The Eating Disorders Diagnostic Inventory (EDDI): The Development of a New Assessment Instrument.

Cecilia Jo Davis

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The Eating Disorders Diagnostic Inventory (EDDI): The development of a new assessment instrument

Davis, Cecilia Jo, Ph.D.
The Louisiana State University and Agricultural and Mechanical Col., 1990
THE EATING DISORDERS DIAGNOSTIC INVENTORY (EDDI):
THE DEVELOPMENT OF A NEW ASSESSMENT INSTRUMENT

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Psychology

by

Cecilia Jo Davis

B.S., Mississippi State University, 1978
M.S., University of Southern Mississippi, 1980
M.A., Louisiana State University, 1984
August, 1990
ACKNOWLEDGEMENTS

This has been a very long and arduous journey—one that I could not have made without the support of many people. First, I would like to thank the committee that gave me invaluable assistance: Dr. Drew Gouvier, Dr. David Blouin, Dr. Arthur Riopelle, Dr. William Waters, and Dr. Don Williamson, who has endured and been very patient and supportive in my meandering path through graduate school....I could not have made it without your encouragement. To you five fine gentlemen—thank you.

There are others at L.S.U. who were integral in the completion of this project. They include Mark Warner, M.A., Kathy Nathan, M.A., Lisa Norris, M.A., Louis Meza, and Dorothy Van Buren, Ph.D. Also, I offer special thanks to Elizabeth Li, M.S., for her help with the statistical analysis. Thank you all very much.

Finally, I must thank some of those who were there to cheer me on, helping me through. Many friends come to mind—and I thank each one for the wonderful support and acceptance which you gave me. But my sister, brother,
mother and father---Gina Fitzgerald, Joey Davis, Elizabeth "Sally" Davis, and Joe "Fats" Davis---you have been so patient and supportive, with food, love, and $$s. This is for you....and especially for LJS....
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Acknowledgements</th>
<th>ii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>iv</td>
</tr>
<tr>
<td>List of Tables</td>
<td>v</td>
</tr>
<tr>
<td>List of Figures</td>
<td>vii</td>
</tr>
<tr>
<td>Abstract</td>
<td>viii</td>
</tr>
<tr>
<td>Body of Dissertation</td>
<td>1</td>
</tr>
<tr>
<td>References</td>
<td>97</td>
</tr>
<tr>
<td>Appendices</td>
<td></td>
</tr>
<tr>
<td>1. Interview for Diagnosis of</td>
<td></td>
</tr>
<tr>
<td>Eating Disorders (IZED)</td>
<td>107</td>
</tr>
<tr>
<td>2. Interview for Diagnosis of</td>
<td></td>
</tr>
<tr>
<td>Eating Disorders--Reliability</td>
<td>121</td>
</tr>
<tr>
<td>3. Interview for Diagnosis of</td>
<td></td>
</tr>
<tr>
<td>Eating Disorders--Validity</td>
<td>123</td>
</tr>
<tr>
<td>4. Eating Attitudes Test (EAT)</td>
<td>125</td>
</tr>
<tr>
<td>5. Bulimia Test (BULIT)</td>
<td>129</td>
</tr>
<tr>
<td>6. Eating Questionnaire-Revised (EQ-R)</td>
<td>137</td>
</tr>
<tr>
<td>7. Eating Disorders Inventory (EDI)</td>
<td>141</td>
</tr>
<tr>
<td>8. Consent Form</td>
<td>145</td>
</tr>
<tr>
<td>9. Body Image Assessment (BIA)</td>
<td>147</td>
</tr>
<tr>
<td>10. Eating Disorders Diagnostic</td>
<td></td>
</tr>
<tr>
<td>Inventory (EDDI)</td>
<td>149</td>
</tr>
<tr>
<td>11. Gottesman and Prescott Terms</td>
<td>157</td>
</tr>
<tr>
<td>Vita</td>
<td>160</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Bruch's Diagnostic Criteria of Anorexia Nervosa</td>
<td>3</td>
</tr>
<tr>
<td>Table 2</td>
<td>Garfinkel and Garner---Revision of Feigner, Robins, Guze, Woodruff, Winokur, and Munoz's Criteria of Anorexia Nervosa</td>
<td>4</td>
</tr>
<tr>
<td>Table 3</td>
<td>Diagnostic and Statistical Manual of Mental Disorders---Third Edition---Diagnostic Criteria of Anorexia Nervosa</td>
<td>6</td>
</tr>
<tr>
<td>Table 4</td>
<td>Diagnostic and Statistical Manual of Mental Disorders---Third Edition---Revised---Diagnostic Criteria of Anorexia Nervosa</td>
<td>11</td>
</tr>
<tr>
<td>Table 5</td>
<td>Diagnostic and Statistical Manual of Mental Disorders---Third Edition---Diagnostic Criteria of Bulimia Nervosa</td>
<td>14</td>
</tr>
<tr>
<td>Table 6</td>
<td>Russell's Diagnostic Criteria of Bulimia Nervosa</td>
<td>17</td>
</tr>
<tr>
<td>Table 7</td>
<td>Diagnostic and Statistical Manual of Mental Disorders---Third Edition---Revised---Diagnostic Criteria of Bulimia Nervosa</td>
<td>19</td>
</tr>
<tr>
<td>Table 8</td>
<td>Proposed Diagnostic Criteria of Compulsive Overeating</td>
<td>22</td>
</tr>
<tr>
<td>Table 9</td>
<td>Similarities and Differences Among Anorexia Nervosa, Bulimia Nervosa, Compulsive Overeaters, Obese, and Normals</td>
<td>24</td>
</tr>
</tbody>
</table>
Table 10. Discriminant Analysis: Classification Accuracy of the EDDI........54

Table 11. False Positive and Negative Rates, Overall Accuracy, Sensitivity, Specificity, Positive and Negative Predictive Power Rates: Initial Sample........59

Table 12. EDDI: Factors and Factor Loadings......64

Table 13. Discriminant Analysis: Eating Disorders Diagnostic Inventory: Validation Sample...............70

Table 14. False Positive and Negative Rates, Overall Accuracy, Sensitivity, Specificity, Positive and Negative Predictive Power Rates: Validation Sample........76

Table 15. Generalized Squared Distance From Each of the Diagnostic Groups........78

Table 16. EDDI Factors—Correlations with Body Image Assessment, Eating Disorders Inventory, and Interview for Diagnosis of Eating Disorders...............82
LIST OF FIGURES

1. Percent Variance of Individual EDDI Items .......... 53
2. Scree Plot of Eigenvalues .................................. 63
3. Relationship Between Diagnostic Groups:
   Initial and Validation Sample ............................ 80
ABSTRACT

The area of eating disorders have been intensively by both the psychological and medical researchers over the last two decades. Differential diagnosis of the four most prevalent eating disorders (anorexia nervosa, bulimia nervosa, compulsive overeating, and the non-binging obese) continues to be a problem for both researchers and clinicians. Diagnosis of these disorders has been complicated by the many changes in diagnostic criteria for each of the disorders. One consequence of these frequent changes is that there is no single self-report inventory for differential diagnosis which is based on currently accepted diagnostic criteria. The purpose of this study was the construction of an assessment instrument, the Eating Disorders Diagnostic Inventory (EDDI), which could reliably differentiate anorexia nervosa, bulimia nervosa, compulsive overeating, non-binging obese, and normals.

The EDDI was developed from a group of test items which included items from the Eating Attitudes Test, the Bulimia Test, and the Eating Questionnaire-Revised, totalling 91 items. In the initial test construction phase of the study, there were 397 subjects. Discriminant analysis identified 35 items, which formed the EDDI, which
differentiated the five diagnostic groups included in the study (anorexia nervosa, bulimia nervosa, compulsive overeating, obese, and normals) with a correct classification rate of 85.5%. Factor analysis identified three scales of the EDDI: a Binge Eat scale, a Drive for Thinness scale, and a Purgative Behavior scale.

A second phase of the study, the Validation Phase, included four groups: bulimia nervosa, compulsive overeaters, obese, and normals. There were 15 subjects per group. A group of anorexics could not be obtained, so this group was dropped from the study. Measures of temporal stability indicated that the EDDI had satisfactory test-retest reliability over a two-week period. However, discriminant validity of the instrument was found to be unsatisfactory in that only 75% of the subjects were correctly classified using the discriminant function established in the first phase. The concurrent validity of the three factors of the EDDI was supported, however. Discussion focused upon additional research steps which may better establish the discriminant validity of the EDDI.
Disorders of eating have become a major focus of medical and psychological attention within the last two decades. Anorexia nervosa and bulimia nervosa have increasingly been topics of research, leading to the misconception that these are relatively new disorders. The symptoms of anorexia, however, were first recognized in the 18th century, and bulimic symptoms in the late 19th century. Anorexia was first formally recognized as a specific disorder with the publication of the Diagnostic and Statistical Manual-II (American Psychiatric Association, 1954), the second diagnostic classification for psychiatric disorders. Bulimia, or as it is currently called, bulimia nervosa, was formally recognized in 1980 in the third edition of the Diagnostic and Statistical Manual (DSM-III, American Psychiatric Association, 1980). With subsequent revisions, the diagnostic criteria for both have been changed, leading to confusion in the assessment and diagnosis of both. To more fully appreciate the changes which have occurred in the descriptions of the disorders, the following historical perspective of anorexia
nervosa and bulimia nervosa is presented.

Anorexia Nervosa

Anorexia nervosa, or "a nervous loss of hunger", was first described in a case study of an 18-year old female by Morton in the 18th century. He referred to anorexia as "nervous consumption" which occurred secondary to sadness and anxiety (Morton, 1720). Almost two centuries later, two investigators independently described anorexia nervosa. Both Lasegue (1873) and Gull (1874), who gave the disorder the name it still carries, both recognized the disorder as a separate diagnostic entity. Gull also noted that familial involvement was integral to the development of the disorder, and so recommended that the patient be isolated from the family while treated. Others continued to sporadically write about the disorder of anorexia nervosa through the following years, but it only came into its current prominence with the writings of Bruch (1965) and Crisp (1968).

Empirical research related to anorexia was made difficult by the various diagnostic criteria and theoretical models proposed for the disorder. Bruch (1973)
presented three criteria for the diagnosis of anorexia (see Table 1).

**TABLE 1**

**BRUCH'S DIAGNOSTIC CRITERIA OF ANOREXIA NERVOSA**

<table>
<thead>
<tr>
<th>Criteria</th>
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<tbody>
<tr>
<td>1. Disturbance of body image.</td>
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<tr>
<td>2. Disturbances in one's internal perceptions, both viscerally and affectively.</td>
</tr>
<tr>
<td>3. An overall sense of personal ineffectiveness or helplessness in one's world.</td>
</tr>
</tbody>
</table>

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Bruch, 1973

Bruch's criteria can be faulted for two reasons. Most importantly, they were not operationally defined, which made empirical validation very difficult. Also, the criteria did not adequately address many of the physical, psychological, and behavioral problems associated with most cases of anorexia (e.g., low body weight, fear of weight gain, and self-starvation). Due to the problems with Bruch's criteria, most research in the early 1970's used
the diagnostic criteria delineated by Feigner, Robins, Gauze, Woodruff, Winokur, and Munoz (1972). These criteria were modified by Garfinkel and Garner (1982), and are presented in Table 2. These criteria were an improvement, but still lacked a great deal of specificity.

**TABLE 2**

GARFINKEL AND GARNER—REVISION OF FEIGNER, ROBINS, GAUZE, WOODRUFF, WINOKUR, AND MUNOZ'S CRITERIA OF ANOREXIA NERVOSA

A. No restrictions on age of onset.

B. No loss of appetite is required; the term anorexia is actually misleading. Weight loss of 25% or more of original body weight is not strictly required; if an individual was relatively thin at the onset or still growing and lost only 15–20%, it should not preclude a positive diagnosis.

C. A distorted, implacable attitude towards eating, food, or weight that overrides hunger, admonitions, reassurance, or threats.

D. No known medical illness that could account for the weight loss.
E. No other known psychiatric disorder with particular reference to primary affective disorders, schizophrenia, obsessive-compulsive neurosis, and phobias.

F. At least two of the following manifestations: 
   (1) amenorrhea, (2) lanugo, (3) bradycardia, 
   (4) periods of overactivity, (5) episodes of 
   bulimia, and/or (6) vomiting (may be self-induced).

Garfinkel and Garner, 1982

With the publication of the third revision of the 
Diagnostic and Statistical Manual, a new set of diagnostic 
criteria for anorexia nervosa was introduced (see Table 3).
### TABLE 3

**DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS—THIRD EDITION—DIAGNOSTIC CRITERIA FOR ANOREXIA NERVOSA**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
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<tbody>
<tr>
<td>A. Intense fear of becoming obese, which does not diminish as weight loss progresses.</td>
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<tr>
<td>B. Disturbance of body image, e.g., claiming to “feel fat” even when emaciated.</td>
<td></td>
</tr>
<tr>
<td>C. Weight loss of at least 25% of original body weight or, if under 18 years of age, weight loss from original body weight plus projected weight gain expected from growth charts may be combined to make the 25%.</td>
<td></td>
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<tr>
<td>D. Refusal to maintain body weight over a minimal normal weight for age and height.</td>
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<tr>
<td>E. No known physical illness that would account for the weight loss.</td>
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</table>

American Psychiatric Association, 1980

The diagnosis was classified under "Disorders First Evident in Infancy, Childhood, or Adolescence", as anorexia often is first diagnosed in adolescence. Prior to the DSM-III, anorexia was classified under "Special Symptoms: Feeding Disturbance". With Garfinkel and Garner's (1982) publication of the revisions of Feigner, et al.’s criteria, two somewhat different criteria were being utilized in both
the diagnosis, treatment, and research regarding anorexia. One very important difference between the two sets of diagnostic criteria was the rather stringent weight loss requirement of 25% by DSM-III and the less stringent requirement (15-20%) of Garfinkel and Garner (1982). In the DSM-III, body image distortion was a necessary condition for the diagnosis of anorexia, but was not even mentioned by Garfinkel and Garner's criteria. Also, in the criteria espoused by Garfinkel and Garner, at least two of six "special" symptoms were required in order to diagnose anorexia, which was not the case for the DSM-III criteria. Also, it should be noted that bulimia (binge eating) and self-induced vomiting were among these symptoms of anorexia. Because of this confusion in diagnostic criteria, research during the 1970's and early 1980's was hampered. The Diagnostic and Statistical Manual-Third Edition-Revised (DSM-III-R, American Psychiatric Association, 1987), has addressed most of these problems by establishing new criteria for anorexia nervosa which synthesize the criteria outlined both by the DSM-III and Garfinkel and Garner (1982) (see Table 4). There are four
criteria which now delineate anorexia nervosa. The first
criteria, body weight 15% below what is expected for age
and height, is less stringent than the DSM-III (APA, 1980)
criteria of a body weight 25% below what is expected for
age and height. Also, it addresses the ambiguity of
Garfinkel and Garner's (1982) weight criteria, which
stated that the patient had to have a 15%, 20%, or 25% loss
weight criteria was problematic, as it was based upon
weight loss, not upon the current weight of the patient.

The second diagnostic criteria of anorexia nervosa in
the DSM-III-R is "an intense fear of gaining weight or
becoming fat, even though underweight" (American
Psychiatric Association, 1987, p. 67). This criteria is
inclusive of two of the DSM-III criteria, fear of becoming
obese, as well as a refusal to maintain even a minimum
normal weight for age and height. Although Garner and
Garfinkel (1982) include a "distorted attitude towards
eating, food, or weight" in their diagnostic criteria of
anorexia nervosa, this criteria was not descriptive
of the emotion that produces the characteristic drive for
thinness that typical anorexic patients display. However, in the DSM-III-R (American Psychiatric Association, 1987) criteria, this "attitude" delineated in the Garfinkel and Garner criteria is more accurately described as an "intense fear".

The third DSM-III-R criteria of anorexia nervosa describes the body image disturbance that is a primary characteristic of the disorder. The DSM-III criteria simply states that there is a "disturbance" of body image, including "feel(ing) fat even when emaciated". The DSM-III-R criteria is more descriptive of body image problems, indicating that it may be a disturbance of the patient's perception of his/her weight size, or shape. Garfinkel and Garner (1982) do not include body image disturbance in their criteria.

The final DSM-III-R criteria is that of amenorrhea for at least three consecutive menstrual cycles in females. The DSM-III criteria do not include amenorrhea in the diagnostic criteria of anorexia nervosa, and Garner and Garfinkel (1982) include it as one of six "special" symptoms that may be used for diagnosis. Amenorrhea often
is one physiological consequence of low body weight, and so quite often is seen in anorexics. Subsequently, it was included in the DSM-III-R criteria.

The DSM-III-R criteria for anorexia nervosa was a needed refinement and improvement of the criteria espoused by the DSM-III (1980) and Garfinkel and Garner (1982). The new criteria are generally more specific than those of Garfinkel and Garner and the DSM-III, and are a reflection of the characteristics described in the medical and psychological research which has investigated the disorder. As a result of the increased specificity and basis in research, the DSM-III-R criteria are felt to be an improvement in describing the integral facets of anorexia nervosa.
TABLE 4

DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS—THIRD EDITION—REVISED—DIAGNOSTIC CRITERIA OF ANOREXIA NERVOSA

A. Refusal to maintain body weight over a minimal normal weight for age and height, e.g., weight loss leading to maintenance of body weight 15% below that expected; or failure to make expected weight gain during period of growth, leading to body weight 15% below that expected.

B. Intense fear of gaining weight or becoming fat, even though underweight.

C. Disturbance in the way in which one's body weight, size, or shape is experienced, e.g., the person claims to "feel fat" even when obviously underweight.

D. In females, absence of at least three consecutive menstrual cycles when otherwise expected to occur (primary or secondary amenorrhea). (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen administration).

American Psychiatric Association, 1987

Bulimia Nervosa

Bulimic symptoms were first described in the late 19th century, with the syndrome first recognized in the 1940's
(Herzog, 1987). Bulimic symptoms were first associated with medical problems, such as diabetes mellitus and malaria. However, as research investigating eating disorders increased, bulimic symptoms became primarily associated with anorexia nervosa, as was evidenced in the Garfinkel and Garner (1982) criteria.

Bulimia, meaning "ox hunger", was thought to occur in a sub-group of anorexics that could not successfully ignore their hunger or desire for food. Periods of starvation were followed by periods where a desire for food was so forceful and compelling that eating could not be stopped, which resulted in the consumption of very large amounts of food (Casper, Eckert, Halmi, Goldberg, & Davis, 1980). Also, it was noted that many of those who binged also engaged in purgative behavior after binging, typically through vomiting, but also by utilizing other methods, including excessive exercise, diuretics, and laxatives. Some investigations of anorexia found that nearly one-half of anorexics had engaged in bulimia, or became bulimic after a return to normal weight (Casper, et al, 1980; Hsu, Crisp, & Harding, 1979).
With the increased interest in this "sub-group" of anorexics, it became evident that bulimia existed also in both normal-weight and obese individuals (Casper, Eckert, Halmi, Goldberg, & Davis, 1980; Hsu, et al, 1979). Due to the increasing prevalence of the disorder, bulimia was formally recognized as a disorder separate from anorexia nervosa in the third edition of the Diagnostic and Statistical Manual (American Psychiatric Association, 1980). The diagnostic criteria for bulimia utilized in the DSM-III are presented in Table 5.
A. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time, usually less than two hours).

B. At least three of the following:
(1) consumption of high-caloric, easily ingested food during a binge
(2) inconspicuous eating during a binge
(3) termination of such eating episodes by abdominal pain, sleep, social interruption, or use of cathartics or diuretics
(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 thought following eating binges.

E. The bulimic episodes are not due to Anorexia Nervosa or any known physical disorder.

American Psychiatric Association, 1980
Both the criteria and label "bulimia" used in the DSM-III have received much criticism (Fairburn, 1984; Garner, 1985; Vandereycken & Meermann, 1984). The term "bulimia" refers to binge-eating, and does not adequately address the constellation of behaviors normally associated with the "binge-purge" syndrome. Also, the diagnostic criteria used in the DSM-III, it has been noted, only describe a pattern of binging and post-binge depression. It should be noted that in the DSM-III, the presence of purgative behavior, body image distortion, or overconcern with body size were not necessary conditions for the diagnosis of bulimia. Critics of these criteria concluded that the criteria were overinclusive, describing a symptom (bulimia or binge eating), rather than a syndrome. Also, the relationship between bulimia and anorexia was unclear, with item E in the bulimic criteria stating that "The bulimic episodes are not due to Anorexia Nervosa" (American Psychiatric Association, 1980, p. 69), while the anorexic criteria indicated that both diagnoses were appropriate if "an episode of Anorexia Nervosa occurs in an individual with Bulimia" (American Psychiatric Association, 1980, p. 69).
Other terms were developed to describe the pattern of binge-eating and purging. The definitions of these terms differed slightly from that used in the DSM-III (American Psychiatric Association, 1980). "Bulimarexia" (Boskind-Lodahl & White, 1978) and "bulimia nervosa" (Russell, 1979, 1983) were terms used to denote a similarity of the disorder to anorexia nervosa. Boskind-Lodahl and White (1978) did not offer definitive diagnostic criteria for bulimarexia, stating only that it was "...a cyclical eating disorder characterized by binging/purging behaviors and abnormally low self-esteem" (p. 84). However, Russell was more specific in his definition of bulimia nervosa (Russell, 1979, 1983). Both his original criteria, as well as his revised criteria, are presented in Table 6. Most importantly, his criteria were quite different from
### TABLE 6

**RUSSELL'S DIAGNOSTIC CRITERIA FOR BULIMIA NERVOSA**

<table>
<thead>
<tr>
<th>Original Criteria (1979)</th>
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<tbody>
<tr>
<td><strong>A.</strong> The patients suffer from powerful and intractable urges to overeat.</td>
</tr>
<tr>
<td><strong>B.</strong> They seek to avoid the &quot;fattening&quot; effects of food by inducing vomiting or abusing purgatives or both.</td>
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</table>

<table>
<thead>
<tr>
<th>Revised Criteria (1983)</th>
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</thead>
<tbody>
<tr>
<td><strong>A.</strong> Preoccupations with food, irresistible cravings for food and repeated episodes of overeating.</td>
</tr>
<tr>
<td><strong>B.</strong> Devices aimed at countering the &quot;fattening&quot; effects of food.</td>
</tr>
<tr>
<td><strong>C.</strong> A psychopathology resembling that of classical anorexia nervosa.</td>
</tr>
<tr>
<td><strong>D.</strong> A previous overt or cryptic episode of anorexia nervosa.</td>
</tr>
</tbody>
</table>

Russell, 1979, 1983

Those outlined in the DSM-III in that purgative behavior was delineated as a necessary condition, which is not the case in the DSM-III (American Psychiatric Association, 1980). Also, Russell, in his modified criteria (1983), stated the relationship between anorexia nervosa and...
bulimia nervosa more clearly, noting that a previous episode of anorexia was necessary for the diagnosis of bulimia nervosa. Russell's criteria appeared to describe a more well-defined psychopathological syndrome than described in the DSM-III (American Psychiatric Association, 1980). As noted by Fairburn and Garner (1986), "...although it is possible in theory for people to fulfill Russell's criteria and not those of DSM-III, in practice this rarely occurs" (p. 408).

With the publication of the revision of the DSM-III (American Psychiatric Association, 1987), many of the criticisms of the DSM-III were addressed, primarily through the use of Russell's criteria. The criteria, which are summarized in Table 7, are much more specific, and the presence of both purgative behavior and body size concerns were now necessary for the diagnosis. Also, the disorder was renamed "bulimia nervosa", implicitly acknowledging a relationship with anorexia nervosa. However, a history of anorexia or an anorexic episode was not required by the DSM-III-R for a diagnosis of bulimia nervosa.
TABLE 7

DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS--THIRD EDITION--REVISED--DIAGNOSTIC CRITERIA FOR BULIMIA NERVOSA

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

B. A feeling of lack of control over eating behavior during the eating binges.

C. The person regularly engages in either self-induced vomiting, use of laxatives or diuretics, strict dieting or fasting, or vigorous exercise in order to prevent weight gain.

D. A minimum average of two binge eating episodes a week for at least three months.

E. Persistent overconcern with body shape and weight.

American Psychiatric Association, 1987

Compulsive Overeaters

In the DSM-III (APA, 1980) criteria of bulimia, binge eaters were included in the diagnosis of bulimia. However, with the more stringent diagnostic criteria of the DSM-III-R (APA, 1987), bulimia nervosa no longer included those who
binged but did not purge. Schlundt and Johnson (in press) have suggested a term to describe this population, termed compulsive overeaters. Table 8 presents a proposal for diagnostic criteria of this group (Williamson, et al, 1990). Essentially, these criteria are based on the DSM-III criteria of bulimia. The criteria describe a pattern of uncontrollable periods of binge eating, without the purgative or starvation behaviors used by bulimics and anorexics for weight control.

Typically, a compulsive overeater is moderately to severely obese. Females make up the majority of this group. According to the proposed criteria for compulsive overeating, binges must occur at least two times per week, and must have been occurring for the last three months. Junk foods high in carbohydrates are typically the foods binged upon. The compulsive overeater is typically overweight, as they do not engage in the extreme methods used by anorexics (severely restrictive eating) or bulimics (purgative behaviors) to control their weight. The compulsive overeater is typically very aware that her eating patterns are abnormal, and they often are fearful of
the loss of control experienced during a binge. Subsequently, the compulsive overeater often experiences depression after a binge. Body image disturbance similar to that reported by anorexics and bulimics is not usually seen in a compulsive overeater, but body dissatisfaction is present, again due to the usual problem of obesity.
TABLE 8

PROPOSED DIAGNOSTIC CRITERIA FOR COMPULSIVE OVEREATING

A. Recurrent episodes of binge eating at least twice per week for 3 months (rapid consumption of a large amount of food in a discrete period of time, usually less than 2 hours).

B. At least 3 of the following:
   1. Consumption of high-caloric, easily ingested food during a binge
   2. Inconspicuous eating during a binge
   3. Repeated attempts at dieting in an effort to lose weight
   4. Negative affect often set the occasion for binge eating
   5. Frequent weight fluctuations greater than 10 pounds due to alternating binging and dieting

C. Does not use extreme methods to lose or control weight, that it, self-induced vomiting, severely restrictive dieting, starvation, laxative or diuretic abuse, or extreme exercise habits.

D. Awareness that the eating pattern is abnormal and fear of not being able to stop eating voluntarily.

E. Depressed mood and self-deprecating thoughts following eating binges.

F. Does not evidence body image disturbances other than body size dissatisfaction.

G. The bulimic episodes are not due to anorexia nervosa, bulimia nervosa, or any known physical disorder.

Comparison of the Eating Disorders Groups

Although anorexia nervosa, bulimia nervosa, and compulsive overeating are currently the most commonly discussed eating disorders, the non-binging obese group is often discussed in the same body of research literature. Although all four groups have disordered eating, they all present a somewhat different, if occasionally overlapping, diagnostic picture. In Table 9, a description of the similarities and differences of the four groups are presented.

Weight status is one variable which discriminates the four eating disordered groups. Anorexics are typically 15-20% below normal weight for their height. Obese individuals are 20% or more above normal weight for their height. Bulimics are typically in the normal weight range, and most compulsive overeaters are above normal weight. It is interesting to note that all eating disordered groups engage in binge eating, differing only in frequency. Both binge eaters and bulimia nervosa are the most frequent bingers.
<table>
<thead>
<tr>
<th>Problem area</th>
<th>AN*</th>
<th>BN*</th>
<th>CO*</th>
<th>O*</th>
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<tr>
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<td>15% or more</td>
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<td>20% or more</td>
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<td></td>
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<td>Moderate</td>
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</tbody>
</table>

*AN=Anorexia Nervosa; BN=Bulimia Nervosa; CO=Compulsive Overeater; O=Obese
All of the eating disordered groups engage in various weight control methods, with anorexics and bulimics engaging in the most severe methods of weight control (e.g., fasting, purging). Compulsive overeaters and obese individuals often engage in restrictive diets. All are concerned about "forbidden foods", or foods that are considered fattening. However, anorexics generally avoid eating these foods while bulimics will usually eat them only when they have the opportunity to binge and purge. Both anorexics and those with bulimia nervosa experience severe anxiety after eating. Also, both report body image disturbances. Neither binge eaters nor obese individuals report post-eating anxiety or severe body image concerns. All report mood influences on eating.

All four groups, it has been found, report additional psychopathology. Anorexics typically have been found to experience the most psychopathology, but bulimia nervosa patients may also report severe psychopathology as well. Typically, depression is the most frequently reported problem, but anxiety and personality disorders have also been reported (Garner, Garfinkel, & O'Shaughnessy, 1985; Halmi, 1983; Prather & Williamson, 1988).
By delineating the various similarities and differences between anorexia nervosa, bulimia nervosa, binge eaters, and obese individuals, more accurate differential diagnosis can be facilitated. With more accurate diagnosis, appropriate treatment which adequately addresses the pathology of each disorder can be designed and delivered.

Due to the noted similarities and differences in each diagnostic category, the assessment of these disorders is often a complicated matter. In the following section, a description of the current methods of assessment of eating disorders is described.

ASSessment instruments

Structured interviews. The structured interview format is a method to systematically obtain information about a patient. Also, a structured interview can be evaluated psychometrically. Three structured interviews have been developed for the assessment of eating disorders patients. The first is the Clinical Eating Disorder Rating Instrument (CEDRI), developed in 1987 by Palmer, Christie, Cordle, Davis, and Kendrick. It was constructed to assess anorexia
nervosa and bulimia nervosa. Thirty-five items, which are each rated on a four-point scale, assess the psychopathology common in both anorexic and bulimic patients. Using five independent raters, interrater reliability was found to be high for most items. However, only 11 subjects were utilized in developing the instrument, and no validity studies were reported.

The second structured interview designed specifically to be used with an eating disorders population is the Eating Disorder Examination (EDE), which was developed by Cooper and Fairburn (1987). It was designed to assess bulimic symptomology over the previous four weeks only, and so only assesses current symptomology, without investigating any historical or developmental factors. The authors suggest that the EDE be used only as a measure of treatment outcome, and do not recommend its use as a diagnostic tool.

The third structured interview is called the Interview for Diagnosis of Eating Disorders (IDED), developed by Williamson, et al, (1990). The IDED (see Appendix 1) was designed to be used with anorexia nervosa, bulimia nervosa,
compulsive overeating, and obesity. A subject's responses to questions assessing the diagnostic criteria of anorexia nervosa, bulimia nervosa, and compulsive overeating are rated (on a seven-point scale) by the interviewer after the completion of the interview. Nineteen ratings are made in all (four regarding the diagnostic criteria for anorexia nervosa, five regarding the diagnostic criteria for bulimia nervosa, and ten regarding the diagnostic criteria for compulsive overeating). Finally, each diagnostic category is given a total score, which is the sum of all ratings regarding each specific diagnostic category (anorexia nervosa, bulimia nervosa, and compulsive overeating). The diagnosis of obesity is made by exclusion (e.g., the lack of endorsement of symptoms of anorexia nervosa, bulimia nervosa, or compulsive overeating), as well as a body weight of 20% above expected for age and height.

In assessing the psychometric properties of the IDED, five bulimics, five compulsive overeaters, five obese, and five normal subjects (n = 20) were interviewed using the measure. Two weeks later, the subjects were re-
interviewed, using the IDED, by a second interviewer, who did not have access to the results of the initial interview. These evaluations were conducted while doing the study presented in this paper. The temporal stability of the instrument (over a two-week period of time) proved to be more than adequate, with interrater reliability coefficients for each of the nineteen ratings $r \geq .86$, which are presented in Appendix 2. Furthermore, the test-retest reliability coefficients of the three total ratings (anorexia nervosa total, bulimia nervosa total, and compulsive overeater total) were significantly correlated, and are also presented in Appendix 2. In Appendix 3, validity coefficients of the IDED are presented. The Anorexia Nervosa total score was significantly correlated with the Body Image Assessment Ideal Body Size, Eating Disorder Inventory (EDI) Drive for Thinness scale, EDI Bulimia scale, and EDI Interoceptive Awareness scale. Thus, the Anorexia Nervosa scale was associated with a desire for a smaller-than-normal body size, excessive concern with dieting, binge eating and purgative habits, and a lack of self-confidence in determining degree of
hunger and satiety.

The Bulimia Nervosa total score was significantly correlated with the EDI Drive for Thinness, Bulimia, and Interpersonal Distrust measures. These scales are indicative of a strong preference for thinness and excessive concern with dieting, binge eating and purgative habits, and feelings of alienation.

Finally, the Compulsive Overeater total score significantly correlated with the Body Image Assessment Current Body Size, EDI Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Interpersonal Distrust, and Interoceptive Awareness scales. These scales measure a perception of large body size, an excessive concern for dieting and thinness, binge eating, dissatisfaction with body size, feelings of general inadequacy and alienation, and a lack of self-confidence in determining sensations of hunger or satiety. It is concluded that this pattern of correlations was supportive of the concurrent validity of the three scales of the IDED.
Self-report inventories. There have been a variety of self report instruments used to assess the symptomatology of those with eating disorders. They include the Eating Attitudes Test (EAT) (Garner & Garfinkel, 1979), the Bulimia Test (BULIT) (Smith & Thelen, 1984), the Eating Questionnaire-Revised (EQ-R) (Williamson, Davis, Goreczny, McKenzie, & Watkins, 1989), and the Eating Disorder Inventory (EDI) (Garner & Olmstead, 1984). Each of these instruments is designed to measure some aspect of disordered eating, and a more thorough discussion of each is presented below.

(a) Eating Attitudes Test (EAT). Garner and Garfinkel (1979) developed a 40-item self-rating scale to assess abnormal attitudes regarding eating (see Appendix 3). The EAT is one of the most widely used assessment instruments used with eating disordered individuals, especially with anorexics (Garner & Olmstead, 1984). A total score of 30 or more is used as a cut-off score for anorexia nervosa. Reliability for the test was reported to be $r = .79$ for a clinical sample of anorexics, and $r = .94$ with a sample of
both clinical subjects (anorexics) and normal subjects. A significant correlation (r = .87) between total EAT score and anorexic vs. normal group membership was supportive of concurrent validity (Garner & Garfinkel, 1979). Gross, et al (1987) used the EAT comparing patients with bulimia nervosa with normal controls. They found that the EAT discriminated the clinical sample from the control sample, supporting criterion validity for the EAT. Although the EAT discriminated bulimia nervosa and bulimia, no study of the discrimination of anorexia nervosa and bulimia nervosa has been conducted.

(b) Bulimia Test (BULIT). Smith and Thelen (1984) designed a 36-item test specifically targeted to measure the DSM-III (American Psychiatric Association, 1980) criteria of bulimia. The BULIT (see Appendix 4) discriminates bulimia (binge eating) from bulimia nervosa, based on cut-off scores. Test-retest reliability was reported to be r = .87; support for concurrent validity, using the correlation of BULIT scores with group membership (bulimia vs. normals) was not as strong, r = .54.
Thelen, Mann, Pruin, and Smith (1986) conducted a factor analysis of the BULIT, using all 36 items. Six factors were derived, including (1) binging, (2) vomiting, (3) negative feelings about binging, (4) menstrual problems, (5) preference for high calorie, easily ingested foods, and (6) weight fluctuations.

(c) Eating Questionnaire-Revised (EQ-R). Williamson, et al (1989) constructed a test, the Eating Questionnaire-Revised (see Appendix 5) which, like the BULIT, was designed to measure the DSM-III (American Psychiatric Association, 1980) criteria of bulimia. It consists of fifteen multiple choice items, which is significantly shorter than the BULIT. Test-retest reliability for the EQ-R has been found to be satisfactory ($r = .83$). Internal consistency was also found to quite high (coefficient alpha = $>.87$). The EQ-R was found to be highly correlated with the BULIT ($r = .80$), and to discriminate bulimics from normals.
(d) **Eating Disorder Inventory (EDI).** The EDI (see Appendix 6) is a 64-item test constructed to measure the "specific cognitive and behavioral dimensions that may meaningfully differentiate subgroups of patients (e.g., anorexics) or which may distinguish those with serious psychopathology from normal dieters" (Garner & Olmstead, 1984, p. 9). It differs from the EAT, in that the EAT is more of a direct measure of the symptomatology associated with anorexia nervosa.

The EDI is typically used in the assessment of anorexia nervosa and bulimia nervosa. No comparisons of binge eaters or non-binging obese with anorexia nervosa or bulimia nervosa has been made. Eight constructs are measured by the EDI: (1) drive for thinness, (2) bulimia (e.g., binge eating), (3) body dissatisfaction, (4) ineffectiveness, (5) perfectionism, (6) interpersonal distrust, (7) interoceptive awareness, and (8) maturity fears. The modified version of Feighner, et al (1972) criteria were used (Garfinkel & Garner, 1982) to delineate the validation sample used. Internal consistency of each subscale was found to be above .80, and average
item-total correlation was found to be $r = .63$. A variety of measures were used to determine the convergent and discriminant validity of each subscale, and strong support was found for the convergent and discriminant validity of each subscale. Also, the criterion validity of the EDI was investigated, using experts' ratings. Satisfactory support was found for each subscale, with correlations ranging from $r = .43$ to $r = .68$.

There are a variety of other instruments which have been utilized in the assessment of anorexia nervosa, bulimia nervosa, compulsive overeating, and obesity. However, the four which have been described are four of the most psychometrically sound instruments, and are solidly based upon well-accepted (although varied) sets of diagnostic criteria. Other tests used in the assessment of eating disorders measure specific characteristics of anorexia or bulimia. They include the Body Image Assessment, used for assessment of body size perception (Williamson, et al, 1989), the Binge Scale, used to measure the behavioral and attitudinal parameters of
binge eating (Hawkins & Clement, 1980), the Eating Behavior Inventory, used for assessing behaviors implicated in weight loss (O'Neil, Currey, Hirsch, Malcolm, Sexauer, Riddle, & Taylor, 1979), the Restraint Scale, a measure of restrained eating patterns (Polivy, Herman, & Walsh, 1978), and the Dutch Eating Behavior Questionnaire, another measure of restrained eating patterns (Wardle, 1986).

Since the publication of the DSM-III-R (American Psychiatric Association, 1987), a new set of criteria have been introduced, changing the diagnostic picture of anorexia nervosa, bulimia, and bulimia nervosa. The existing assessment instruments are now somewhat obsolete, in the light of these changes in diagnostic criteria. Also, as noted above, no single instrument has been developed for differential diagnosis of the most common eating disorders. Therefore, a new assessment instrument to differentiate anorexia nervosa, bulimia nervosa, binge-eaters, and non-binging obese, based upon the criteria published in the DSM-III-R (American Psychiatric
Association, 1987) is needed. In the following section, a description of this study, which attempted to construct such a test, is presented.

TEST CONSTRUCTION STRATEGY

Initial test construction phase. As noted earlier, a self-report inventory which could be used for differential diagnosis of the most common types of eating disorders is needed. The methodology for constructing such an instrument, called the Eating Disorders Diagnostic Inventory (EDDI), follows.

In order to establish an assessment instrument utilized to differentiate diagnostic groups, one must first develop a group of test items which might discriminate those groups. This pool could be taken from a group of already existing tests, or could be independently constructed. In this particular study, the test item pool was constructed from items of the BULIT, EAT, and EQ-R, which totalled 91 items. The decision to use this pool of items was based
upon several considerations: (1) all of these instruments have shown some usefulness for differential diagnosis of all of the relevant eating disorder groups, (2) items from all instruments have a similar multiple choice format, (3) there was a large data set using these three instruments with groups of subjects diagnosed as anorexia nervosa, bulimia nervosa, compulsive overeaters, non-binging obese, and normals which could be utilized.

The items of these three tests (total = 91) were subjected to a multivariate discriminant analysis, in order to identify an item pool which was able to differentiate the various diagnostic groups. Discriminant analysis involves deriving the linear combination of the two (or more) independent variables that discriminate best between a priori defined groups (Hair, Anderson, Tatham, & Grablowsky, 1979). In discriminant analysis, a group mean, or centroid, is derived by averaging the discriminant scores for the individuals within each particular group. The distance between the group centroids is then measured by comparing the distribution of the discriminant score distributions. By comparing the group centroids of each
scale, the amount of (or lack of) overlap between the
discriminant score distributions determined the
probabilities of misclassification of group members.

In addition to evaluating the discriminant validity of
the EDDI, derivation of scales was desireable so that the
EDDI could be used for description of eating disorder
problems. These scales related to the characteristics of
eating disorders were derived by utilizing factor analysis.
It was expected that factors would emerge which were
similar to the primary characteristics of anorexia nervosa,
bulimia nervosa, and compulsive overeating, e.g., purging,
binge eating, restrictive eating, and preoccupation with
body size.

Validation phase. The second phase of the study
involved evaluation of the reliability of the test. A
commonly used method of determining reliability is based on
the internal consistency of each scale. Coefficient alphas
were utilized to assess internal consistency of the scales
of the EDDI (Anastasi, 1976). The next step involved
assessing the test-retest reliability of the total score
and the scales of the EDDI. Over a two-week period of time, the test was re-administered to a sub-sample of subjects from the second phase.

The validation phase of testing involved determining the concurrent and discriminant validity of the test. Utilizing the discriminant function determined in the multivariate discriminant analysis conducted in the Initial Phase of the study, an attempt was made to replicate the rate of correct and incorrect classification of the EDDI for eating disorders groups and normals. If the new instrument was found to be reliable and valid, it would be a significant development for assessing eating disorders, and should assist in operationalizing the measurement of these disorders for both clinical and research purposes.

Concurrent validity refers to the effectiveness of a test in predicting an individual's behavior in specified situations (Anastasi, 1976). A pre-existing measure designed to assess the same thing (in this case, the EDI, body image measures, and weight status) was used as a criterion of the new test's validity. The correlation of a
single scale in the EDDI with the appropriate test would be supportive of concurrent validity. For example, comparing the correlation of the Bulimia scale with the scale measuring binge eating symptomology would be an appropriate comparison.

Summary of the Study

As indicated by the previous review, with the publication of the DSM-III-R, the current self-report inventories for differential diagnosis of eating disorders are inadequate. Existing self-report inventories have not been related to the current diagnostic criteria utilized to diagnose those with eating disorders. Specifically, there is no assessment measure which has been designed to differentiate anorexia nervosa, bulimia nervosa, compulsive overeaters, obese, and normals, based upon the new criteria set forth by the DSM-III-R and medically accepted standards (for obesity). In order to fill this void, a new test which differentiates these groups was developed. It is called the Eating Disorders Diagnostic Inventory (EDDI).

The steps involved in developing the EDDI are summarized below:
INITIAL PHASE

STEP 1: Identification of items from the EAT, BULIT, and EQ-R which differentiate the five (5) diagnostic groups.

STEP 2: Establish a discriminant function based upon these items which maximize the discrimination of the groups.

STEP 3: Factor analyze these items to form scales related to specific eating disorders characteristics.

VALIDATION PHASE

STEP 4: Using coefficient alphas, finalize scales with a high degree of internal consistency.

STEP 5: Evaluate the test-retest reliability of the scales, using a new sample.

STEP 6: Attempt replication of the results of discriminant function of Step 2.

STEP 7: Evaluate the concurrent validity of the scales of the EDDI by using a new sample.
METHOD

Subjects

Initial sample. An initial pool of subjects (n = 397) was recruited from undergraduate classes at Louisiana State University and from the surrounding community. They were also recruited from two private inpatient psychiatric hospitals which have eating disorders programs. Clinical subjects met the criteria for either anorexia nervosa or bulimia nervosa, using DSM-III-R criteria. Compulsive overeaters were diagnosed using the criteria proposed by Williamson, et al, 1990. Those classified in the obese group were 20% above their normal weight for height. Normals did not meet the diagnostic criteria for anorexia nervosa, bulimia nervosa, or compulsive overeating, and were of normal weight (± 10%) for their height.

The bulimia nervosa group (n = 169) averaged 23.03 years of age, were 64.47 inches tall, and 135.56 pounds. The anorexia nervosa group (n = 22) averaged 23.94 years of age, were 63.14 inches tall, and 90.33 pounds. The compulsive overeater group (n = 85) averaged 29.95 years of
age, was 64.75 inches tall, and 188.51 pounds. The non-binging obese group (n = 46) averaged 28.97 years of age, was 66.83 inches tall, and 228.00 pounds. The normal group (n = 75) averaged 20.29 years of age, were 64.89 inches tall, and 131.15 pounds. All subjects were female.

Validation sample. The validation sample was original proposed to number 15 subjects per group (anorexia nervosa, bulimia nervosa, compulsive overeater, obese, and normal), or 75 total subjects. However, due to the lack of anorexia nervosa subjects, this group was deleted from the study. The problem of obtaining 15 anorexic patients may be attributed to the low incidence of anorexia in the general population. Although epidemiological surveys indicate a rising incidence rate of anorexia since the 1930's, current studies indicate that anywhere from 0.37 per 100,000 to 1.12 per 100,000 individuals may be diagnosed with anorexia (Strober, 1986).

Without the anorexia nervosa group, the validation sample numbered 60 total (15 per group). These subjects were obtained in the same way that the original sample was
obtained—via the community, undergraduate students, and patients treated at three eating disorders programs, with the exception of the compulsive overeater and obese groups. These groups were recruited from undergraduate classes in part or totally. Forty-seven percent (47%) of the compulsive overeater group was recruited from a non-clinical setting, with a 53% recruited from eating disorders treatment programs. One hundred percent (100%) of the obese group was recruited from a non-clinical setting. This difference of recruitment of obese subjects is reflected in the differing weights of the obese group in the initial sample (average wt. = 228 pounds) versus the obese group in the validation sample (average wt. = 180 pounds). The bulimia nervosa group averaged 64.97 inches tall and 129.40 pounds. The compulsive overeater group averaged 64.93 inches tall, while the average weight of this group was 196.93 pounds. The average height of the obese group was 62.13 inches tall, and the average weight was 180.00 pounds. In the normal group, the average height was 63.33 inches, and the average weight was 119.40 pounds. All subjects were female.
ASSESSMENT INSTRUMENTS

Initial Sample. Each subject was asked to fill out a group of assessment instruments. These included the Eating Attitudes Test (EAT) (Garner & Garfinkel, 1979), a measure of anorexic behaviors and beliefs regarding eating and weight, the Bulimia Test (BULIT) (Smith & Thelen, 1984), a measure of the DSM-III (APA, 1980) criteria of bulimia, and the Eating Questionnaire-Revised (Williamson, et al 1989), also a measure of the DSM-III criteria of bulimia. Each subject's height and weight was measured at the time of assessment.

Validation Sample. Each subject in the validation sample was asked to fill out several assessment instruments. These included the Eating Disorders Diagnostic Inventory (EDDI), the Eating Disorders Inventory (EDI), a measure constructed to measure the "specific cognitive and behavioral dimensions that may meaningfully differentiate subgroups of patients", and which is typically used to assess anorexia nervosa and bulimia nervosa, and the Body Image Assessment Procedure (BIA)
(Williamson, et al, 1990). The Body Image Assessment (see Appendix 8) is a measure designed to assess a subject's perception of current body size (CBS) and ideal body size (IBS) through the use of body silhouettes which are printed on 6 inch X 4 inch cards. One silhouette is printed per card, and there are nine cards. On each card there is a drawing of a female figure whose body size ranges from very thin to very obese, in incremental steps. The cards are placed in random order on a flat surface. The subject is then instructed to "Select the card that most accurately depicts your current body size, as you perceive it to be. Please be honest. You must choose only one card and you may not rearrange the cards to directly compare them." After the subject selects a card, the number of the card (which is on the back of each card) is recorded, the cards are shuffled, and again placed in random order on the flat surface. The subject is then instructed to "Please select the card that most accurately depicts the body size that you would most prefer. Again, be honest and do not rearrange the cards." The number of the card that the subject selects is then recorded. This procedure
typically takes less than one minute. From these data, one can derive a subject's perception of her current body size (CBS) as well as her ideal body size (IBS).

Height and weight were also measured at the time of the assessment. The Eating Disorders Inventory and the Body Image Assessment were selected to be utilized in the validation sample as psychometrically sound measures of eating disorders symptoms which are common to anorexia nervosa, bulimia nervosa, and compulsive overeaters. They were used as measures of concurrent validity.

PROCEDURE

Initial sample. Each subject was asked to read, and then sign, an consent form prior to participating in the study (see Appendix 8). An interview was conducted with the subjects, to assess for behaviors and beliefs regarding eating, food, and weight. Each subject was then administered the Eating Attitudes Test (EAT), the Bulimia Test (BULIT), and the Eating Questionnaire—Revised (EQ-R). Their height and weight was also measured at that time. The subjects were staffed with a licensed clinical
psychologist after the assessment procedure was completed. The diagnoses were made on the basis of data derived from the interview.

Validation sample. After the construction of the EDDI (see Appendix 10), a second group of subjects (N = 60) was recruited. They were asked to sign the consent form (see Appendix 8), and were then administered the assessment measures (the Eating Disorders Inventory, Eating Disorders Diagnostic Inventory, and Body Image Assessment) (see Appendices 7, 10, and 9, respectively). Their weight and height were also measured at that time. A structured interview, the Interview for Diagnosis of Eating Disorders (IDED) (see Appendix 1) was conducted with each subject. Two weeks later, the same group of subjects were re-administered the EDDI, for test-retest purposes. Sixty-seven percent (67%) (10 of 15) subjects of the bulimia nervosa group, 73% (11 of 15) of the compulsive overeater subjects, 80% (12 of 15) of the obese subjects, and 100% (15 of 15) subjects were given the EDDI a second time over a test-retest period of approximately two weeks.
One third (5 of 15) of the subjects per group in the validation sample were also randomly selected to be interviewed a second time, using the Interview for Diagnosis of Eating Disorders (IDED). The reliability coefficients are presented in Appendix 2, and were discussed earlier (see p. in the Assessment Instruments section). The validity coefficients, utilizing the Body Image Assessment and Eating Disorders Inventory for concurrent validity are presented in Appendix 3. Of most importance was the finding of 100% agreement upon diagnoses by the interviewers.

Data Analysis

Data analyses were conducted in seven steps. The first step entailed identifying items from three assessment instruments, the EAT, BULIT, and EQ-R, which differentiated the five diagnostic groups (i.e., anorexia nervosa, bulimia nervosa, binge eaters, obese, and normals), utilizing stepwise multivariate discriminant analysis. A stepwise multivariate discriminant analysis was used to identify a discriminant function which discriminated the five groups.
Factor analysis was then performed on the items identified by the discriminant analysis. From this factor analysis, scales were established. This completed the Initial Phase of the study.

After formation of the Eating Disorders Diagnostic Inventory (EDDI) in the Initial Phase of the study, internal consistency of the scales was measured using coefficient alpha. The test was administered over a two-week interval, for the purpose of assessing test-retest reliability of the EDDI and its scales. Pearson product-moment correlations were used for this purpose. Also, an attempt to replicate the results of the discriminant function derived in the Initial Phase of the study was made. Concurrent validity was then assessed, using correlations between the various EDDI scale scores and two measures of eating disorders symptomology, the Body Image Assessment and Eating Disorders Inventory.
RESULTS

Initial Phase

**Discriminant analysis.** The items of the Eating Attitudes Test (EAT), Bulimia Test (BULIT), and Eating Questionnaire-Revised (EQ-R) were subjected to a stepwise multivariate discriminant analysis, in order to determine which items were most effective for differentiating the five diagnostic groups. The discriminant model was statistically significant, $F(5, 391) = 89.214, p > .0001$. Thirty-five items were found to discriminate the five groups in the study (anorexia nervosa, bulimia nervosa, compulsive overeaters, obese, and normals) with 85.5% accuracy. Thirty-five items were chosen, as the variance accounted by item number 36 dropped below .5. The cumulative (total) variance accounted for by the 35 items was 59.2%. In Figure 1, the variance accounted for by each item is plotted. In Table 10, the classification accuracy of these 35 items is shown, by diagnostic group.
Figure 1. Percent Variance of Individual EDDI Items.
### TABLE 10

**DISCRIMINANT ANALYSIS: CLASSIFICATION ACCURACY OF THE EDDI**

<table>
<thead>
<tr>
<th>A Priori Group Assignment</th>
<th>AN*</th>
<th>BN*</th>
<th>CO*</th>
<th>O*</th>
<th>N*</th>
</tr>
</thead>
<tbody>
<tr>
<td>#/group</td>
<td>22</td>
<td>20</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>90.9%</td>
<td>9.1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>BN*</td>
<td>169</td>
<td>6</td>
<td>148</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3.6%</td>
<td>87.6%</td>
<td>7.1%</td>
<td>0.59%</td>
<td>1.2%</td>
</tr>
<tr>
<td>CO*</td>
<td>85</td>
<td>1</td>
<td>1</td>
<td>67</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>1.2%</td>
<td>1.2%</td>
<td>78.8%</td>
<td>14.1%</td>
<td>10.9%</td>
</tr>
<tr>
<td>O*</td>
<td>46</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>2.2%</td>
<td>15.2%</td>
<td>71.7%</td>
<td>10.9%</td>
</tr>
<tr>
<td>N*</td>
<td>75</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>1.3%</td>
<td>98.7%</td>
</tr>
</tbody>
</table>

*AN = A orexia Nervosa, BN = Bulimia Nervosa, CO = Compulsive Overeater, O = Obese, N = Normal*
Terminology recommended by Gottesman and Prescott (1989) will be used to describe the outcome of this step of the study (see Appendix 11). They utilize the terms "false positive" and "false negative" rate to describe the classification rate or hit rate of a test. A false positive rate is defined as the proportion of subjects not in a defined group classified into that group by a test. A false negative rate is defined as the proportion of subjects in a defined group not classified into that group by a test. For example, a false positive rate for this study could be defined as the proportion of non-bulimics classified as bulimic by this test. A false positive negative rate could be divined as the proportion of bulimics classified as non-bulimic. They also use the term "overall accuracy" to define the proportion of all subjects correctly classified by a test. "Sensitivity" is the term used to define the proportion of subjects in a defined group who are classified correctly by a test. "Specificity" is the proportion of subjects not in a defined group who are classified correctly by a test. For example, in this study, sensitivity may refer to the
proportion of obese who are correctly classified by the EDDI. Specificity refers to the number of non-obese who are correctly classified by the EDDI. "Positive predictive power" refers to the proportion of individuals classified by a test as being in a defined group who are in the defined group. "Negative predictive power" refers to the proportion of subjects classified not belonging in a defined group by the test who are not in the defined group. For example, in this study, positive predictive power may refer to the proportion of subjects classified by the EDDI as anorexic who are anorexic. Negative predictive power may refer to the proportion of subjects classified by the EDDI as non-anorexic who are non-anorexic. In Table 11, the false positive rate, false negative rate, overall accuracy rate, sensitivity, specificity, positive predictive power, and negative predictive power are defined for the initial phase of the study.

Utilizing the thirty-five items identified by the discriminant analysis, two of the twenty-two anorexics were misclassified into the bulimic group, with the remaining 90.9% correctly classified. There was a 1.8% false
positive rate and a .5% false negative rate of classification for the anorexia nervosa group. That is, 1.8% of non-anorexics were classified as anorexic by the EDDI, and .5% of anorexics were classified as non-anorexic by the test. The overall accuracy rate for the anorexic group was 97.7%, meaning that 97.7% of all subjects were correctly classified by the EDDI. The sensitivity measure indicated that 90.9% of the anorexic subjects were correctly classified by the EDDI. The specificity measure indicated that 98.1% of non-anorexics were classified correctly. The positive predictive power, or the proportion of subjects classified by the EDDI as anorexic who were anorexic, was 74.1%. The negative predictive power, or the proportion of subjects classified as non-anorexic by the EDDI who were non-anorexic, was 99.5%.

In the bulimic group, six (3.6%) were misclassified into the anorexic group, twelve (7.1%) into the compulsive overeater group, one (.59%) into the obese group, and two (1.2%) into the normal group. There was a 1.0% false positive rate, meaning that 1% of non-bulimics were classified bulimic by the EDDI. The false negative rate of
5.3% indicated that 5.3% of bulimics were classified as non-bulimic by the EDDI. The overall accuracy rate for the bulimic group was 93.7%, indicating that this percentage of bulimics and non-bulimics were correctly classified by the EDDI. The sensitivity, or proportion of bulimics who were classified correctly by the EDDI, was 87.6%. The specificity, or proportion of non-bulimics who were classified correctly by the EDDI, was 99.1%. The positive predictive power of the EDDI, or proportion of subjects classified as bulimic who were bulimic, was 97.4%. The negative predictive power, or proportion of subjects classified as non-bulimic who are non-bulimic, was 91.4%.

In the compulsive overeater group, there was a 4.8% false positive classification rate, indicating that 4.8% of non-compulsive overeaters were classified as compulsive overeaters. A 4.3% false negative rate of classification indicates that 4.3% of compulsive overeaters were classified as non-compulsive overeaters. The overall accuracy was 93.1%, indicating that this percentage of compulsive overeaters and non-compulsive overeaters was classified correctly classified by the EDDI. The sensitivity of the EDDI for the compulsive overeater group
**TABLE 11**

FALSE POSITIVE AND NEGATIVE RATES, OVERALL ACCURACY, SPECIFICITY, AND POSITIVE AND NEGATIVE PREDICTIVE POWER OF THE EDDI: INITIAL PHASE

<table>
<thead>
<tr>
<th></th>
<th>AN*</th>
<th>BN*</th>
<th>CO*</th>
<th>D*</th>
<th>N*</th>
</tr>
</thead>
<tbody>
<tr>
<td>False + Rate</td>
<td>1.8%</td>
<td>1.0%</td>
<td>4.8%</td>
<td>4.3%</td>
<td>2.7%</td>
</tr>
<tr>
<td>False - Rate</td>
<td>.5%</td>
<td>5.3%</td>
<td>4.3%</td>
<td>3.2%</td>
<td>.1%</td>
</tr>
<tr>
<td>Overall Accuracy</td>
<td>97.7%</td>
<td>93.7%</td>
<td>90.1%</td>
<td>93.1%</td>
<td>97%</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>90.9%</td>
<td>87.6%</td>
<td>79.8%</td>
<td>71.7%</td>
<td>98.7%</td>
</tr>
<tr>
<td>Specificity</td>
<td>98.1%</td>
<td>99.1%</td>
<td>93.9%</td>
<td>96%</td>
<td>96.6%</td>
</tr>
<tr>
<td>+ Predictive Power</td>
<td>74.1%</td>
<td>97.4%</td>
<td>77.9%</td>
<td>70.2%</td>
<td>87.1%</td>
</tr>
<tr>
<td>- Predictive Power</td>
<td>99.5%</td>
<td>91.4%</td>
<td>94.5%</td>
<td>96.2%</td>
<td>99.7%</td>
</tr>
</tbody>
</table>

*AN=Anorexia Nervosa; BN=Bulimia Nervosa; CO=Compulsive Overeater; O=Obese; N=Normal*
was 79.8%, indicating that this percentage of compulsive overeaters was correctly classified by the EDDI. The proportion of non-compulsive overeaters who were classified correctly by the EDDI (specificity) was 93.9%. The positive predictive power, or the proportion of subjects classified by the EDDI as compulsive overeaters who were compulsive overeaters, was 77.9%. The negative predictive power, or proportion of subjects classified by the EDDI as non-compulsive overeaters who were non-compulsive overeaters, was 94.5%.

There was a 4.3% false positive rate for the obese group, indicating that 4.3% of non-obese were classified as obese. A 3.2% false negative rate of classification indicated that 3.2% of obese were classified as non-obese. The overall accuracy rate for the obese group indicated that 93.1% of obese and non-obese subjects were correctly classified by the EDDI. Sensitivity showed that 71.7% of obese subjects were classified correctly by the EDDI. The specificity rate of 96% indicated that 96% of non-obese were correctly classified by the EDDI. The positive predictive power, or proportion of subjects classified by the EDDI as obese who are obese, was 70.2%. The negative
predictive power, or proportion of subjects classified by the EDDI as non-obese who were non-obese, was 96.2%.

There was a 2.7% false positive rate and a .1% false negative rate of classification for the normal group, indicating that 2.7% of the clinical subjects were misclassified as normals, and .1% of normals were misclassified as clinical subjects. The overall accuracy rate of 97% indicated that this percentage of subjects was correctly classified by the EDDI. The sensitivity indicated that 98.7% of normals were classified correctly by the EDDI, and the specificity rate indicated that 96.6% of clinical subjects were classified correctly by the EDDI. The positive predictive power, or proportion of subjects classified by the EDDI as normal who were normal was 87.1%. The negative predictive power, or proportion of non-normals who were classified as non-normal subjects by the EDDI, was 99.7%.

Factor analysis. Factor analysis of the EDDI yielded three factors, which were labelled as: Factor 1 = Binge Eating; Factor 2 = Restrictive Eating/Laxative Abuse; and
Factor 3 = Purgative Behavior. A decision to retain three factors was based upon the following considerations. A scree plot, shown in Figure 2, suggested retaining four or five factors. However, using a factor loading criterion of .50, only the first three factors had four or more items per factor. In Figure 1, the scree plot of Eigenvalues. The specific EDDI items and factor loadings above .50 are shown in Table 12.
Figure 2. Scree Plot of Eigenvalues.
### TABLE 12

**EDDI: FACTORS AND FACTOR LOADINGS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How much are you concerned about your binge eating?</td>
<td>-.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Do you ever vomit during a binge?</td>
<td></td>
<td>.82</td>
<td></td>
</tr>
<tr>
<td>3. I am satisfied with my eating patterns.</td>
<td>-.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Other people think I am too thin.</td>
<td></td>
<td></td>
<td>.77</td>
</tr>
<tr>
<td>7. I feel that food controls my life.</td>
<td></td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td>10. Which of the following describes your feelings after a binge?</td>
<td></td>
<td></td>
<td>-.74</td>
</tr>
<tr>
<td>11. How often do you vomit after eating in order to lose weight?</td>
<td></td>
<td></td>
<td>.80</td>
</tr>
<tr>
<td>12. I eat a lot of food when I'm not hungry.</td>
<td></td>
<td>.74</td>
<td></td>
</tr>
<tr>
<td>13. How often do you use restrictive diets?</td>
<td></td>
<td></td>
<td>.57</td>
</tr>
<tr>
<td>14. I give too much time and thought to food.</td>
<td></td>
<td></td>
<td>.74</td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>Factor</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>My eating patterns are different from eating patterns of most people.</td>
<td>.72</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I take laxatives.</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Do you believe that it is easier for you to vomit than it is for most people?</td>
<td>-.74</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Would you presently call yourself a &quot;binge eater&quot;?</td>
<td>.74</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>One of your best friends suddenly suggests that you both eat at a new restaurant buffet that night. Although you’d planned on eating something light at home, you go ahead and eat out, eating quite a lot and feeling full. How would you feel about yourself on the ride home?</td>
<td>-.71</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Do you ever eat uncontrollably to the point of stuffing yourself?</td>
<td>-.70</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>I feel sad or blue after eating more than I’d planned.</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I feel that others would prefer if I ate more.</td>
<td>.88</td>
<td></td>
</tr>
</tbody>
</table>
28. Most people I know would be amazed if they knew how much food I can consume at a sitting. .73

29. I feel extremely guilty after eating. .70

30. I am terrified about being overweight. .54

31. I suffer from constipation. .55

32. I particularly avoid foods with a high carbohydrate content. .62

34. I avoid eating when I am hungry. .75

Factor 1, or the Binge Eat Factor, contained fourteen items. The items in this factor included concern regarding binge eating, dissatisfaction with eating patterns, feeling out of control regarding food, eating a lot of food when not even hungry, thinking too much about food, abnormal eating patterns, labelling self as a "binge eater",
negative affect after overeating, and uncontrollable binge eating. This factor appears to measure eating large amounts of food, while feeling out of control with regard to control eating and food, and experiencing negative affect (sad, blue, self-disgust) after binge eating. This factor was labelled Binge Eating, since most of the items pertained to binge eating or negative affect after binging. The percent of variance accounted for by this factor was 33.4%.

Factor 2, Restrictive Eating/Laxative Abuse, included six items. Items related to: others thinking that the subjects "is too thin", laxative abuse, others preferring that the subject increase food intake, constipation, avoidance of high carbohydrate foods, and avoidance of eating when hungry were included in this factor. It appears that this factor measures feelings of pressure from others to gain weight and eat more, avoidance of eating, and laxative abuse, thus, it was labelled Restrictive Eating/Laxative Abuse. The variance accounted for by this factor was 13.7%. 
Finally, Factor 3, the Purgative Behavior Factor, included four items. The items included purging via vomiting as a weight control technique, as well as frequent use of restrictive diets. The four items in this factor concerned the use of vomiting and restrictive eating as a purgative method. Therefore, it was labelled Purgative Behavior. Total variance accounted for by this factor was 12.0%. The total amount of variance explained by the Binge Eat, Restrictive Eating/Laxative Abuse, and Purgative Behavior factors was 59.2%.

Validation phase

Test—retest reliability and internal consistency.
Using the new sample of subjects, test—retest reliability coefficients (Pearson Product Moment Correlations) for the three scales were as follows: Factor 1 (r = .96); Factor 2 (r = .87); Factor 3 (r = .88). The reliability coefficient for the total score of the EDDI was r = .93. Coefficient alphas were computed for each scale, and were found to indicate a high degree of internal consistency: Factor 1 = .85; Factor 2 = .79; and Factor 3 = .74.
Discriminant analysis. In order to replicate the findings of the discriminant analysis in the Initial Phase, the same discriminant function was used to assess the rate of correct and incorrect classification when using the EDDI. These results are presented in Table 13. In Table 14, a description of the findings (using false positive and false negative rates, overall accuracy rate, sensitivity, specificity, and positive and negative predictive powers) for the Validation Sample is presented.
TABLE 13

DISCRIMINANT ANALYSIS: EATING DISORDERS DIAGNOSTIC INVENTORY—VALIDATION SAMPLE

<table>
<thead>
<tr>
<th>Assigned Diagnostic Group</th>
<th>BN*</th>
<th>CO*</th>
<th>O*</th>
<th>N*</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN*</td>
<td>15</td>
<td>11</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>73.3%</td>
<td>26.7%</td>
<td>0%</td>
</tr>
<tr>
<td>CO*</td>
<td>15</td>
<td>0</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0%</td>
<td>80%</td>
<td>13.3%</td>
</tr>
<tr>
<td>O*</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0%</td>
<td>6.7%</td>
<td>66.7%</td>
</tr>
<tr>
<td>N*</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0%</td>
<td>0%</td>
<td>20%</td>
</tr>
</tbody>
</table>

*BN = Bulimia Nervosa; CO = Compulsive Overeater; O = Obese; N = Normal

In total, fifteen of the total 60 subjects (25%) were misclassified when utilizing the EDDI with this sample of subjects. Therefore, the overall correct classification rate of 75% is lower than the 85.5% correct classification rate of the Initial Phase of the study. Eleven (73.3%) of
bulimics were accurately classified, with 26.7% of this group inaccurately placed into the compulsive overeater group. Thus, there was a 0% false positive rate and a 7% false negative rate of classification for the bulimic group. The overall accuracy rate indicates that 93.3% of bulimic and non-bulimic subjects were correctly classified by the EDDI. The sensitivity rate, or proportion of bulimics who were classified correctly by the EDDI, was 73.3%. The specificity, or proportion of non-bulimics who were classified correctly by the test, was 100%. Positive predictive power, or proportion of subjects classified by the EDDI as bulimic who were bulimic, was 100%. Finally, the negative predictive power, or proportion of non-bulimics were classified as non-bulimic was 91.8%. The false positive rate in the Validation Sample (0%) was less than in the Initial Sample (1%), indicating that the EDDI misclassified more non-bulimics as bulimic in the Initial Sample than in the Validation Sample. However, sensitivity in the Validation Sample was much lower (73.3%) than in the Initial Sample (87.6%).
Eighty percent (12) of the compulsive overeater group was accurately classified, with three subjects being inaccurately placed into the obese (two subjects) and normal (one subject) categories. There was an 8% false positive rate and a 5% false negative rate for the compulsive overeater group. That is, 8% of non-compulsive overeaters were classified by the EDDI as compulsive overeaters, and 5% of compulsive overeaters were classified as non-compulsive overeaters. The overall accuracy indicated that 86.7% of compulsive overeater and non-compulsive overeater subjects were correctly classified by the EDDI. The sensitivity rate of 80% indicated that this percentage of compulsive overeaters were correctly classified by the EDDI. The specificity rate indicated that 88.9% of non-compulsive overeaters were correctly classified by the EDDI. The positive predictive power, or proportion of subjects classified by the EDDI as compulsive overeaters who were compulsive overeaters, was 100%. The negative predictive power, or proportion of subjects classified as non-compulsive overeaters who were non-compulsive overeaters, was 93%. The false positive
rate was higher for the Validation Sample (8.3%) as compared to the Initial Sample (4.8%), indicating that there were more non-compulsive overeaters misclassified as compulsive overeaters in the Initial vs. Validation Sample. Also, specificity was better in the Initial Sample (93.9%) than in the Validation Sample (88.9%). Positive predictive power for the compulsive overeater group in the Initial Sample was 77.9%, as compared to 70.1%, indicating that the proportion of compulsive overeaters who were accurately classified was greater in the Initial Sample than in the Validation Sample.

In the obese group, ten (66.%) were accurately classified, with one (6.7%) placed into the compulsive overeater group, and four (26.7%) placed inaccurately into the normal group. There was an 8% false positive rate and an 8% false negative rate for the obese group, meaning that 8% of non-obese were misclassified as obese by the EDDI, and 8% of obese were misclassified as non-obese by the test. The overall accuracy rate of 83.3% indicated that this percentage of subjects was correctly classified by the EDDI. Sensitivity indicated that 66.7% of obese were
classified as obese by the EDDI. Specificity was 88.9%, indicating that most non-obese were correctly classified by the EDDI. Positive predictive power was 66.7%, indicating that only two out of three obese subjects was classified by the EDDI as obese. Finally, negative predictive power indicated that 88.9% of subjects classified as non-obese were non-obese. As a whole, obese subjects in the Initial Sample were classified more accurately than in the Validation Sample.

Finally, eighty percent (12) of normal subjects were accurately classified, with the remaining twenty percent (3) being inaccurately placed into the obese group. There was an 8% false positive rate and a 5% false negative rate for the normal group. Overall accuracy indicated that 86.7% of normal and clinical subjects were correctly classified by the EDDI. Sensitivity indicated that 80% of normals were accurately classified by the EDDI. Specificity was 66.7%, indicating that only two-thirds of non-normals were classified correctly by the EDDI. Positive predictive power, or proportion of subjects classified by the EDDI as normal who were normal, was also
low, i.e., 70.6%. Negative predictive power, or proportion of subjects classified by the EDDI as non-normal, was 93%. As with the obese group, as a whole, normal subjects were classified more accurately in the Initial Sample as compared with the Validation Sample.
### TABLE 14

FALSE POSITIVE AND NEGATIVE RATES, OVERALL ACCURACY
SENSITIVITY, SPECIFICITY, POSITIVE AND NEGATIVE
PREDICTIVE POWER RATES: VALIDATION SAMPLE

<table>
<thead>
<tr>
<th></th>
<th>BN*</th>
<th>CO*</th>
<th>O*</th>
<th>N*</th>
</tr>
</thead>
<tbody>
<tr>
<td>False + Rate</td>
<td>0%</td>
<td>8.3%</td>
<td>8.3</td>
<td>8.3</td>
</tr>
<tr>
<td>False - Rate</td>
<td>6.7%</td>
<td>5%</td>
<td>8.3</td>
<td>5%</td>
</tr>
<tr>
<td>Overall Accuracy</td>
<td>93.3%</td>
<td>86.7%</td>
<td>63.3%</td>
<td>86.7%</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>73.3%</td>
<td>80%</td>
<td>66.7%</td>
<td>80%</td>
</tr>
<tr>
<td>Specificity</td>
<td>100%</td>
<td>88.9%</td>
<td>88.9%</td>
<td>66.7%</td>
</tr>
<tr>
<td>+ Predictive Power</td>
<td>100%</td>
<td>70.1%</td>
<td>66.7%</td>
<td>70.6%</td>
</tr>
<tr>
<td>- Predictive Power</td>
<td>91.8%</td>
<td>93%</td>
<td>88.9%</td>
<td>93%</td>
</tr>
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</table>

*BN= Bulimia Nervosa; CO= Compulsive Overeater; O= Obese; N= Normal
A comparison of the discriminant function of the Initial Sample with the Validation Sample is made in Table 15. In this table, data from the Initial Sample are shown in the top right half, and the data from the Validation Sample are shown in the bottom left half of the table. The comparison is based on the generalized squared distance from each of the five diagnostic groups. This comparison is of interest, as it indicates the pattern of differences between groups in both samples, based on the discriminant function.
Table 15

Generalized Squared Distance from Each of the Diagnostic Groups

<table>
<thead>
<tr>
<th></th>
<th>AN*</th>
<th>BN*</th>
<th>CO*</th>
<th>O*</th>
<th>N*</th>
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<tbody>
<tr>
<td>INITIAL SAMPLE</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>AN*</td>
<td>20.70</td>
<td>25.61</td>
<td>27.41</td>
<td>34.09</td>
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<tr>
<td>BN*</td>
<td></td>
<td>10.36</td>
<td>14.82</td>
<td>22.65</td>
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<tr>
<td>CO*</td>
<td></td>
<td>15.36</td>
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<td>4.16</td>
<td>18.02</td>
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<tr>
<td>O*</td>
<td></td>
<td>24.97</td>
<td>8.64</td>
<td></td>
<td>14.83</td>
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<tr>
<td>N*</td>
<td></td>
<td>30.39</td>
<td>15.72</td>
<td>3.36</td>
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VALIDATION SAMPLE

*AN=Anorexia Nervosa; BN=Bulimia Nervosa; CO=Compulsive Overeater; O=Obese; N=Normal

Based upon these data, it appears that the bulimia nervosa group and compulsive overeater groups were closer in the initial discriminant function than they were in the
Validation Sample. The compulsive overeater and obese groups follow a similar pattern. The compulsive overeater group and obese group are closer in the Initial Sample than they were in the Validation Sample. Finally, the obese and normal groups were much closer in the Validation Sample than in the Initial Sample. A representation of the relationship between groups, based upon data reported in Table 15 is shown in Figure 3. As can be seen, a major difference between the two samples was that, in the Validation Phase, the obese group was much more similar to the normal group than in the Initial Sample.
This pattern may have occurred due to the manner in which the subjects were recruited. In the Initial Sample, the subjects were primarily recruited from clinical settings, with the exception of the normal group, which was obtained from undergraduate psychology classes. In the Validation Sample, the bulimia nervosa group was totally
recruited from clinical settings. Fifty-three percent (8 of 15 subjects) of the compulsive overeater group was recruited from clinical settings and 47% (7 of 15 subjects) from undergraduate psychology classes. The differences in group recruitment may have led to less pathological groups in the Validation Sample, as those recruited from clinical settings are typically in some distress, which leads them to seek treatment. Those recruited from non-clinical settings may not have experienced significant distress regarding their weight or eating behaviors. Because the compulsive overeater and obese groups all had a portion or all subjects recruited from non-clinical settings, they may have been different from the compulsive overeater and obese groups in the Initial Sample.

Concurrent validity. Using Pearson Product Moment correlation coefficients, the three factors of the EDDI were correlated with other measures of eating disordered symptomology as a measure of concurrent validity. The Body Image Assessment (BIA) current body size (CBS) and ideal body size (IBS) measures, the Eating Disorders Inventory
(EDI) scales, and the Interview for Diagnosis of Eating Disorders (IDED) Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Compulsive Overeating (CO) total rating scores were all used as measures of concurrent validity. These results are presented in Table 1.

TABLE 1

EDDI FACTORS—CORRELATIONS WITH BODY IMAGE ASSESSMENT, EATING DISORDERS INVENTORY, AND INTERVIEW FOR DIAGNOSIS OF EATING DISORDERS SCORES

<table>
<thead>
<tr>
<th>ASSESSMENT</th>
<th>BINGE EAT FACTOR</th>
<th>RESTRICTIVE EATING/</th>
<th>LAXATIVE ABUSE FACTOR</th>
<th>PURGATIVE BEHAVIOR FACTOR</th>
<th>EDDI TOTAL SCORE</th>
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<tr>
<td>BIA CBS</td>
<td>.16</td>
<td>.41**</td>
<td>-.16</td>
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<td>BIA IBS</td>
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<td>-.33**</td>
<td>-.10</td>
<td></td>
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<td>EDI DFT</td>
<td>.29*</td>
<td>.40**</td>
<td>.28*</td>
<td>.64***</td>
<td></td>
</tr>
<tr>
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<td>.55***</td>
<td>.23</td>
<td>.25</td>
<td>.68***</td>
<td></td>
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<tr>
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<td>.16</td>
<td>.18</td>
<td>.05</td>
<td>.36**</td>
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<tr>
<td>EDI IN</td>
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### Assessment Scale

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<tr>
<td>EDI MF</td>
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<td>.77***</td>
<td>.75***</td>
<td>.40**</td>
</tr>
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<td>.56***</td>
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<tr>
<td>IDED CO</td>
<td>.75***</td>
<td>.68***</td>
<td>.10</td>
<td>.42**</td>
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* *p < .05
** *p < .01
*** *p < .001

1: BIA CBS=Body Image Assessment Current Body Size; BIA BIS=Body Image Assessment Ideal Body Size; EDI DFT=Eating Disorders Inventory Drive for Thinness; EDI BU=Eating Disorders Inventory Bulimia; EDI BD=Eating Disorders Inventory Body Dissatisfaction; EDI IN=Eating Disorders Inventory Ineffectiveness; EDI P=Eating Disorders Inventory Perfectionism; EDI ID=Eating Disorders Inventory Interpersonal Distrust; EDI IA=Eating Disorders Inventory Interoceptive Awareness; EDI MF=Eating Disorders Inventory Maturity Fears; IDED AN=Interview for Diagnosis of Eating Disorders Anorexia Nervosa; IDED BN=Interview for Diagnosis of Eating Disorders Bulimia Nervosa; IDED CO=Interview for Diagnosis of Eating Disorders Compulsive Overeating
The Binge Eating factor was significantly correlated with the IDED Anorexia Nervosa, Bulimia Nervosa, and Compulsive Overeater scales, as well as the EDI Drive for Thinness and Bulimia scales. After examination of the items which were included in the Binge Eating factor, it is clear why the anorexia nervosa, bulimia nervosa, and compulsive overeater scales of the IDED, as well as the EDI scales were significantly correlated with this factor. This factor not only includes items which measure the behavior and feelings about binge eating, but feelings about eating in general (e.g., giving too much time and thought to food, feeling guilty after eating, etc.). The Binge Eating factor did not correlate with scales measuring body size disturbance or dissatisfaction, or the EDI scales which measure constructs less related to eating disorder symptomology.

The Restrictive Eating/Laxative Abuse factor was significantly correlated with the BIA CBS, IDED Anorexia Nervosa, Bulimia Nervosa, and Compulsive Overeater scale, as well as the EDI Drive for Thinness scale. This factor seems to measure feelings of a larger-than-normal body size
(although recognizing that others think she is "too thin"), a distrust of others, and a very high drive for thinness. This factor did not correlate with the BIA Ideal Body Size measure, or EDI Bulimia or Body Dissatisfaction scales. Also, the EDI scales measuring constructs less related to eating disorder symptomology (with the exception of the Interpersonal Distrust scale), were uncorrelated with this factor.

Finally, the Purgative Behavior factor was significantly correlated with the BIA IBS, IDED Anorexia Nervosa scale, IDED Bulimia Nervosa scale, and the EDI Drive for Thinness and Bulimia scales. This factor included items which endorsed a desire for a lower-than-normal ideal body size, high motivation for thinness, and use of extreme measures to accomplish this goal (e.g., vomiting or restrictive eating). This factor did not correlate with BIA Current Body Size measure, EDI Body Dissatisfaction scale, or EDI scales measuring constructs less related to eating disorder symptomology, or the IDED Compulsive Overeating scale.

In order to further assess concurrent validity of the
EDDI, the total score of the measure was compared with the BIA and the EDI, utilizing Pearson Product Moment Correlation Coefficients. These results are also presented in Table 16. The total score of the EDDI was significantly correlated with the BIA CBS, the EDI Drive for Thinness scale, EDI Bulimia scale, EDI Body Dissatisfaction scale, EDI Ineffectiveness scale, EDI Perfectionism scale, EDI Interpersonal Distrust scale, and EDI Interoceptive Awareness scale.

These results are indicative of a high level of concordance between the three measures: the EDDI, the BIA, and the EDI. The only measures which were not significantly correlated with the EDDI total score was the BIA Ideal Body Size and the EDI Maturity Fears scale. The BIA Ideal Body Size, however, was shown to be significantly correlated with a factor of the EDDI. In regard to the EDI Maturity Fears scale the EDDI does not purport to measure this construct, and so no relationship between the two was expected.
The diagnostic guidelines regarding eating disorders have, within the last thirty years, undergone many revisions. The changing criteria for these disorders have subsequently led to changes in the assessment instruments which have been used in research and treatment of eating disorders patients. For example, measures which were designed to assess the DSM-III criteria of bulimia are now outdated, as the criteria for bulimia nervosa were significantly altered with the publication of the DSM-III-R. A thorough review of the existing research literature regarding the assessment of eating disorders indicates that there is no one instrument which was designed to assess all four eating disorders: anorexia nervosa, bulimia nervosa, compulsive overeating, and obesity. The Eating Disorders Diagnostic Inventory (EDDI) was constructed to serve this purpose.

An initial stepwise discriminant analysis of the EDDI indicated that the test was able to discriminate groups with an 85.5% accuracy rate. However, with the validation
sample, an overall accuracy rate of 75% was found, which is a less acceptable rate of discrimination among groups. This reduction in successful classification rate may have been affected by the different method in which the subjects were recruited in the two samples. The eating disordered subjects (i.e., anorexics, bulimics, compulsive overeaters, and obese) in the initial sample were seeking treatment for their eating disorder. Some level of dissatisfaction with their eating, weight, or other problems is implied by the fact that these subjects were seeking help. However, the eating disordered subjects (bulimics, compulsive overeaters, obese) in the validation sample were from clinical settings, as well as from a non-clinical setting. The obese group in this sample was especially affected by the difference in recruitment method, as this group was totally from a non-clinical population, i.e., none were seeking weight-loss treatment. This difference was reflected in the mean weights of the obese groups in the two samples. The group in the initial sample was approximately 50 pounds heavier than the obese group in the validation sample. Examination of Table 15 and Figure 3
show the pattern of differences in the groups. In the Initial Sample, the eating disorders groups were more closely related on a continuum, and less similar to the normal group, based upon the discriminant function. However, in the Validation Sample, the compulsive overeater and obese groups were more similar to the normal group than in the Initial Sample. That is, they may have been less "pathological" in regard to eating disorder symptomology in the Validation Sample than in the Initial Sample. Savin (1989) found that there were two types of compulsive overeaters: those who were concerned about body size, and those who were not. It may be that the Initial Sample included an overproportion of the former, and the Validation Sample was overrepresented by those unconcerned with body size. This speculation is based upon the assumption that level of concern regarding body size is associated with seeking vs. not seeking treatment.

Factor analysis of the EDDI derived three factors: Binge Eating, Restrictive Eating/Laxative Abuse, and Purgative Behaviors. An examination of Table 9 shows that these problem areas are indicative of the cardinal
behavioral characteristics of obesity, compulsive overeating, bulimia nervosa, and anorexia nervosa. Obese individuals report occasional binge eating, as well as attempts to control their weight via restrictive diets (Williamson, et al, 1990). Purgative behavior, however, is not seen in obese patients. A primary characteristic of compulsive overeating is binge eating, and restrictive dieting is often used in an attempt to control weight problems resulting from the binge eating. Purging is not seen in compulsive overeaters. All three factors are relevant to the typical presenting picture of bulimia. Binge eating and purgative behavior are primary symptoms of bulimia, and restrictive eating is also very commonly reported. Finally, restrictive eating is a primary characteristic of anorexia. However, binge eating and purging are only rarely reported. Although there are other characteristics of eating disorders, the three reflected in the three factors identified in the EDDI seem to be an excellent representation of the primary symptoms across the four eating disordered populations represented in this study.
However, based on the results of this study, there are several problems which must be addressed before the EDDI can be said to truly be an assessment tool to be used with every eating disordered population. First, and most importantly, an anorexic group must be obtained and assessed. Due to the severer pathology typically associated with anorexia nervosa (see Table 9), it is predicted that this group would most likely be diagnosed by the EDDI with a high degree of accuracy (similar to the level of accuracy that the bulimic group was diagnosed). This must be proven empirically by assessing a second sample of anorexics, and entering their data in the discriminant analysis.

A second problem with the EDDI concern the groups of obese and compulsive overeater subjects which were recruited for the validation sample of the study. The obese group was a non-clinical sample, and almost half of the compulsive overeater group were not actively seeking treatment. These subjects were recruited from undergraduate psychology classes. In the Initial Sample, all of the subjects in these two groups were
seeking treatment for their condition, which suggest that they were dissatisfied with their weight. As a result, there was little difficulty in differentiating between the compulsive overeater, obese, and normal subjects in the Initial Sample, but some problems of classification in the Validation Sample. A clinical sample of obese and compulsive overeater subjects is needed for the Validation Sample in order to accurately assess how well the EDDI differentiates between eating disordered subjects who desire treatment and normals.

Assuming that the discriminant validity of the EDDI can be improved, it has several strengths relative to the Bulimia Test, the Eating Attitudes Test, the Eating Questionnaire-Revised, or the Eating Disorders Inventory. It is a reliable instrument, based upon the test-retest correlation coefficients and coefficient alphas. Concurrent validity was established in the present study. Three factors measuring three primary behavioral characteristics of eating disorders were derived. Thus, it is a brief (35 items) instrument which reliably assesses the behavioral characteristics of bulimia nervosa,
compulsive overeating, and obesity. In comparison, the EAT, BULIT, EQ-R, and EDI are about four times longer (total number of items = 155) and do not add a great deal more information. For example, the EAT primarily measures restrictive eating, the BULIT measures binge eating and purgative behaviors, and the EQ-R measures binge eating and purgative behaviors. The EDI adds other factors, but most of these are only peripherally related to core eating disorders psychopathology, e.g., maturity fears, ineffectiveness, and interpersonal distrust.

It appears that the EDDI could be used for two aspects of evaluating the eating disorders. First, differential diagnosis of eating disorders patients, based on cut-off scores would be of great utility. This function of the EDDI needs to be strengthened by future research, as was discussed earlier. At present, multiple tests must be administered to differentially diagnose eating disorders patients. A second use of the EDDI would be to utilize the factor (or scale) scores for describing the individual differences of each patient, and therefore facilitate appropriate treatment planning. For example, a bulimic
patient whose scores indicated a severe problem of binge eating and restrictive eating/laxative abuse, yet had a lower score on the purgative scale, might benefit from a treatment targeting appropriate eating habits (cessation of binge eating, increased "normalized" eating).

A patient who had a high score on the Purgative Behavior scale, with a moderate score on the Binge Eating scale, and a low score on the Restrictive Eating/Laxative Abuse scale, might require a different treatment plan. The second case, based on her scale scores, might benefit from treatment which focused upon elimination of purgative habits, e.g., exposure with response prevention (Rosen & Leitenberg, 1982). Patients within a diagnostic category are often very different in the pattern and severity of symptoms that they present. Therefore, they may benefit from a more symptom-specific treatment program. The three factors (scales) of the EDDI could also be used to evaluate treatment outcome, since it measures the primary behavioral characteristics of anorexia nervosa, bulimia nervosa, obesity, and compulsive overeating.

Computerized psychological assessment is becoming much
more prevalent in the area of assessment (Burke & Normand, 1987). The benefits of computerization of a test include efficient use of clinician's time and standardization of administration and scoring. Since the general population is becoming more familiar with computerized services (e.g., banking, home computers, word processing), the use of the computer for assessment also is more feasible than it would have been even ten years ago. Using a computerized version of the EDDI may be of utility in the future. Kobak, Reynolds, Rosenfeld, and Greist (1990) developed and validated a computerized version of the Hamilton Depression Rating Scale, and found a high correlation (.96) between the paper-and-pencil and computerized versions of the test. A similar investigation of a computerized version of the EDDI would be useful for the afore-mentioned benefits. Also, the computerization of the EDDI could be useful in research, facilitating testing large number of subjects with a minimum of time and maximum amount of generalizability (Kobak, et al, 1990). Computerization of the EDDI would involve at least two data analytic steps. First, the response of subjects to each
item would be entered into the discriminant function. This analysis would (ideally) yield an estimate of the subject's membership in one of five diagnostic categories (anorexia nervosa, bulimia nervosa, obesity, compulsive overeating, normal). The second step would involve calculation of scale scores based upon the factor analysis of the EDDI. This computerized version of the EDDI would be quite economical and would provide useful diagnostic and descriptive data related to the eating disorders.

Therefore, this study can not yet said to be completed. The reliability and concurrent validity of the EDDI is satisfactory, based upon the findings of this study. However, before the EDDI can be used with any certainty, two groups must be obtained and assessed: an anorexia nervosa group, and a clinical obesity group. By including these two groups, a more definitive picture of the discriminant validity of the Eating Disorders Diagnostic Inventory can be obtained.
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In P. A. Keller & L. G. Ritt (Eds.), *Innovations in
clinical practice: A sourcebook* (pp. 321-326).
Sarasota, FL: Professional Resource Exchange, Inc.

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of eating disorders: Obesity, anorexia, and bulimia.*
New York: Pergamon Press.
I. General Assessment and History

A. Introductory Questions

1. Would you briefly describe the problems or concerns you are currently experiencing with your eating?

   Breakfast:

   Lunch:

   Dinner:
B. WEIGHT/EATING HISTORY

1. What has been your highest and lowest weight? When?

2. Were you overweight as a child? Y N (Describe)

3. Were you/are you overweight as an adolescent? Y N (Describe)

4. What has been the course of your eating problems? (How the behavior began, increases, decreases, changes in eating.)

5. Do you avoid eating certain foods? Y N (Describe)

6. What emotional reaction occurs when you eat these "forbidden" foods? (Foods which are avoided or purged due to a belief that the foods will lead to rapid and significant weight gain)
C. MEDICAL PROBLEMS

1. Have you had any medical/dental problems? (Check for lethargy, dehydration, dizziness, LBP, HBP, tooth erosion, thyroid problems, diabetes)

D. FAMILY SITUATION

1. How many members are there in your household?

2. Do they know about your eating problems? Y N
   If Yes, how do they react/feel about your eating disorder?

3. Would they participate in your treatment? Y N

II. Anorexia Nervosa

1. Do you currently go periods of time without eating (starvation) to control your weight? Y N
   (If Yes, please describe.)

When did you first begin to lose weight/restrict your eating?
Are there any factors/situations which seem to increase or decrease periods of restrictive eating?

2. Do you feel that your weight is normal? Y N (Describe)

3. What emotional reaction would you have if you lost
   2 lbs.? ______________________________________________________
   5 lbs.? ______________________________________________________
   10 lbs.? _____________________________________________________

What emotional reaction would you have if you gained
   2 lbs.? ______________________________________________________
   5 lbs.? ______________________________________________________
   10 lbs.? _____________________________________________________

4. Do you wish to be thinner than you are now? Y N (If Yes, ask what body areas should be thinner.)

What is your goal weight?

Do you think or worry a lot about your weight and body size?

Do you often feel "fat" when you gain only a few pounds? Y N (Describe.)
Do you weigh yourself often? Y N How often?

5. When was your last menstrual cycle?

Have you experienced menstrual irregularities within the last three months? Y N (Describe)

III. Bulimia Nervosa

1. Do you ever binge (rapid consumption of large amounts of food in a discrete period of time)? What is the daily course of your binge eating? (Describe all covert and overt events that usually occur prior to, during, and after a binge.)

Do you ever feel as though you have overeaten when you eat small portions of certain fattening foods? Y N (Describe)

When did you first begin to have problems with binging?

Are there any factors which appear to increase or decrease the frequency of binge eating?
2. Do you feel out of control prior to or during a binge? Y N  Do you feel hungry prior to a binge? Y N (Describe)

3. Do you purge after meals or after a binge? Y N

  Do you vomit? Y N  How often per day/week?

  Do you use laxatives? Y N  How often, what type?

  Do you use diuretics? Y N  How often, what type?

  Do you use appetite suppressants? Y N  How often, what type?

  Do you often go on strict diets? Y N  How often, what type?

  Do you engage in vigorous exercise? Y N  How often, what type?

  When did you first begin to purge?

  Are there any factors which appear to increase or decrease the frequency of purging?

4. How often does the binge eating occur?

  How long have you been binging at least twice per week?
How often does the binge-purge cycle occur?

IV. Compulsive Overeating

1. If you binge, what types of food do you typically eat?

2. Do you binge alone/in secret?  Y  N  (Describe)

3. What emotions typically precede a binge?

4. Do you often attempt to diet in order to lose weight?  (Describe)

5. Have you had frequent weight fluctuations greater than ten pounds in the past few years?  Y  N  (Describe)

6. Do you consider your eating to be abnormal?  Y  N  
Do you feel that you have control over your eating?  Y  N  (Describe)
7. How do you feel during and after a binge episode? (Describe)

8. Are you satisfied with your current weight? Y N If No, what is your goal weight?
RATING SCALE FOR THE IDED

I. Anorexia Nervosa

1. Refusal to maintain appropriate weight for height


2. Intense fear of weight gain


3. Body image disturbance: Feels "fat" even thought not significantly overweight


4. Amenorrhea


TOTAL SCORE
II. Bulimia Nervosa

1. Recurrent binge eating episodes

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2. Feeling of loss of control during binge eating

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3. Purgative behavior

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5. Overconcern with body shape and size

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TOTAL SCORE

III. Compulsive Overeating

1. Frequency of recurrent binge eating episodes

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<td>fre-</td>
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<td>and</td>
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2. Consumption of high-calorie, easily ingested food during a binge

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4. Repeated efforts at dieting

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5. Frequency of recurrent binge eating episodes

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6. Frequent weight fluctuations greater than 10 lbs.

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7. Absence of purgative behavior

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8. Realization that eating pattern is abnormal/ out of control

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9. Depressed mood and self-deprecating thoughts after a binge

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10. Body size dissatisfaction

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TOTAL SCORE________
APPENDIX 2
### INTERVIEW FOR DIAGNOSIS OF EATING DISORDERS: TEST-RETEST RELIABILITY COEFFICIENTS

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**TOTAL RATINGS**

- AN* = .87
- BN* = .94
- CO* = .94

*AN=Anorexia Nervosa; BN=Bulimia Nervosa; CO=Compulsive Overeater*
APPENDIX 3
### INTERVIEW FOR DIAGNOSIS OF EATING DISORDERS:
#### VALIDITY

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<td>.55*</td>
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</table>

*<p><sup>♦</sup> p ≤ .01

**BIA CBS=Body Image Assessment Current Body Size; BIA IBS=Body Image Assessment Ideal Body Size; EDI DFT=Eating Disorders Inventory Drive for Thinness; EDI BU=Eating Disorders Inventory Bulimia; EDI BD=Eating Disorders Inventory Body Dissatisfaction; EDI IN=Eating Disorders Inventory Ineffectiveness; EDI P=Eating Disorders Inventory Perfectionism; EDI ID=Eating Disorders Inventory Interpersonal Distrust; EDI IA=Eating Disorders Inventory Interoceptive Awareness; EDI MF=Eating Disorders Inventory Maturity Fears
APPENDIX 4
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126-128, Appendix 4 - Eating Attitudes Test

130-136, Appendix 5 - Bulimia Test (BULIT)

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EATING QUESTIONNAIRE-REVISED

NAME: ___________________________ DATE: _________

Directions: In the space provided, indicate the letter of the answer that best describes your eating behavior.

_____ 1. How often do you binge eat? (a) seldom; (b) once or twice a month; (c) once a week; (d) almost every day; (e) every day.

_____ 2. What is the average length of a binging episode: (a) less than 15 minutes; (b) 15-30 minutes; (c) 30 minutes to one hour; (d) one hour to two hours; (e) more than two hours. Please indicate length of episode: _________

_____ 3. Which of the following statements best applies to your binge eating? (a) I don't eat enough to satisfy me; (b) I eat until I've had enough to satisfy me; (c) I eat until my stomach feels full; (d) I eat until my stomach is painfully full; (e) I eat until I can't eat anymore.

_____ 4. Do you ever vomit after a binge? (a) never; (b) about 25% of the time; (c) about 50% of the time; (d) about 75% of the time; (e) about 100% of the time.

_____ 5. Which of the following best applies to your eating behavior when binge eating? (a) I eat much more slowly than usual; (b) I eat somewhat more slowly than usual; (c) I eat at about the same speed as I usually do; (d) I eat somewhat faster than usual; (e) I eat very rapidly.

_____ 6. How much are you concerned about your binge eating? (a) not bothered at all; (b) bothers me a little; (c) moderately concerned; (d) a major concern; (e) the most important concern in my life.
7. Which best describes the control you feel over your eating during a binge? (a) never in control; (b) in control about 25% of the time; (c) in control about 50% of the time; (d) in control about 75% of the time; (e) always in control.

8. Which of the following describes your feelings immediately after a binge? (a) I feel very good; (b) I feel good; (c) I feel fairly neutral, not too nervous or uncomfortable; (d) I am moderately nervous and/or uncomfortable; (e) I am very nervous and/or uncomfortable.

9. Which most accurately describes your mood immediately after a binge? (a) very happy; (b) moderately happy; (c) neutral; (d) moderately depressed; (e) very depressed.

10. Which of the following best describes the situation in which you typically binge? (a) always completely alone; (b) alone but around unknown others (e.g., restaurant); (c) only around others who know about my binging; (d) only around friends and family; (e) in any situation.

11. Which of the following best describes any weight changes you have experienced in the last year? (a) 0-5 lbs; (b) 5-10 lbs; (c) 10-20 lbs; (d) 20-30 lbs; (e) more than 30 lbs.

12. On a day that you binge, how many binge episodes typically occur during that day? (a) 0; (b) 1; (c) 2; (d) 3; (e) 4 or more.

13. How often do you use restrictive diets/fasts? (a) never; (b) 1 time per month; (c) 2 times per month; (d) 1 time per week; (e) almost always.
14. How often do you use laxatives to lose weight? 
(a) never; (b) 1-3 times per month; (c) 1 time per week; (d) 1 time per day; (e) more than 1 time per day. (Please indicate frequency). 

15. How often do you use diuretics to lose weight? 
(a) never; (b) 1-3 times per month; (c) 1 time per week; (d) 1 time per day; (e) more than 1 time per day. (Please indicate frequency).
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142-144, Appendix 7 - Eating Disorders Inventory (EDI)

University Microfilms International
APPENDIX B
I, ________________________________, voluntarily consent to participate in the Eating Disorders Research program directed by Donald A. Williamson, Ph.D.. This research involves both normal and eating disordered individuals. Therefore, provision of my consent does not imply that I have problems related to eating. By my signature, I agree to participate in the research activities indicated below and to allow data pertaining to me to be reported in scholarly publications, scholarly meetings, or in educational programs related to the Eating Disorders Research project. I understand that my identity will remain anonymous and that my name will not be used in any publications or presentations which are derived from this research. The activities in which I agree to participate are those checked below:

_____ 1. Clinical interviews
_____ 2. Height and weight measurement
_____ 3. Psychological testing
_____ 4. Assessment of therapy outcome
_____ 5. Assessment of depression
_____ 6. Body image assessment
_____ 7. Group therapy
_____ 8. Individual therapy
_____ 9. Self monitoring of eating
_____ 10. Survey of oral habits

All of my questions have been answered and I understand that I may withdraw from the research project without penalty at any time.

__________________________/__________  
Signature      Date

__________________________/__________  
Signature      Date
APPENDIX 9
Body Image Assessment Silhouettes
EATING DISORDERS DIAGNOSTIC INVENTORY

DATE__________

NAME_________________________________________ AGE______

RACE______ DATE OF BIRTH__________

WEIGHT_________ HEIGHT__________

ADDRESS__________________________________________

TELEPHONE__________

REFERRED BY________________________

1. How much are you concerned about your binge eating?
   (a) don't binge eat, or not bothered at all
   (b) bothers me a little
   (c) moderately concerned
   (d) a major concern
   (e) the most important concern in my life

2. Do you ever vomit during a binge?
   (a) never
   (b) sometimes
   (c) usually
   (d) almost always
   (e) always

3. I am satisfied with my eating patterns.
   (a) agree
   (b) neutral
   (c) disagree a little
   (d) disagree
   (e) disagree strongly

4. Other people think I am too thin.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never
5. My menstrual cycle occurs once a month.
   (a) always
   (b) usually
   (c) often
   (d) sometimes
   (e) never
   Not applicable, due to (check one)
   ___ male
   ___ hysterectomy
   ___ other (please explain)

6. How many binge episodes typically occur during any one day?
   (a) 0
   (b) 1
   (c) 2
   (d) 3
   (e) 4 or more (please indicate frequency if greater than 4 ______)

7. I feel that food controls my life.
   (a) always
   (b) almost always
   (c) frequently
   (d) sometimes
   (e) seldom or never

8. How often do you use diuretics?
   (a) never
   (b) sometimes
   (c) usually
   (d) almost always
   (e) always

9. I have tried to lose weight by fasting or going on "crash" diets.
   (a) not in the past year
   (b) once in the past year
   (c) 2-3 times in the past year
   (d) 4-5 times in the past year
   (e) more than 5 times in the past year

10. Which of the following describes your feelings after a binge?
    (a) I don't binge eat
    (b) I feel OK
    (c) I feel mildly upset with myself
    (d) I feel quite upset with myself
    (e) I hate myself
11. How often do you vomit after eating in order to lose weight?
   (a) less than once a month or never
   (b) once a month
   (c) 2-3 times a month
   (d) once a week
   (e) 2 or more times a week

12. I eat a lot of food when I’m not even hungry.
   (a) very frequently
   (b) frequently
   (c) occasionally
   (d) sometimes
   (e) seldom or never

13. How often do you use restrictive diets/fasts?
   (a) never
   (b) sometimes
   (c) usually
   (d) almost always
   (e) always

14. I give too much time and thought to food.
   (a) always
   (b) very often
   (c) often
   (d) sometimes
   (e) never

15. My last menstrual period was:
   (a) within the last month
   (b) within the past 2 months
   (c) within the past 4 months
   (d) within the past 6 months
   (e) not within the past 6 months

   Not applicable, due to (please check):
   (___) male
   (___) hysterectomy
   (___) other

16. My eating patterns are different from eating patterns of most people.
   (a) always
   (b) almost always
   (c) frequently
   (d) sometimes
   (e) seldom or never
17. I take laxatives:
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

18. What is the most weight you've ever lost in one month?
   (a) over 20 pounds
   (b) 12-20 pounds
   (c) 8-11 pounds
   (d) 4-7 pounds
   (e) less than 4 pounds

19. Do you believe that it is easier for you to vomit than it is for most people?
   (a) yes, it's no problem at all for me
   (b) yes, it's easier
   (c) yes, it's a little easier
   (d) about the same
   (e) no, it's less easy

20. Would you presently call yourself a "binge eater"?
   (a) yes, absolutely
   (b) yes
   (c) yes, probably
   (d) yes, possibly
   (e) no, probably not

21. I think about burning up calories when I exercise:
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

22. One of your best friends suddenly suggests that you both eat at a new restaurant buffet that night. Although you'd planned on eating something light at home, you go ahead and eat out, eating quite a lot and feeling uncomfortably full. How would you feel about yourself on the ride home?
   (a) fine, glad I'd tried that new restaurant
   (b) a little regretful that I'd eaten so much
   (c) somewhat disappointed in myself
   (d) upset with myself
   (e) totally disgusted with myself
23. Do you ever eat uncontrollably to the point of stuffing yourself (i.e., go on eating binges)?
   (a) once a month or less
   (b) 2-3 times a month
   (c) once or twice a week
   (d) 3-6 times a week
   (e) once a day or more

24. I feel sad or blue after eating more than I'd planned to eat.
   (a) always
   (b) almost always
   (c) frequently
   (d) sometimes
   (e) seldom, never, or not applicable

25. I eat until I feel too tired to continue.
   (a) at least once a day
   (b) 3-6 times a week
   (c) once or twice a week
   (d) 2-3 times a month
   (e) once a month or less (or never)

26. I feel that others would prefer if I ate more.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

27. I wake up early in the morning.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

28. Most people I know would be amazed if they knew how much food I can consume at a sitting.
   (a) without a doubt
   (b) very probably
   (c) probably
   (d) possibly
   (e) no
29. I feel extremely guilty after eating.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

30. I am terrified about being overweight.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

31. I suffer from constipation.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

32. I particularly avoid foods with a high carbohydrate content.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

33. I enjoy trying new rich foods.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never

34. I avoid eating when I am hungry.
   (a) always
   (b) frequently
   (c) often
   (d) sometimes
   (e) rarely or never
35. What is the most weight you've ever gained in one month?
   (a) over 20 pounds
   (b) 12–20 pounds
   (c) 8–11 pounds
   (d) 4–7 pounds
   (e) less than 4 pounds
In the following definitions, the term "bulimia" will be used to demonstrate the use of these terms regarding individuals in a defined group in this study. The term "individuals" will be used to indicate all subjects in the study.

Results of classification decisions can be summarized in a contingency table as illustrated below:

<table>
<thead>
<tr>
<th>Actual Diagnosis</th>
<th>Non- Bulimic</th>
<th>Bulimic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Test</td>
<td>e</td>
<td>f</td>
</tr>
<tr>
<td>Negative Test</td>
<td>g</td>
<td>h</td>
</tr>
</tbody>
</table>

\[ e+g=A \quad f+h=B \]

where e, f, g, and h are raw values and sum to N, the number of all subjects in the total sample.

**False + Rate** = \( f/N \), the proportion of non-bulimics classified bulimic by a test.

**False − Rate** = \( g/N \), the proportion of bulimics classified non-bulimic by a test.

**Overall Accuracy** = \( (e + h)/N \), the proportion of all individuals correctly classified by a test.
Sensitivity = \( \frac{e}{e + g} \), the proportion of bulimics who are classified correctly by a test.

Specificity = \( \frac{h}{f + h} \), the proportion of non-bulimics who are classified correctly by a test.

Positive Predictive Power = \( \frac{e}{e + f} \), the proportion of individuals classified by a test as bulimic who are bulimic.

Negative Predictive Power = \( \frac{h}{g + h} \), the proportion of individuals classified by a test as non-bulimic who are non-bulimic.
CURRICULUM VITA
Curriculum Vita

Cecilia Jo Davis

Date of Birth:  2-19-56

Marital Status: Single

Office Address:  Parkland Hospital
               Eating Disorders Program
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Educational Background

1987-1988  Veterans Administration Medical Center,
          Department of Psychology (APA approved
          internship)
          Long Beach, California

1982-present  Louisiana State University (APA approved)
            Baton Rouge, Louisiana
            Major: Clinical Psychology
            Specialty Area: Behavioral Medicine
            Minor: Behavioral Neurology
            Received M.A. December, 1985
            To receive Doctoral Degree August, 1990

1978-1980  University of Southern Mississippi
           (APA approved)
           Hattiesburg, Mississippi
           Major: Counseling Psychology
           Received M.S. May, 1980

1974-1978  Mississippi State University
           Starkville, Mississippi
           Major: Educational Psychology
           Minor: Education
           Received B.S. May, 1978
Chairperson: Donald A. Williamson, Ph.D.

Intermediate Project: "Body image distortion in bulimia nervosa: An empirical analysis of current revisions of the DSM-III."
Chairperson: Donald A. Williamson, Ph.D.

Dissertation: "The Eating Disorders Diagnostic Inventory (EDDI): The development of a new assessment instrument."
Chairperson: Donald A. Williamson, Ph.D.

Clinical Experience

September 1988 - Present: Eating Disorders Program: Assistant Director and Therapist: Parkland Hospital, Baton Rouge, Louisiana.
Conduct assessments of eating disordered patients, as well as conduct individual and group therapy sessions with inpatients, outpatients, and families of patients with eating disorders. Also, give talks to the community and school groups on the etiology and treatment of eating disorders. Have developed an eating disorders treatment program for children who are obese (32 hours/week).
Supervisor: Donald A. Williamson, Ph.D.
September 1988 - Present:

**Therapist:** Talbot Outpatient Center/Family Therapy Clinic, Baton Rouge, Louisiana. Assessment and treatment of children, adolescents, and adults. Treatment of anxiety, depression, phobias, eating disorders, post-traumatic stress disorder, adult children of alcoholics, and personality disorders. Emphasis on cognitive and behavioral techniques (20 hours/week).

**Supervisor:** Donald A. Williamson, Ph.D.

September 1987 - August 1988:

**Internship:** APA approved, Veterans Administration Medical Center, Long Beach, California. Rotations included geropsychology/surgical consultation (6 months), pain management treatment program (4 months), hemodialysis/sexual dysfunction (4 months), neuropsychology (6 months), and day treatment program for the chronically mentally ill (4 months).

**Director:** Richard Hansen, Ph.D.

March 1986 - August 1987:

**Eating Disorders Therapist:** CPC Meadow Wood Psychiatric Hospital, Baton Rouge, Louisiana; Parkland Psychiatric Hospital, Baton Rouge, Louisiana. Conducted assessments with eating disordered individuals, as well as conducted individual and group therapy sessions with inpatients, outpatients, and families of patients with eating disorders. Also, gave talks to the community and school groups on etiology and treatment of eating disorders (20 hours/week).

**Supervisor:** Donald A. Williamson, Ph.D.
Medical Psychology Trainee: Family Practice Unit, Earl K. Long Memorial Hospital, Baton Rouge, Louisiana. Conducted psychological assessments and treatment for child, adolescent, and adult outpatients referred physicians. Worked with chronic pain, oncology, family practice, pediatric, crisis intervention, psychiatry and surgery patients (20 hours/week).
Supervisor: Philip J. Brantley, Ph.D.

Consultant: Tangipahoa Association for Retarded Citizens, Hammond, LA. Conducted intellectual and adaptive assessments for mentally retarded adults ranging from 20 to 65 years of age. These adults were employed at a sheltered workshop. Also, designed and implemented behavior management treatment programs at this facility, as well as provided training to the direct care staff on behavior management principles and techniques (12 hours/month).
Supervisor: Frank Gresham, Ph.D.

Child Psychology Trainee: Parent Training Clinic, Psychological Services Center, Louisiana State University. Conducted psychological evaluations and individual and group treatment for children and their parents. Topics covered included reinforcement principles, problem solving, contracting, and communication skills training (20 hours/week).
Supervisor: Mary Lou Kelley, Ph.D.
Sept. 1982—Aug. 1983:

**Medical Psychology Trainee:** Pediatrics Unit, Earl K. Long Memorial Hospital, Baton Rouge, Louisiana. Conducted psychological evaluations and treatment for both pediatric inpatients and outpatients referred by physicians (20 hours/week).

**Supervisor:** Mary Lou Kelley, Ph.D.

Sept. 1982—Aug. 1983:

**Research Assistant:** Department of Psychology, Louisiana State University, Baton Rouge, Louisiana. Participated in conducting research involving physiological measurement of bulimics' responses to eating, psychopathology of bulimia, and heterosocial skills research (30 hours/week).

**Supervisor:** Donald A. Williamson, Ph.D.


**Research Assistant:** Smoking Clinic, Veterans Administration Medical Center, Department of Psychology, Jackson, Mississippi. Involved in research investigating various methods of smoking cessation, as well as the physiological effects of smoking. Also, conducted individual smoking cessation therapy with medical patients (40 hours/week).

**Supervisors:** Donald A. Prue, Ph.D. and John E. Martin, Ph.D.
Jan. 1980–May 1980:  
Counseling Psychology Trainee: Alcohol Dependency Treatment Program, Veterans Administration Medical Center, Jackson, Mississippi. Intern (through the University of Southern Mississippi Counseling Psychology program) conducting individual assessments and individual, marital, and group therapy with inpatients receiving treatment for alcohol and/or drug-related problems (40 hours/week). Supervisor: Robert Rychtarik, Ph.D.

Professional Activities

1987  
Guest review, Journal of Consulting and Clinical Psychology

1990  
Developed and presented program to the Louisiana Foundation Against Sexual Abuse workshop: Stress Management and Burnout Prevention

Presentations


Bruce, B.K., Brantley, P.J., Carnrike, C.L.M., & Davis, C.J. (1984). Predictors of anticipatory nausea and emesis in chemotherapy patients. Presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Philadelphia, PA.


Davis, C.J., Williamson, D.A., & Goreczny, A. (1986). *Body image distortion in bulimia: An important distinction between binge-purgers and binge-eaters.* Presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Chicago, IL.


Publications and Book Chapters


References

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Director of Training
Department of Psychology
Long Beach Veterans Administration Medical Center
Long Beach, CA
Candidate:  Cecilia Jo Davis

Major Field:  Psychology

Title of Dissertation:  The Eating Disorders Diagnostic Inventory (EDDI): The Development of a New Assessment Instrument

Approved:

[Signature]
Major Professor and Chairman

[Signature]
Dean of the Graduate School

EXAMINING COMMITTEE:

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Date of Examination:

April 17, 1990