability and validity for each instrument are discussed.

Adult Nowicki-Strickland Internal-External Scale

The AN-SIE is a 40-item, yes or no answer instrument that assesses the locus of control of reinforcements for an individual
These reinforcement situations occur across interpersonal and motivational areas such as achievement, affiliation, and dependency. The instrument evolved from a children's form originally developed by Nowicki and Strickland (1973). The scale was developed to overcome shortcomings frequently associated with the Rotter Internal-External Locus of Control Scale. These shortcomings include the relationship between the Rotter scale and social desirability, the tendency of the scale to confound different types of locus of control, high reading level, and problems in administering the instrument to large groups of people (Nowicki & Duke, 1973). The Rotter scale was designed for a college age or older population, while the AN-SIE can be used with adolescents as well as older groups.

Data gathered from 766 subjects in 12 separate studies support the AN-SIE as being psychometrically sound (Nowicki & Duke, 1973). Split-half reliability ranged from .74 to .86, while test-retest reliability over a six week period was reported as $r = .83$. Chandler (1976) found that over a seven week period this reliability was .65. Finally, Mink (1976), using community college students, reports test-retest reliability over a one year period as $r = .56$.

Both discriminative and construct validity have been documented for this instrument. Nowicki and Duke (1973) determined that scores on the AN-SIE were not related to social desirability as measured by the Marlowe-Crown Social Desirability Scale ($r = .10$, $n = 48$). Nemec (1974), and Quinn (1974) also found the AN-SIE was not related to social desirability. Documentation of this lack of relationship is particularly important in light of the fact that the Rotter
Internal–External Scale is frequently criticized for the influence of social desirability on responses to that instrument. Chandler and Dugovic (1977) found the AN-SIE measures essentially the same content for locus of control for males and females.

Duke and Nowicki (1974) investigated the relationship between AN-SIE scores and academic achievement. Using the Scholastic Aptitude Test, these researchers found little relationship between AN-SIE scores and performance on the SAT ($n = 48, r = .11$).

Construct validity for the AN-SIE is documented by determining the existence of a significant relationship between this new instrument and other well established measures and by defining the construct more accurately than previous scales. Nowicki and Duke (1973) report a significant positive correlation between the AN-SIE and the Rotter Internal–External Scale ($r = .68, df = 47, p < .01$). Remainis (1974) and Jones (1976) also document significant correlations between these two instruments.

Duke and Nowicki (1973) determined that the pattern of correlations between the AN-SIE and the Adjective Checklist is in the same direction and approximate degree as are correlations for the Rotter Internal–External Scale and the Adjective Checklist. This suggests that the AN-SIE and the Rotter instrument are measuring the same dimension but not to the degree where they would be considered identical.

Nowicki and Duke (1973) reasoned that if the AN-SIE is an accurate measure of locus of control of reinforcement then subjects who score in an external direction should evidence more maladaptation.
than internals. They found externality on the AN-SIE is indeed positively correlated with higher Neuroticism scores on Eysenck's scale (Males, r = .36, df = 35, p < .05; females, r = .32, df = 46, p < .05) and with Anxiety scores as measured by the Taylor Manifest Anxiety Scale (males, r = .34, df = 35, p < .05; females, r = .40, df = 46, p < .05).

Profile on Nonverbal Sensitivity

The PONS is a standardized measure of nonverbal decoding accuracy developed by Rosenthal and his associates at Harvard University (Rosenthal et al., 1979). The 47-minute, black and white, audio-visual videotape presents a series of 220 two second, randomly ordered scenes portrayed by a young woman. These scenes represent eleven channels of nonverbal communication across four affective quadrants. The scenes consist of visual information only, auditory information only, and combinations of visual and auditory information. The affective quadrants include positive, negative, submissive, and dominant affective expressions.

Respondents are asked to view and/or listen to each numbered scene and select one of two supplied descriptions which best describes the scene. Each scene is followed by a measured pause so the respondent can make and record decisions. This instrument can be administered individually or to a group of people.

Although the development of the PONS has eliminated many problems associated with previous nonverbal decoding research instruments, several limitations have been identified (Rosenthal et al., 1979). The scenes in the PONS are context-free. Persons normally use
information from a variety of sources in the process of making a
decision about a specific context. The viewer receives no information
regarding the setting, prior history, or situational antecedents of
the scene. Knowledge of the onset and duration of the specific
message being portrayed are also lacking. In this particular
instrument, nonverbal communication is isolated into specific channels
for analysis. The isolation of nonverbal behaviors limits the
nonverbal cues available to the decoder and alters the natural way in
which people receive nonverbal cues in everyday life.

The masking of verbal information (words) through techniques of
content filtering and random splicing eliminates the normally
occurring relationship between words and nonverbal qualifiers. This
procedure allows the decoder to focus exclusively on the nonverbal
aspects of communication unlike real life situations. The PONS film
measures only eleven channels of nonverbal communication, focusing the
assessment on encoding behavior of the face, body, trunk, and voice.
Nonverbal cues such as space, eye contact, skin color, and olfaction
are omitted from this assessment. The PONS is also a measure of
decoding only. In the actual face to face interaction, an individual
is both an encoder and decoder of nonverbal cues. Both of these
abilities are probably important factors in determining the outcome of
an interaction.

Posed scenes rather than spontaneous portrayals are used in the
PONS instrument. The effect of posed portrayals on nonverbal accuracy
is unknown. Finally, viewers are rated on their ability to recognize
a manifest level of emotion rather than interpret the true state of an
encoder as would occur in a real life situation.

The normative data for the full PONS was gathered from a sample of 492 subjects (Rosenthal et al., 1979). The instrument has an overall internal consistency reliability of .92 as measured by Armor's Theta and a .86 as measured by Kuder-Richardson (KR-20) method. Reliability for each of the eleven channels and four quadrants was also determined. These findings ranged from .78 to .94 with the exception of electronically content filtered speech where $r = .56$. A further examination of the PONS revealed that negative affect was more reliable than positive affect ($F(1,11) = 8.75, p < .05, r = .66$), and dominant affect was more reliable than submissive affect ($F(1,11) = 9.60, p < .05, r = .68$). Test-retest reliability or the stability of the instrument over time was determined from six samples with test-retest intervals of ten days to ten weeks (Rosenthal et al., 1979). The overall test-retest reliability is reported to be $r = .69$ (median $r$ for six samples).

Construct validity is established by correlating scores of the test in question with scores from other standardized tests. Rosenthal et al. (1979) suggest that personality measures with high construct validity have a near-maximum criterion validity correlation coefficient of approximately .30. Larger coefficients would indicate overlap in measurement of the same construct. Support for the construct validity of the PONS was obtained through data generated from hundreds of PONS studies, where on the average, the criterion and discriminant validity coefficients fell in the upper limit of .30, and correlations with variables that should be less correlated such as IQ
were suitably low. Copies of the two instruments, the Personal Data Sheet, and the questionnaires used to gather information are located in Appendix A.

Data Analysis

Categorical data gathered from the demographic and personal variables were analyzed with frequency chi-squares. This analysis helped to assess the relationship that existed among the distribution of subjects for each of the categorical demographic and personal variables. Means and standard deviations for each of the ratio-level demographic variables were subjected to one way analysis of variance. The SPSS Crosstabs and One-way Programs were used for these analyses.

Research questions 1 and 2 were addressed through the use of a one-way multivariate analysis. This statistical procedure determines how the independent variable accounts for differences on the canonical variates. In this investigation, the independent variable was group membership and the dependent variables were locus of control score and PONS total score. Univariate F-tests for each of the dependent variables were performed and orthogonal comparisons identified any statistical differences which existed between Group I and each of the other groups. The SPSS MANOVA program was used for this section of the analysis.

Pearson product-moment correlations were used to address the third research question. The correlation coefficient is an index that describes the extent to which two sets of data are related. Both the direction and magnitude of the relationship is determined by this
statistic. In this investigation the correlation between the locus of control variable and PONS total was computed for each of the four groups.

The fourth research question was addressed with a stepwise multiple discriminant analysis. The locus of control score, the PONS total score, and nine demographic variables (age, birth order, height, weight, number of brothers, number of sisters, marital status, income, and educational level) were selected to be the discriminators of group membership. A discriminate analysis is performed in order to arrive at the combination of variables which most effectively maximizes the differences between the four groups of subjects under investigation.

Wilk's lambda was selected as the criterion for the analysis because the variable which is chosen to enter the analysis at each step is the one which would maximize the multivariate F-ratio between the group centroids. The discriminant functions derived were then tested to determine how effectively they classified the subjects within the four groups under investigation. The classification method selected for the analysis used pooled within-group covariance matrix to arrive at the group assignments. The SPSS Discriminant program was used during this portion of the analysis.

Summary

The methodology employed in this study was described in this chapter. The findings of the investigation are presented in Chapter IV.
CHAPTER IV

FINDINGS

The results of the statistical analyses are presented in this chapter. The intent of this study was to examine the differences and similarities that existed for the personality construct locus of control and nonverbal decoding accuracy among four groups of women. These groups included bulimic women in counseling, women in counseling, women in a diet program, and women representing a nontreatment comparison group. A one-way MANOVA was used to statistically address the first two research questions, Pearson product-moment correlations were used to address the third question, while the last question was addressed with a discriminant analysis.

The specific research questions posed were as follows:

(1) Are females with bulimia more external in locus of control than females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?

(2) Are females with bulimia as accurate in decoding nonverbal expression as females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?

(3) What relationship exists between locus of control and nonverbal decoding accuracy among females with bulimia, females in counseling, females in a diet program, and females representing a nontreatment comparison group?
(4) What combination of personality and demographic variables under study best discriminates among the four groups?

Multivariate Analysis of Variance Results

The MANOVA procedure was selected as a statistical technique used in this investigation because it allows for the simultaneous consideration of more than one dependent variable. Univariate statistics test the null hypothesis by determining significant differences among group means. Multivariate techniques test the null hypothesis, through matrix algebra, by examining the differences among the vectors of group means. These vectors contain all the scores of the dependent variables, thus permitting the simultaneous test of all the measures (Leary & Altmaier, 1980). The MANOVA procedure is useful in protecting against the high probability of committing a Type 1 error which can occur when multiple ANOVA's are performed. Wilk's lambda rather than Pillai-Bartlett V was selected as the test statistic because the differences between the groups was heavily concentrated in one dimension of the data (Olson, 1979; Stevens, 1979). In this study, the independent variable was group and the dependent variables were locus of control score and PONS total score.

Are females with bulimia more external in locus of control than females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?

Are females with bulimia as accurate in decoding nonverbal expression as females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?
Inspection of the one-way MANOVA revealed a significant Wilk's lambda of .843 (approximate F (6,230) = 3.41, p < .003). The results of the MANOVA are presented in Table 1.

Table 1

MANOVA of Locus of Control and PONS Total by Group

<table>
<thead>
<tr>
<th>Source</th>
<th>Wilk's lambda</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>.843</td>
<td>6, 230</td>
<td>3.41</td>
<td>.003</td>
</tr>
</tbody>
</table>

The use of MANOVA dictates that for any univariate analysis of variance (ANOVA) test to be considered significant, the corresponding multivariate test must first prove to be significant (Leary & Altmaier, 1980; McKee & Smouse, 1983). Univariate F tests were selected as the follow up procedure because in this investigation the dependent variables of interest are considered conceptually independent (Biskin, 1980). At the univariate level, a significant differences among groups (F (3, 116) = 6.10, p < .001) was observed for the locus of control variable but not for PONS total. Table 2 depicts the means and standard deviations for the locus of control variable and PONS total for each of the four groups. Table 3 depicts the results of the Univariate F test for the locus of control variable and PONS total.
Table 2
Means and Standard Deviations of Locus of Control and PONS Total for Groups

<table>
<thead>
<tr>
<th>Locus of Control</th>
<th>PONS Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Mean</td>
</tr>
<tr>
<td>I</td>
<td>12.40</td>
</tr>
<tr>
<td>II</td>
<td>11.23</td>
</tr>
<tr>
<td>III</td>
<td>8.17</td>
</tr>
<tr>
<td>IV</td>
<td>8.17</td>
</tr>
</tbody>
</table>

Table 3
Univariate Analysis of Variance for Locus of Control and PONS Total

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
<td>Group</td>
<td>3</td>
<td>420.0917</td>
<td>120.0306</td>
<td>6.10*</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>116</td>
<td>2664.9000</td>
<td>22.9733</td>
<td></td>
</tr>
<tr>
<td>PONS</td>
<td>Group</td>
<td>3</td>
<td>149.6667</td>
<td>49.8889</td>
<td>.74</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>116</td>
<td>7857.5333</td>
<td>67.7374</td>
<td></td>
</tr>
</tbody>
</table>

* p < .001
Orthogonal comparisons were performed comparing means for the locus of control and PONS total scores for Group I with the means of these variables for each of the other three groups. For the locus of control variable significant differences were found between the means of Group I and the means of Groups III and IV ($t (df, 58) = 3.42, p < .001$). No significant differences were found for PONS total when the mean of Group I was compared with the means of Groups II, III, and IV.

Correlation Results

Inspection of the correlation coefficients revealed no significant relationship between the locus of control and PONS total scores for members of Groups I, III, and IV ($r = -.09$, $r = .01$, and $r = -.09$ respectively). A significant negative relationship was observed between locus of control and PONS total for subjects in Group II ($r = -.36$). The results of this analysis are reported in Table 4.
Table 4

Pearson Product-Moment Correlations for
Locus of Control and PONS Total

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>30</td>
<td>-.09</td>
<td>.64</td>
</tr>
<tr>
<td>II</td>
<td>30</td>
<td>-.36</td>
<td>.05</td>
</tr>
<tr>
<td>III</td>
<td>30</td>
<td>.01</td>
<td>.98</td>
</tr>
<tr>
<td>IV</td>
<td>30</td>
<td>-.09</td>
<td>.65</td>
</tr>
</tbody>
</table>

Discriminant Analysis Results

The discriminant analysis is divided into two phases, analysis and classification. The discriminant functions and related statistics are derived in the analysis phase. The subjects are then classified into the four groups and the goodness of fit of the discriminant function equations are measured. A set of equations by which each subject can be classified into one of four groups is derived from the discriminant analysis program. The probability of group membership for each of the research groups is estimated for each subject. The accuracy, and thus the efficiency, of the classification is determined by verifying how many of the subjects were correctly classified.

A variation of the stepwise option in the SPSS Subprogram Discriminant, using Wilk's lambda variable selection method, was used in this analysis. The traditional stepwise analysis is designed to
examine each discriminating variable and select the variable at each step of the analysis that maximized the overall multivariate F-ratio. The variable which maximizes the F-ratio also minimizes Wilk's lambda, a measure of group discrimination. In this study a hierarchical ordering of the variables to be entered into the equation was established. The demographic and personal variables were entered into the equation first in a direct fashion. The two personality variables, locus of control and PONS total scores, were then allowed to enter the equation in a stepwise fashion. This procedure was designed to identify the additional contribution these two variables offered to the significance of the discriminant functions developed on the first set of variables.

What combination of personality and demographic variables under study best discriminants among the four groups?

After the nine demographic and personal variables entered the equation, only one of the two personality variables, locus of control, contributed enough to the discrimination to be entered into the equation. Table 5 presents the variables at the final step of the analysis, the F-value of the variable at the final step, and the Wilk's lambda associated with each step.

The final Wilk's lambda of .410 approximated a chi-square statistic with 30 degrees of freedom using Bartlett's approximation. The resultant chi-square of 99.85 (p < .001) indicated that the discrimination of the groups was statistically significant when the first discriminant function was used. The chi-square value of 42.43 (p < .001) with 18 degrees of freedom indicated that the second
discriminant function was also statistically significant. The third function was not significant as the chi-square value, based on 8 degrees of freedom, was 6.97 (p < .540).

The maximum number of discriminant functions in this investigation was three. This was determined by subtracting 1 from the number of groups involved in the study. The relative percentage of explained variance accounted for by each discriminant function is reflected in the eigenvalues. The square of the canonical correlations reflect that proportion of variance in the discriminant function explained by the groups. Both the eigenvalues and canonical correlations for each of the discriminant functions are presented in Table 6.
Table 5

Results of Stepwise Discriminant Analysis

<table>
<thead>
<tr>
<th>Step</th>
<th>Variables Entered</th>
<th>F</th>
<th>Wilk's Lambda</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Age</td>
<td>3.60</td>
<td>.739</td>
</tr>
<tr>
<td>2.</td>
<td>Birth Order</td>
<td>1.76</td>
<td>.730</td>
</tr>
<tr>
<td>3.</td>
<td>Height</td>
<td>1.80</td>
<td>.722</td>
</tr>
<tr>
<td>4.</td>
<td>Weight</td>
<td>10.16</td>
<td>.572</td>
</tr>
<tr>
<td>5.</td>
<td>Brothers</td>
<td>1.93</td>
<td>.554</td>
</tr>
<tr>
<td>6.</td>
<td>Sisters</td>
<td>1.54</td>
<td>.533</td>
</tr>
<tr>
<td>7.</td>
<td>Marital Status</td>
<td>0.05</td>
<td>.531</td>
</tr>
<tr>
<td>8.</td>
<td>Income</td>
<td>1.95</td>
<td>.494</td>
</tr>
<tr>
<td>9.</td>
<td>Education</td>
<td>0.87</td>
<td>.485</td>
</tr>
<tr>
<td>10.</td>
<td>Locus of Control</td>
<td>6.55</td>
<td>.410</td>
</tr>
</tbody>
</table>
Table 6

Derivations of Discriminant Functions

<table>
<thead>
<tr>
<th>Discriminant Functions</th>
<th>Eigenvalues</th>
<th>Canonical Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.670</td>
<td>.633</td>
</tr>
<tr>
<td>2</td>
<td>.372</td>
<td>.521</td>
</tr>
<tr>
<td>3</td>
<td>.064</td>
<td>.246</td>
</tr>
</tbody>
</table>

The relative percentage of variance explained by the discriminant functions indicates that the first function accounted for about 60% of the variance explained by the analysis. The relative ability of each of discriminant function to separate the four groups is reflected in the canonical correlations. In this study, the canonical correlations indicate that the first and second discriminant functions each have a much greater discriminant ability than the third function.

The loading of each discriminator variable entered in this modified stepwise analysis is represented by the discriminant function coefficients. When studying the standardized coefficients in the analysis, it should be noted that the first and second discriminant functions were more powerful than the third in discriminating among the groups. The standardized discriminant function coefficients for the ten variables are presented in Table 7.
Table 7

**Standardized Discriminant Function Coefficients**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Function 1</th>
<th>Function 2</th>
<th>Function 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.735</td>
<td>.533</td>
<td>.298</td>
</tr>
<tr>
<td>Birth Order</td>
<td>.479</td>
<td>-.270</td>
<td>-.078</td>
</tr>
<tr>
<td>Height</td>
<td>-.283</td>
<td>.223</td>
<td>-.535</td>
</tr>
<tr>
<td>Weight</td>
<td>.788</td>
<td>-.343</td>
<td>.458</td>
</tr>
<tr>
<td>Brothers</td>
<td>-.434</td>
<td>.100</td>
<td>.332</td>
</tr>
<tr>
<td>Sisters</td>
<td>-.297</td>
<td>.328</td>
<td>-.352</td>
</tr>
<tr>
<td>Marital Status</td>
<td>-.067</td>
<td>-.045</td>
<td>-.046</td>
</tr>
<tr>
<td>Income</td>
<td>.024</td>
<td>-.497</td>
<td>.203</td>
</tr>
<tr>
<td>Education</td>
<td>.329</td>
<td>.018</td>
<td>.319</td>
</tr>
<tr>
<td>Locus of control</td>
<td>-.495</td>
<td>.450</td>
<td>.585</td>
</tr>
</tbody>
</table>
A review of the standardized coefficients indicated that the first discriminant function was associated primarily with older age, greater weight, internality, higher birth order, and fewer number of brothers. The second function was associated with older age, lower income, and externality. Shorter height, externality, and larger weight were associated with the third function.

An examination of the centroids of the groups, reported in Table 8, assists in determining the manner and extent to which the three discriminant functions separated the four groups under investigation.

Table 8

**Centroids of the Four Groups**

<table>
<thead>
<tr>
<th>Group</th>
<th>Function 1</th>
<th>Function 2</th>
<th>Function 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-1.110</td>
<td>-0.138</td>
<td>.255</td>
</tr>
<tr>
<td>2</td>
<td>.147</td>
<td>1.012</td>
<td>-0.088</td>
</tr>
<tr>
<td>3</td>
<td>1.142</td>
<td>-0.347</td>
<td>0.201</td>
</tr>
<tr>
<td>4</td>
<td>-0.180</td>
<td>-0.527</td>
<td>-0.368</td>
</tr>
</tbody>
</table>

In reviewing Table 7, it is evident that the first discriminant function associated with older age, larger weight, internality, higher birth order, and fewer brothers, provided the greatest separation of the groups. Group III was most similar to the characteristics identified by the first discriminant function with Group I being the
most dissimilar. The second function, associated with older age, lower income, and externality, was strongly related to Group II. Group IV was most unlike these characteristics, but this was not very strong. Group I was most related to the third function which was associated with shorter height, externality, and larger weight. However, the discrimination among the other groups was, at best, weak.

The classification phase of the discriminant analysis involves the identification of the likely group membership of each subject when the only information known is the subjects' scores on the discriminator variables. The classification procedure was used in this analysis to test the efficiency of the derived discriminant functions. By classifying the subjects with the use of the discriminant functions derived in the analysis and comparing the predicted with the actual membership, the success in discrimination could be empirically measured by observing the proportion of correct classifications. The results of the classification of the four groups of females are presented in Table 9.
Table 9

Predicted and Actual Group Membership

<table>
<thead>
<tr>
<th>Actual Group Membership</th>
<th>n of cases</th>
<th>Predicted Group Membership</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Females- Bulimic</td>
<td>30</td>
<td></td>
<td>17</td>
<td>3</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>56.7%</td>
<td>10.0%</td>
<td>3.3%</td>
<td>30.0%</td>
</tr>
<tr>
<td>(2) Females- Counseling</td>
<td>30</td>
<td></td>
<td>5</td>
<td>20</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16.7%</td>
<td>66.7%</td>
<td>13.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>(3) Females- Dieters</td>
<td>30</td>
<td></td>
<td>0</td>
<td>7</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.0%</td>
<td>23.3%</td>
<td>43.3%</td>
<td>33.3%</td>
</tr>
<tr>
<td>(4) Females- Nontreatment</td>
<td>30</td>
<td></td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20.0%</td>
<td>10.0%</td>
<td>6.7%</td>
<td>63.3%</td>
</tr>
</tbody>
</table>

Percentage of cases correctly classified: 57.50%

Summary

In this chapter the findings of the research were reported. In Chapter V these findings are discussed, conclusions drawn, and recommendations based on the findings are presented.
A summary of the findings of the study, conclusions which can be drawn from the findings, and a discussion of the findings are presented in this chapter.

Summary

The practice of binging and purging has been traced to the Roman period of history. Members of the affluent classes routinely indulged in bulimia as it was considered a socially acceptable behavior. Prior to and throughout the centuries that followed this period, various cultures have embraced purging as a form of purification. During the late 1970's binge-purge activities have re-emerged among young, white, middle to upper class females. Lucus (1981) and Casper (1983) believe this return to bulimia coincides with changes in cultural and economic conditions. These changes include greater emphasis on the desirability of thinness in women, alterations in the role of women, and greater economic resources. Although the actual prevalence of bulimia is unknown, the disorder is considered to be widespread among women, particularly on college campuses (Domke, 1981; Halmi et al, 1981).
The early research efforts on eating disorders have centered on anorexia nervosa. Much of the work was directed toward identifying personality traits and descriptive social variables which discriminated between restrictor anorexics and anorexics who consumed large quantities of food, then purged. Subjects for these studies were generally drawn from hospitalized populations. In conducting this research, it became apparent that not all individuals who indulged in binging and purging were anorexic. Clinicians in outpatient settings also began to document the existence of bulimia among a nonanorectic population.

The initial research efforts on bulimia were directed toward classifying the disorder, identifying a common profile of the bulimic individual, and determining the frequency and duration of the binge-purge episodes. Much of the early research on personality characteristics of bulimic persons was accomplished by comparing these individuals with anorectic groups. Few research attempts were made to compare these groups to representative samples of a normal population. Several personality differences were found to distinguish the bulimic person from the anorectic person. This differentiation of personality characteristics between bulimics and anorexics has been useful, but it may be more helpful to determine the underlying psychological dynamics of bulimics by comparing samples of bulimic subjects with people representing a comparatively normal population. Certainly continued research efforts directed at identifying personality characteristics common to individuals with bulimia are needed.
In compliance with that need, this study examined locus of control and nonverbal decoding accuracy among females with bulimia. Comparisons of scores on instruments that assessed these areas were made between a group of females with bulimia and females in counseling, females in a diet program, and females representing a nontreatment comparison group. Much of the literature and research findings on bulimia is suggestive of a personality profile characterized as impulsive, dependent, passive, and conforming. These characteristics, along with poor health practices, are common to individuals who possess an external locus of control. Empirically substantiating the disposition of the individual with bulimia in terms of locus of control would provide support for developing counseling goals and treatment interventions for bulimia. It might also contribute to a better understanding of the emergence and maintenance of the disorder.

Bulimic individuals also tend to rely on others to validate their self-worth. This behavior leads one to question the accuracy of their perceptions of others. Persons with a great need for social approval and acceptance generally have difficulty in accurately perceiving others (Rosenthal et al., 1979). In particular, people who strongly value social acceptance are often poor at decoding nonverbal expressions (Buck, 1976; Mehrabian, 1972). Researchers and clinicians who work with bulimic clients have documented the tendency of these individuals to strongly value acceptance by others. No research has been conducted to identify the ability of these individuals to accurately identify and interpret nonverbal expressions. This
information would be useful in developing counseling goals and
treatment strategies.

The purpose of this study was to examine the similarities and
differences that existed for the personality construct locus of
control and nonverbal decoding accuracy among groups identified as 1) bulimic women in counseling, 2) women in counseling, 3) women in a diet program, and 4) women representing a nontreatment comparison group. A second purpose was to use the information obtained about these groups to draw conclusions and to make recommendations regarding counseling intervention in the treatment of bulimia. The focus of this research was self-reported data from nonhospitalized individuals.

The following research questions were addressed:

(1) Are females with bulimia more external in locus of control than females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?

(2) Are females with bulimia as accurate at decoding nonverbal expression as females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?

(3) What relationship exists between locus of control and nonverbal decoding accuracy among females with bulimia, females in counseling, females in a diet program, and females representing a nontreatment comparison group?

(4) What combination of personality and demographic variables under study best discriminates among the four groups?

All subjects were asked to complete a Personal Data Sheet, The Adult Nowicki-Strickland Internal-External Scale (AN-SIE), and the Profile on Nonverbal Sensitivity (PONS). In addition, Group I was asked to complete a questionnaire about their history with bulimia and counseling. Group II completed a questionnaire about their counseling
Subjects for this study were white females, ranging in age from 15 to 32, whose families of origin were middle to upper class. Each woman met certain criteria for inclusion into one of four groups. Group I was composed of women currently receiving counseling for bulimia in an outpatient setting. Members of Group II were in outpatient counseling for problems such as alcohol abuse, anxiety, depression, marital or family problems, and personal adjustment concerns. Group III subjects expressed concern about their weight and were actively participating in a formal diet program. Members of Group IV were students at a university's baccalaureate and master's program in nursing. Those subjects who were younger than 19 were sisters of these students. Subjects in Group IV indicated that they were not concerned about their weight, were free of anorexia nervosa or bulimia, and denied any past or present clinical counseling experience.

Data collected from the Personal Data Sheet was used to identify similarities and differences that existed among the four groups. No significant differences were found to exist for variables such as religion, educational level, birth order, number of brothers, number of sisters, and height. Differences among the groups were found to exist for marital status, income, living arrangements, and roles. Groups II and III had a higher incidence of marriage or having been married than did Groups I and IV. Groups I, III, and IV were more likely to live with at least one other person, while members of Group
II frequently lived alone. Group I and IV participants were likely to identify their role as student or student and wage earner. Subjects from Group II tended to identify their role as wage earner, while Group III members were students, wage earners, or students and wage earners. Differences existed between Group II and Groups I, III, and IV on income. Generally the subjects in Group II reported incomes below $30,000 annually, while members of the other three groups reported incomes of greater than $30,000. This was probably due to the fact that Group II members were more likely to report only their income, while subjects from the other three groups reported family incomes.

Differences existed for age and weight among the four groups. Significant differences between Groups I and IV and Groups II and III on the age variable were found. The former two groups tended to be in their early twenties, while the latter two groups were in their middle to late twenties. The average weight of members of Group I was significantly smaller than the other three groups. This difference is probably due to the rigorous attention given to dieting by the bulimic females.

The instruments used for data collection included the Personal Data Sheet, the Adult Nowicki-Strickland Internal-External Scale (AN-SIE), the Profile on Nonverbal Sensitivity (PONS), and specific group questionnaires. The AN-SIE was chosen because it assesses the locus of control of reinforcements for an individual. The scale was designed to overcome several shortcoming of the Rotter Internal-External Scale. These shortcomings include the tendency for
the scale to confound different types of locus of control, high reading level, problems with administering the instrument to large groups of people, and the relationship between the Rotter scale and social desirability. The last shortcoming is particularly relevant to this study because of the strong need of bulimic individuals to respond in a manner they feel is expected by others. The AN-SIE, therefore, would provide a more accurate assessment of the locus of control for this group of subjects because the instrument is not related to social desirability. No previous research has compared the locus of control of an outpatient bulimic group with groups composed of women in counseling, women in a diet program, and women representing a nontreatment population.

The PONS was selected because it measures nonverbal decoding accuracy. The instrument provides an overall score and subscores for eleven channels of nonverbal communication and four affective quadrants. There has been no previous research efforts to determine the nonverbal decoding accuracy of females with bulimia. In this investigation the nonverbal decoding accuracy of females with bulimia was compared to women in counseling, women in a diet program, and women representing a nontreatment comparison group.

The first two research questions were addressed statistically with a one-way MANOVA. A Pearson product-moment correlation was used to address the third question. The fourth question was analyzed with a discriminant analysis.

Are females with bulimia more external in locus of control than females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?
Significant differences among the groups were observed for the locus of control variable. The mean of Group I was significantly higher than the means of Groups III and IV. No significant differences were found between the means of Groups I and II. This finding indicates that scores on the AN-SIE were higher for the counseling groups than for the noncounseling groups.

Are females with bulimia as accurate at decoding nonverbal expression as females in counseling for problems other than eating disorders, females participating in a diet program, and females representing a nontreatment comparison group?

No significant differences or identifiable trends were found to exist among the four groups when the means for the PONS total score were examined.

What relationship exists between locus of control and nonverbal decoding accuracy among females with bulimia, females in counseling, females in a diet program, and females representing a nontreatment population?

No significant relationships were observed between these two variables among subjects in Groups I, III, and IV. A significant negative relationship was observed in Group II (r = -.36, p < .05). For this group, high scores on the locus of control scale (externality) were related to lower PONS total scores.

What combination of personality and demographic variables under study best discriminants among the four groups?

After the personal and demographic variables were entered into the discriminant analysis, an attempt was made to enter both the locus of control and PONS total variables. Only the locus of control
variable contributed sufficiently to the discrimination to be entered into the equation. Two significant discriminant functions were identified.

The first discriminant function was associated with older age, larger weight, internality, higher birth order, and fewer brothers. This function most efficiently discriminated between Groups I and III. The characteristics associated with the first function more closely described the members of Group III. Group I members were described as younger, lighter in weight, less internal, among the first children in the family, and have a greater number of brothers. The second discriminant function was associated with older age, lower income, and externality. This function discriminated most efficiently between Groups II and IV. The characteristics associated with this function more closely described the members of Group II. Members of group IV were younger, more affluent, and more internal in locus of control. A third discriminant function was not found to be statistically significant.

Conclusions

Several conclusions can be drawn from the findings of this study. These conclusions are as follows:

1) **Females in counseling score higher on the locus of control scale than do women who are not in counseling.** This finding is consistant with previous research findings which have documented the relationship between psychological distress and externality (Pawlicki & Almquist, 1973; Levenson and Miller, 1974; Finch & Nelson, 1974;
Kilpatrick, Dublin, & Marcotte, 1974; Moyal, 1976). The consistency of this finding is further established by the similarities between the mean scores for both counseling groups and the nontreatment groups and mean scores for groups in other studies examining locus of control and counseling (Rosenweig, 1973). Inconsistent findings from previous research on the relationship between locus of control and obesity and weight loss prohibits a comparison of the results of the diet group in this study with previous studies. One might reason that this group would score slightly higher than the nontreatment group but lower than the two groups involved in counseling. In this investigation, however, the dieting group and the nontreatment group had the same mean scores.

In general, people with internal locus of control expectancies are more effective at making decisions, more resistant to influence, more likely to assert themselves and take responsibility for their actions, and probably feel more in control of situations than do those people with external locus of control beliefs. These behaviors are all likely to contribute to physical and psychological health. An exception to this generality has been documented by Strober (1982) who found that female adolescents with anorexia nervosa were likely to possess internal rather than external locus of control beliefs. He proposed that the anorectic process produces an exaggerated sense of power, personal control, and self-sufficiency within the individual. More often, individuals with psychological problems experience feelings of dependency, helplessness, and lack of power. These characteristics are descriptive of bulimic women in general and are
consistent with the bulimic women and women in counseling who participated in his study.

2) While no significant differences were found between Groups I and II, the women in the bulimia group were slightly more external in locus of control than women representing the other counseling group. This trend lends support to the notion that bulimic women feel limited in the amount and type of control they exert over their lives. This restricted sense of control is probably more a function of developmental processes than of age, since the nontreatment comparison group was similar in age but internal in locus of control. Boskind-Lodahl (1976) and Bruch (1977) both contend that the female with bulimia is typically passive, compliant, and dependent and has learned as a child to conform to the wishes and values of others. Compliant and conforming behavior is rewarded and reinforced by parents and other figures of authority in their lives. The findings of this study suggest that bulimic women come to believe that the reinforcements for their behavior are under external rather than internal locus of control. Because of this development, these women are dependent upon others to shape their sense of worth and personal identity.

3) Nonverbal decoding accuracy as measured by the PONS does not appear to be useful in discriminating among women with bulimia, women in treatment for another type of emotional problem, women in a diet program, and women representing a nontreatment population. Researchers such as Rosenthal et al. (1979), Buck (1976), and Mehrabian (1972) have determined that people who have a high need for
acceptance and social approval tend to do poorly on decoding nonverbal expressions. Confidence and social maturity influence the ability to decode nonverbal expression. As a result of these findings and based on previous knowledge that bulimic women have a high need for acceptance and approval by others, it was reasoned that bulimic women would be less accurate in decoding nonverbal expression than were the women composing the other three groups in the investigation. The findings of this study did not support this line of reasoning. No differences were observed among the groups on their ability to interpret nonverbal expression.

Three potential explanations exist for the outcome of this section of the study. First, an unknown confounding variable may have influenced the results. Second, bulimic women may indeed not have a stronger need for approval than women in general. This explanation, however, is highly doubtful because the literature strongly suggests that these women are dependent upon others to validate their self-worth. Third, while the researchers who developed the PONS claim that it accurately measures nonverbal decoding sensitivity, the instrument may lack the precision necessary to efficiently identify the subtle differences which may be present among the groups in this study.

4) No consistent relationship between internal-external locus of control and nonverbal decoding accuracy was identified. Initially, it was reasoned that knowledge of I-E scores would give one more knowledge of a person's degree of nonverbal sensitivity. More specifically, it was believed that an inverse relationship would exist
between these two constructs. High scores on the AN-SIE, indicating externality, would likely be accompanied by lower scores on the PONS. In this study, the only significant relationship between locus of control and nonverbal sensitivity was observed among women who were in counseling for problems other than eating disorders. While this relationship was statistically significant, the coefficient of determination (r-squared) indicated that only 13% of the total variance in locus of control can be associated with the variance in PONS total in this group. Therefore, the practical significance of this result may be limited.

5) A combination of personal, demographic, and personality variables were found to discriminate among the four groups of women in this study. The discriminating variables were age, weight, locus of control, income, birth order, and number of brothers. The significant discriminant functions clearly distinguished Group I from Group III and Group II from Group IV. The group of bulimic women were generally younger, lighter in weight, and external in locus of control. They were often among the first children in the family and had a greater number of brothers. The dieting group was older, greater in weight, and internal in locus of control. These women had fewer brothers and were generally middle or younger children in the family. Members of the counseling group were older, external in locus of control, and had lower incomes, while the nontreatment comparison group was younger, internal in locus of control and more affluent.

Other variables may exist which, if identified, would contribute to the efficiency of the discrimination. The rate of correct
classification in this study (57.5%) is adequate to conclude that such a discrimination is possible. The practical significance of the discrimination functions derived in this study, however, is moderate at best.

Recommendations

The rising incidence of bulimia among young women demands that this problem be addressed in a competent and efficient manner. Empirically substantiated research findings contribute to an improved understanding of the personal, demographic, and personality variables which contribute to the development and maintenance of bulimia among this population. Several recommendations emerge from this study and can be used in treatment planning and intervention, inservice education for counselors, community awareness and prevention programs, and further research.

First, it is recommended that counselors consider the implications of locus of control when determining differential diagnoses between anorexia nervosa and bulimia and when developing individualized treatment plans. This construct may be helpful in distinguishing between low weight bulimics and anorexics since internality is associated with anorexia nervosa (Strober, 1982) and externality has been documented among bulimics. During the assessment or intake phase of the counseling process, the counselor is encouraged to gather information about locus of control along with the more traditional information generally obtained from clients with bulimia. The AN-SIE is a quick and reliable instrument for determining locus of
control. In addition, questions about parenting practices and the individual's response to authority may provide information about the individual's sense of personal control.

Such information will be useful in developing and implementing intervention strategies. Motivation to change is influenced by locus of control. Those individuals who relate behaviors to outcomes (internals) are more likely to be motivated to change than are those external individuals who see no connection between behavior and outcome. Connolly (1980) points out that counselors may find locus of control to be an important variable in influencing change. Bulimic clients with external locus of control beliefs will need initial counseling inventions which help the client understand the relationships between behavior and outcome and promote feelings of personal control. Those individuals who already possess internal locus of control beliefs can be assisted in strengthening these beliefs. Opportunities within the treatment process for strengthening personal control and decision making abilities should be encouraged. These clients might also benefit from homework assignments which require them to assert control over various situations.

Locus of control could also prove to be useful as a component of outcome evaluation. Change in locus of control from externality to internality along with decreased binge-purge episodes, increased personal insight, and resolution of personal and family conflict would provide the client and counselor with indicators of improved physical and psychological health.
The second recommendation is that information on locus of control be included in preservice and inservice training sessions for counselors who plan to work with bulimic clients. These counselors should be provided with a general overview of the following aspects of locus of control: 1) a definition of the construct; 2) basic characteristics of internal-external expectancies; 3) antecedents of locus of control; 4) the influence of locus of control on physical and psychological health; and 5) the influence of locus of control on counseling in general. With this basic knowledge counselors are ready to examine the relationship between locus of control and bulimia. Treatment goals and strategies for bulimic clients can then be modified to include locus of control.

A third recommendation is that information about the personal, demographic, and personality variables identified as associated with bulimia in this study be incorporated into community awareness and prevention programs. Counselors can help parents, teachers, and students identify populations who are potentially at risk in developing bulimia. Typically, the person with bulimia is a white, single, female who began binging and purging in her middle to late teens. These women generally come from middle to upper socioeconomic families and are often considered to be "model" children. From an early age they conform to the wishes and values of parents, denying their own needs in the process. As they develop, they come to believe that reinforcements for their behaviors are under controls which are external to them.
Bulimic females tend to be externally motivated. These women strongly value social acceptance and approval and will live up to the expectations of others in order to receive that approval. Parenting behaviors which are over-protecting, critical, and authoritarian tend to foster the development of external locus of control beliefs. Children whose parents demand conformity and are controlling are likely to develop expectations of being controlled by others. On the other hand, parents described as consistent, nurturing, accepting, and approving help children develop personal control and a sense of identity. The same can be said for teachers and other adults who work closely with adolescent girls and young adult women.

The remaining recommendations are related to future research efforts. Now that locus of control has been identified as an important variable among women with bulimia as well as among women in counseling, it may be useful to assess the effectiveness of operationalizing the locus of control construct in the treatment process. This may be accomplished in well-designed experimental research studies which examine the differences in outcome between treatment groups where the locus of control construct is operationalized in different ways and nontreatment or attention placebo control groups.

It is also important to identify other personality variables which may contribute to the development and maintenance of bulimia. Based upon the literature, these may include such variables as: cognitive styles, decision-making processes, coping styles, need for affiliation, and self-concept.
While the results of this study failed to support the notion that women with bulimia experience difficulty in accurately interpreting nonverbal expression, this problem has been observed in the clinical setting. Perhaps another style of measurement should be developed which would more effectively assess this areas of performance and differentiate among groups of similar aged adults.

Spurred on by the rising incidence of eating disorders, researchers have attempted to identify causal factors, determine characteristics which differentiate among the disorders and develop effective treatment methods. The literature on bulimia covers a wide range of research which has been directed at classifying the disorder; identifying the incidence and prevalence; determining the frequency, duration, and physiological effects of binging and purging; and developing a composite profile and identifying personality characteristics common to bulimics. Initial efforts are also being directed at identifying effective treatment interventions. This study was intended to expand the existing body of knowledge on personality characteristics of females with bulimia. The findings will hopefully contribute to an improved understanding of this disorder.
APPENDIX A

PERSONAL DATA SHEET

GROUP QUESTIONNAIRES (I, II, III)

ADULT NOWICKI–STRICKLAND INTERNAL–EXTERNAL SCALE
PERSONAL DATA SHEET

1. Age _________ yrs.  2. Birth Order ______

3. Height __ ft. __ in.  4. Weight ______

5. Number of Siblings ___ brothers ___ sisters

6. Religious Affiliation (please circle one letter)
   a. Jewish
   b. Protestant
   c. Roman Catholic
   d. Other (please specify) _________________
   e. None

7. Marital Status (please circle one letter)
   a. Single
   b. Married
   c. Divorced
   d. Widowed

8. Estimated Family Income - 1 year
   (please circle one letter)
   a. Under 15,000
   b. 15,000 - 19,999
   c. 20,000 - 24,999
   d. 25,000 - 29,999
   e. 30,000 - 34,999
   f. 35,000 - 39,999
   g. 40,000 - 45,999
   h. 45,000 - 49,999
   i. 50,000 or over

9. Living Arrangements (please circle one letter)
   a. With Parents
   b. Conjugal
   c. Alone
   d. With Roommate
10. Education (please circle one letter)
   a. Postgraduate Degree
   b. Bachelor's Degree Plus
   c. Bachelor's Degree
   d. Associate Degree
   e. High School Diploma Plus
   f. High School Diploma
   g. Some High School

11. Role (please circle one letter)
   a. Wage Earner
   b. Student
   c. Wage Earner/Student
   d. Homemaker
   e. Wage Earner/Homemaker
Questionnaire A - Group I

1. Binging History
   a. Age of onset _____
   b. Duration of bulimia _____
      (How long)
   c. Frequency of binges:
      Average number of binges per day _____
      Average number of binges per week _____
   d. Technique by which binging episodes are terminated:
      (Please circle letter(s) of responses which apply to you)
      1. Vomiting
      2. Laxatives
      3. Sleep
      4. Abdominal pain
      5. Other (please specify): __________
   e. Previous diagnosis of anorexia nervosa?
      1. Yes
      2. No

II. Therapeutic History
   a. Age when began therapy _____
   b. Length of present therapy _____
   c. Present type of therapy:
      (Please circle letter(s) of responses which apply to you)
      1. Individual counseling
      2. Group counseling
      3. Marital or family counseling
1. Which of the following best describes your reason for seeking counseling? (Please circle letters of responses which apply)
   a. Depression
   b. Anxiety
   c. Personal adjustment to a life event
   d. Other (please specify) ____________________

2. How long have you been involved in this counseling relationship?
   ___ Weeks

3. Which of the following best describes your present type of counseling? (please circle letters of responses which apply)
   a. Individual
   b. Group
   c. Marital or family counseling

4. Have you ever had any past experiences as a client in a formal counseling relationship? (please circle one letter)
   a. No
   B. Yes

   If your response is "yes", please identify the number and type of experiences.

5. Have you ever experienced either of the following eating disorders? (please circle the appropriate letter's)
   a. Anorexia nervosa
   b. Bulimia
   c. Neither
Questionnaire C - Group III

1. What was the age of onset of your weight problem?

2. Please estimate the length of time of your weight problem?

3. How much weight do you want to lose?

4. Identify your current stage of the Diet Center Program?
   ______ Conditioning
   ______ Reducing
   ______ Stabilization
   ______ Maintenance
   ______ Nutrition/ Behavior Modification Classes

5. How many times have you been on the Diet Center Program?

6. How many times have you participated in other diet programs?

7. Please identify names of other diet programs in which you have participated? (Examples: Weight Watchers, Cambridge Diet)
Adult Nowicki-Strickland Internal External Scale

Directions: Please circle the "yes" or "no" answer that best applies to you.

1. Do you believe that most problems will solve themselves if you just don't fool with them? yes no

2. Do you believe that you can stop yourself from catching a cold? yes no

3. Are some people just born lucky? yes no

4. Most of the time do you feel that getting good grades meant a great deal to you? yes no

5. Are you often blamed for things that just aren't your fault? yes no

6. Do you believe that if somebody studies hard enough he or she can pass any subject? yes no

7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway? yes no

8. Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do? yes no

9. Do you feel that most of the time parents listen to what their children have to say? yes no

10. Do you believe that wishing can make good things happen? yes no

11. When you get punished does it seem it's for no good reason at all? yes no

12. Most of the time do you find it hard to change a friend's (mind) opinion? yes no

13. Do you think that cheering more than luck helps a team to win? yes no

14. Do you feel that it was nearly impossible to change your parent's mind about anything? yes no

15. Do you believe that parents should allow children to make most of their own decisions? yes no

16. Do you feel that when you do something wrong there's very little you can do to make it right? yes no
17. Do you believe that most people are just born good at sports? yes no
18. Are most of the other people your age stronger than you are? yes no
19. Do you feel that one of the best ways to handle most problems is just not to think about them? yes no
20. Do you feel that you have a lot of choice in deciding whom your friends are? yes no
21. If you find a four leaf clover, do you believe that it might bring you good luck? yes no
22. Did you often find that whether or not you did your homework had much to do with what kind of grades you got? yes no
23. Do you feel that when a person your age is angry at you, there’s little you can do to stop him or her? yes no
24. Have you ever had a good luck charm? yes no
25. Do you believe that whether or not people like you depends on how you act? yes no
26. Did your parents usually help you if you asked them to? yes no
27. Have you felt that when people were angry with you it was usually for no good reason at all? yes no
28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today? yes no
29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them? yes no
30. Do you think that people can get their own way if they just keep trying? yes no
31. Most of the time do you find it useful to try to get your own way at home? yes no
32. Do you feel that when good things happen they happen because of hard work? yes no
33. Do you feel that when somebody your age wants to be your enemy there’s little you can do to change matters? yes no
34. Do you feel that it's easy to get friends to do what you want them to do? ..............................yes no

35. Do you usually feel that you have little to say about what you get to eat at home? ..............................yes no

36. Do you feel that when someone doesn't like you there's little you can do about it? ..............................yes no

37. Did you usually feel that it was almost useless to try in school because most of the other children were just plain smarter than you are? ..............................yes no

38. Are you the kind of person who believes that planning ahead makes things turn out better? ..............................yes no

39. Most of the time, do you feel that you have little to say about what your family decides to do? ..............................yes no

40. Do you think it is better to be smart than to be lucky? ..............................yes no
### Table 10
**Means and Standard Deviations of Age for Groups**

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>S. D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>20.7</td>
<td>3.88</td>
</tr>
<tr>
<td>II</td>
<td>27.2</td>
<td>4.18</td>
</tr>
<tr>
<td>III</td>
<td>25.2</td>
<td>5.95</td>
</tr>
<tr>
<td>IV</td>
<td>21.8</td>
<td>3.32</td>
</tr>
</tbody>
</table>

\[ F (3, 116) = 13.63, p < .001 \]

### Table 11
**Means and Standard Deviations of Birth Order for Groups**

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>S. D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>2.1</td>
<td>1.40</td>
</tr>
<tr>
<td>II</td>
<td>2.5</td>
<td>1.90</td>
</tr>
<tr>
<td>III</td>
<td>2.7</td>
<td>1.93</td>
</tr>
<tr>
<td>IV</td>
<td>2.4</td>
<td>1.27</td>
</tr>
</tbody>
</table>

\[ F (3, 116) = 0.785, p < .504 \]
Table 12
Means and Standard Deviations of Brothers for Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1.5</td>
<td>1.01</td>
</tr>
<tr>
<td>II</td>
<td>1.3</td>
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\[ F (3, 116) = 0.437, p < .727 \]

Table 13
Means and Standard Deviations of Sisters for Groups

<table>
<thead>
<tr>
<th>Group</th>
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<th>S.D</th>
</tr>
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<td>III</td>
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<td>IV</td>
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\[ F (1, 116) = 2.17, p < .095 \]
Table 14
Means and Standard Deviations of Height for Groups

<table>
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<th>Group</th>
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<th>S.D</th>
</tr>
</thead>
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<td>I</td>
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<tr>
<td>II</td>
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<td>III</td>
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<td>IV</td>
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F (3, 116) = 0.420, p, .739

Table 15
Means and Standard Deviations of Weight for Groups

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<tr>
<td>III</td>
<td>149.4</td>
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<td>IV</td>
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F (3, 116) = 9.57, p<.001
Table 16

Description of Religion for Groups

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<td>50.0</td>
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<td>9</td>
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Chi-square = 14.184  12 degrees of freedom  significance = 0.289
Cramer's V = 0.199
Table 17

Description of Marital Status for Groups

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<td>90.0</td>
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<td>Divorced</td>
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Chi-square = 15.379  6 degrees of freedom  significance = 0.018

Cramer's V = 0.253
Table 18

Description of Income for Groups

<table>
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<th>Income</th>
<th>Groups</th>
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<th>IV</th>
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<td>30.8</td>
<td>23.1</td>
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<td>10</td>
<td>4</td>
<td>1</td>
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<td>23.3</td>
<td>13.3</td>
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<td>43.8</td>
<td>25.0</td>
<td>6.3</td>
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<td>0</td>
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<td>4</td>
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<td>5</td>
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<td>3.3</td>
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Chi-square = 47.617  24 degrees of freedom  Significance = .003

Cramer's V = 0.364
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<th>Group</th>
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<th>IV</th>
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<td>With Parents</td>
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<td>11</td>
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<td></td>
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<td>10.0</td>
<td>36.7</td>
<td>16.7</td>
</tr>
<tr>
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<td>9.7</td>
<td>35.5</td>
<td>16.1</td>
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<td>8</td>
<td>4</td>
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<td>20.0</td>
<td>26.7</td>
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<td>9</td>
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<td>30.0</td>
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Chi-square = 47.769  12 degrees of freedom  Significance = 0.001
Cramer's V = 0.364
Table 20

Description of Educational Level for Groups

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<th>Educational Level</th>
<th>Group</th>
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<th>IV</th>
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<td>45.5</td>
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<tr>
<td>Bachelor's Degree Plus</td>
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<td>5</td>
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<td></td>
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<td>20.0</td>
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<td>66.7</td>
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<td>6</td>
<td>10</td>
<td>15</td>
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<tr>
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Chi-square = 25.195  18 degrees of freedom  Significance = 0.120

Cramer's V = 0.265
### Table 21

**Description of Roles for Groups**

<table>
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<th>III</th>
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<tbody>
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<td>28.9</td>
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<td>18.4</td>
<td>47.4</td>
</tr>
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<td>Wage Earner/Student</td>
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<td>10</td>
<td>10</td>
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<td>0.0</td>
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<td>1</td>
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<td>46.2</td>
<td>23.1</td>
<td>7.7</td>
</tr>
<tr>
<td>Wage Earner/Homemaker/Student</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
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</tr>
</tbody>
</table>

Chi-square = 57.225  15 degrees of freedom  Significance = 0.001

Cramer's V = 0.399
LIST OF REFERENCES


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