2002

Study of the Efficacy of a Christian-based Inpatient Hospital for Treating Eating Disorders, Depression, and Spiritual Distress

Robert Alan Darden
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STUDY OF THE EFFICACY OF A CHRISTIAN-BASED INPATIENT HOSPITAL FOR TREATING EATING DISORDERS, DEPRESSION, AND SPIRITUAL DISTRESS

A Dissertation
Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by

Robert Alan Darden

June 2002
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ABSTRACT

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by

Robert Alan Darden

Chair: Frederick A. Kosinski, Jr.
ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University
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Name of researcher: Robert Alan Darden

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Date completed: June 2002

Problem

Outcome studies continue to indicate that a substantial proportion of individuals with eating disorders have a dangerously limited response to treatment. Therefore, the purpose of this study was to determine if a Christian cognitive-behavioral-based inpatient hospital that specializes in eating disorders was an effective program for treating eating disorders. Next, this study sought to determine if this inpatient hospital was effective in treating both depression and spiritual distress. Finally, this study examined the relationship between depression and spiritual distress with treatment outcome.
Method

Five hundred and eighty-two patients were admitted to an inpatient hospital between July 1, 1999, and June 30, 2000. Four hundred and fifty-one patients provided useable data. Participants completed the Beck Depression Inventory-II at admission and discharge, the Remuda Ranch Spiritual Inventory at admission and discharge, and the Eating Disorder Inventory-2 at admission, discharge, and 1-year post-discharge.

Results

A multivariate repeated measure analysis of variance indicated that eating disorder symptomatology was significantly reduced. Two separate paired t-tests suggested that mean depression and spiritual distress scores were significantly reduced. Three separate regression analyses provided evidence that depression and spiritual distress significantly accounted for some of the variance in eating disorder symptomatology.

Conclusions

Results indicated that a Christian-based inpatient hospital can be an effective treatment milieu for reducing eating disorder symptomatology, depression, and spiritual distress. Results also provided evidence that depression and spiritual distress are correlated with treatment outcome.
In memory of my late father, Robert George Darden, who loved and inspired me towards excellence in education.
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CHAPTER 1

INTRODUCTION

In 1873, Gull and Lesque separated anorexia nervosa from other forms of eating problems within a few months of each other. Long before this, however, there is evidence that various forms of self-induced starvation existed. For example, fasting was prolonged often to the point of death as part of certain ancient Eastern religions in an effort to totally withdraw from a material world perceived as evil (Bemporad, 1996). Nonetheless, it has only been in the last 25 to 30 years that interest in eating disorders has grown substantially (Arnow, 1999) leading to the recognition that several different eating disorder diagnoses exist.

In 1980 the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, distinguished Bulimia from Anorexia Nervosa (APA, DSM-III, 1980) and in 1987 the Diagnostic and Statistical Manual of Mental Disorders, Third Edition – Revised, changed the term to Bulimia Nervosa (APA, DSM-III-R, 1987). Currently, the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, has divided Bulimia Nervosa into two subtypes, purging and nonpurging (APA, DSM-IV, 1994). Similarly, the DSM-IV has subdivided Anorexia Nervosa into restricting and binge-eating/purging subtypes. The DSM-IV also provides greater specificity in the description of the Eating Disorder, Not Otherwise Specified (EDNOS) diagnostic...
category. A new proposed disorder, Binge-Eating Disorder, is also being considered for inclusion.

With the increased interest in researching eating disorders, more accurate information has been made available. Epidemiological studies have confirmed that eating disorders are more prevalent among young White females from the middle to upper class (Hsu, 1990; McClelland & Crisp, 2001; Pawluck & Gorey, 1998; Stice, 1999), although the gap between socioeconomic, ethnic, and cultural barriers may be narrowing (Stice, 1999; Wilfley et al., 1996). Secular trends indicate that the incidence rate of anorexia is as much as 5 times greater for teenagers than women 20 and older (Pawluck & Gorey, 1998), with peak incidence rates around age 18 (Hsu, 1990). Moreover, there is evidence that while the prevalence rate for teenagers has remained relatively stable over the past 40 years, the incidence of anorexia among women in their twenties and thirties has increased nearly threefold over this same time frame (Pawluck & Gorey, 1998).

Estimates for the prevalence of eating disorders now range from 0.5% to 2% for Anorexia Nervosa (APA, 1994; Hsu, 1990; Johnson, Tsoh, & Varnado, 1996), and 1% to 19% for Bulimia Nervosa (APA, 1994; Fairburn & Beglin, 1990; Hsu, 1990; Johnson et al., 1996; Stice, 1999). Eating disorders are much more common in females than males, with the female to male ratio as high as, or higher than, 10 to 1 for Anorexia Nervosa and 36 to 1 for Bulimia Nervosa (APA, 1994; Pawluck & Gorey, 1998).

These numbers are significant when mortality rates, health risks, and emotional and social consequences are considered. Anorexia Nervosa has one of the
highest mortality rates of all psychiatric disorders (Fichter & Quadflieg, 1999).
Mortality rates for Anorexia Nervosa range from 4% to 21% (Arnow, 1999; Crow, Praus, & Thuras, 1999; Johnson et al., 1996; Richards et al., 2000; Steinhausen & Glanville, 1983; Sullivan, 1995). In one study involving a meta-analysis, Sullivan (1995) examined 42 published studies of mortality in Anorexia Nervosa, and found an annual mortality rate of 0.56%, or 5.6% per decade. The breakdown in the Sullivan study indicated that 27% died from suicide, 54% died from a direct effect of their illness, and 19% died from unknown and other causes. In another study that examined the emergency room medical records of 122 consecutive eating disorder patients, the crude mortality rates for Anorexia Nervosa and Bulimia Nervosa were 7.4% and 2.4% respectively (Crow et al., 1999). The crude mortality rate for the entire sample, including eating disorders not otherwise specified (EDNOS), was 4.1%. Rates are “crude” if the variables have not been adjusted for other factors such as gender.

The health risks associated with eating disorders are also profound with most medical complications resulting from starvation and purging (De Zwaan & Mitchell, 1999). For both patients with anorexia and bulimia, vomiting, laxative, and diuretic abuse may lead to electrolyte disturbances and electrocardiographic changes (Hsu, 1990). That cardiac complications are common among eating disorder patients is well established (Hsu, 1990; Powers, 1999). It is estimated that about half of the deaths of anorexic patients are related to cardiac complications (Powers, 1999). For the patients with bulimia, cardiac complications leading to death are less common, but pose a threat nonetheless (Powers, 1999).
For the anorexic patient, prolonged fasting can cause hypoglycemia (Hsu, 1990). Endocrine disturbances with anorexic patients can lead to amenorrhea, changes in gastrointestinal hormones, defects in urinary concentration, increased growth hormone (GH) levels and decreased prolactin levels (Hsu, 1990; Waldholtz, 1999).

For the patient with bulimia, menstrual irregularity and amenorrhea are common, even in normal weight bulimia patients (Hsu, 1990). Low estrogen and progesterone levels are also common (Hsu, 1990). Triiodothyronine (T-3) and thyroxine (T-4) levels may also be low in normal weight bulimics, suggesting that patients may be biologically starved even though they are at a relatively normal weight (Hsu, 1990). Like the anorexic patients, gastrointestinal problems are also prevalent among women with bulimia nervosa (Waldholtz, 1999).

The social and emotional effects of eating disorders can be debilitating. Psychosocial adjustments including isolation, withdrawal from family and friends, interference with school and work, and disruption in dating and marital relationships are common among women with eating disorders (Pike, 1998). In addition, eating disorders almost always have companion disorders (Andersen, 1999). High rates of depression, alexithymia, impulsivity, Axis II diagnoses, obsessive compulsive diagnoses, social phobia, and other anxiety disorders are often associated with eating disorders (De Groot, Rodin, & Olmsted, 1995; Podar, Hannus, & Allik, 1999; Sexton, Sunday, Hurt, & Halmi, 1998; Wiederman & Pryor, 2000).
Statement of the Problem

Although progress has been made in treating eating disorders, outcome studies continue to indicate that a substantial proportion of individuals with these disorders have a dangerously limited response to treatment (Heatherton, Mahamedi, Striepe, Field, & Keel, 1997; Kaye, Strober, Stein, & Gendall, 1999). Outcome results vary from study to study, in large part due to differences in severity, treatment, duration of the study, and definitions of recovery. Many studies now break down recovery into categories of good, intermediate, and poor outcome. In addition, there is some evidence that individuals with Bulimia Nervosa have better outcome results than individuals diagnosed with Anorexia Nervosa (Fichter & Quadflieg, 1998; Herzog et al., 1993).

The majority of studies, which examine outcome 12 years or less after the conclusion of treatment, report that 30% to 70% of individuals with anorexia achieve a good outcome, 15% to 40% achieve an intermediate outcome, and 10% to 35% fully relapse or are chronically symptomatic (Fichter & Quadflieg, 1998; Pike, 1998; Rastam, Gillberg, & Gillberg, 1996; Richards et al., 2000; Sullivan, Bulik, Fear, & Pickering, 1998). A study by Fichter and Quadflieg (1998), for example, which examined 103 consecutively diagnosed anorexic eating-disordered inpatients at 6 years post-treatment, found that 34.7% achieved good results, 38.6% had an intermediate outcome, 20.8% had poor results, and 5.9% were deceased.

Interestingly, this same study, which also examined the same inpatients at 2 years post-treatment, found that there was substantial improvement during therapy, moderate decline during the first 2 years post-treatment, and further improvement
from 3 to 6 years post-treatment. In addition, 16.8% developed bulimia nervosa at the 6-year follow-up. Finally, three prognostic factors were identified which predicted poor outcome at the 6-year follow-up. Fichter and Quadflieg (1998) found that patients who either had binge attacks during the period before treatment, who had another mental disorder before treatment, or who had a relatively low body weight at the end of treatment had a less favorable 6-year outcome. Similarly, other studies have found that low body weight at the end of treatment, longer duration of illness, premorbid psychiatric disorders, episodes of purging before treatment, early age onset, and poor insight are predictive of poor outcome (Fichter & Quadflieg, 1999; Greenfeld, Anyan, Hobart, Quinlan, & Plantes, 1991; Mukai, 1996; Pike, 1998; Richards et al., 2000).

Outcome figures for bulimia nervosa are similar, though the mortality rate is considerably lower. Post-treatment outcome results at 10 years or less indicate that, in general, between 27% to 73% achieve good results, 40% to 50% report some binging and purging, and between 15% and 33% continue to meet full diagnosis for an eating disorder (Bulik, Sullivan, Joyce, Carter, & McIntosh, 1998; Keel, Mitchell, Miller, Davis, & Crow, 2000; Reas, Williamson, Martin, & Zucker, 2000; Richards et al., 2000). Predictors for poor outcome include pretreatment frequency of binge and purge behavior, history of obesity, presence of major depression, pretreatment symptom severity, longer duration of illness, and pretreatment presence of an Axis-II diagnosis (Bulik, Sullivan, Carter, McIntosh, & Joyce, 1999; Bulik et al., 1998; Fahy & Russell, 1993; Richards et al., 2000).

In summary, results are mixed with good and bad news. There is evidence that
most women with eating disorders will fully recover. However, a large number remain resistant to treatment, fully relapse, and continue to be at risk for severe consequences. This makes treatment considerations for individuals with eating disorders very important.

Scott Richards et al. (2000) reviewed 28 eating disorder treatment outcome articles. Only 3 of the 10 articles that addressed outcome research on Anorexia Nervosa did so exclusively. The remaining seven articles also reviewed research on bulimia. In comparison, 18 of the 25 articles that examined outcome research on Bulimia Nervosa did so exclusively. A review of the articles that addressed Anorexia Nervosa found the efficacy of various therapies for treating Anorexia Nervosa, including cognitive-behavioral therapy and medications, was mixed. Richards and colleagues concluded that more research is needed on anorexia nervosa to determine which treatments are most effective. In contrast, Richards and colleagues argue that there is convincing evidence that certain treatments such as cognitive-behavioral therapy, antidepressants, and group therapy are effective in treating patients with Bulimia Nervosa.

Indeed, more than any other treatment modality, cognitive-behavioral therapy coupled with antidepressant medications has the strongest empirical support for positive results in treating Bulimia Nervosa (Peterson & Mitchell, 1999; Richards et al., 2000; Spangler, 1999). Empirical evidence also suggests that cognitive-behavioral therapy alone is more effective than pharmacological interventions, with changes lasting longer and relapse occurring less often (Johnson et al., 1996; Peterson & Mitchell, 1999). Moreover, empirical evidence indicates that pharmacological
interventions do not influence weight gain or the core characteristic of eating disorders though they may help to reduce binging and purging behavior (Johnson et al., 1996). It does appear that a combination of pharmacological and psychological treatment is slightly more effective than cognitive-behavioral treatment by itself (Peterson & Mitchell, 1999). Finally, cognitive-behavioral therapy along with other treatment modalities such as exposure techniques and dialectic behavior therapy may be more effective than cognitive therapy alone (Johnson et al., 1996; Peterson & Mitchell, 1999).

What has yet to be explored with eating disorder populations is whether the efficacy of a Christian based cognitive-behavioral treatment program for eating disorders can be enhanced by addressing spiritual issues. Unfortunately, literature that addresses spiritual factors in relationship to treatment outcome is scant (Harris, Thoresen, McCullough, & Larson, 1999; Richards et al., 1997). Harris and colleagues write, “Virtually no well-controlled intervention studies have yet focused primarily on changing a spiritual or religious factor, that is, none have used such factors as the major focus or dependent variable of an intervention” (Harris, Thoresen, et al., 1999, p. 415).

Nonetheless, there is growing support for the role religion and spirituality play in the physical and mental health of individuals (Ai, Dunkle, Peterson, & Bolling, 1998; Gartner, Larson, & Allen, 1991; George, Larson, Koenig, & McCullough, 2000; Levin, 1994). In recent years the interest in the relationship between religion and health has grown substantially (Ai et al., 1998; Hawkins, Tan, & Turk, 1999; Worthington, Kurusu, McCullough, & Sandage, 1996). This has culminated in
studies that have examined correlations between religious and spiritual factors with health. For example, prayer and church attendance have been linked with lower levels of depression, suicide, mortality, psychological distress, and improved spiritual well-being (Ai et al., 1998; Gartner et al., 1991; Maltby, Lewis, & Day, 1999).

Moreover, literature supports a link between religion and spirituality with eating disorders (Bemporad, 1996; Joughin, Crisp, Halek, & Humphrey, 1992; Lelwica, 1999; Mitchell, Erlander, Pyle, & Fletcher, 1990). Joughin and colleagues, for example, in a study that included results from the Eating Disorder Inventory and the Religious Belief Questionnaire from 924 members of the Eating Disorders Association, concluded that religion is important to individuals with eating disorders, and that religious beliefs and the eating disorder interact (Joughin et al., 1992). In another study, Mitchell and colleagues were surprised to find from a survey of 50 bulimic females that the most common write-in answer to what was helpful in their recovery had to do with faith, pastoral counseling, or prayer (Mitchell et al., 1990).

Finally, there is evidence that Christian cognitive-behavioral therapy is at least as effective in treating clients and patients as secular cognitive-behavioral therapy (Harris, Thoresen et al., 1999; Hawkins et al., 1999; Worthington et al., 1996). Harris and colleagues, for instance, found five psychotherapy outcome studies that evaluated the relative efficacy of cognitive-behavioral treatment modified to be more spiritually or religiously focused (Harris, Thoresen, et al., 1999). Four of the five studies found no difference between secular and Christian cognitive-behavioral interventions. However, one study found that a religiously adapted Christian cognitive-behavioral therapy, which used religious imagery, was statistically more effective in reducing
levels of depression than the secular version.

Another study that compared secular versus Christian inpatient cognitive-behavioral therapy found that patients who chose the Christian version of therapy statistically improved on measures of spiritual well-being (Hawkins et al., 1999). In addition, while there was no difference between groups on depression, the authors concluded that the more the patients improved in spiritual well-being, the more they were likely to decrease on measures of depression. Finally, the authors noted that there was a trend for lower levels of depression among patients who chose the Christian version of treatment, which may have been further substantiated in a study of larger power.

Other studies have supported the important relationship that spiritual well-being has with psychological health. Ellison and Smith (1991) noted that spiritual well-being has been found to be a mediator between depression in response to life changes. They also wrote that spiritual well-being has been positively correlated with assertiveness and self-confidence, and negatively correlated with forms of aggression and dependency. In yet another study, 9 of 16 studies reviewed reported a negative correlation between depression and one of four dimensions of spiritual wellness (Westgate, 1996).

It stands to reason, then, that eating disorder patients may benefit from having spiritual or religious factors addressed from a Christian cognitive-behavioral modality. In particular, addressing the spiritual component of the eating disorder patient may be helpful in recovery. However, no studies to date have examined whether this holds true or not. To do so would require the development and use of an
instrument that can assess the spiritual state of an individual. Then, results from this instrument could be examined in relation to outcome data.

**Purpose of the Study**

The purpose of this study was to first determine if The Remuda Ranch Center for Anorexia and Bulimia, Inc., which incorporates Christian cognitive-behavioral therapy as the foundation for its treatment modality, is an effective program for treating eating disorders. This study also sought to determine if the Remuda Ranch program is effective in treating both depression and spiritual distress. This study also examined the relationship between both depression and spiritual distress with treatment outcome. Finally, in order to assess how spiritual issues relate to treatment outcome, the Remuda Ranch Spiritual Inventory was examined to ensure that this instrument is a valid and reliable instrument for research purposes.

**Research Questions**

Research Question 1

Research question 1 asks: Will the levels of eating disorder symptoms be significantly lower in patients between admission and discharge and between admission and 1-year post-discharge. This is an important question for establishing the efficacy of the Remuda Ranch program for treating eating disorder symptomatology.
Research Question 2

Research question 2 asks: Will patients' levels of depression be significantly lower between admission and discharge. This question is important for establishing the efficacy of the Remuda Ranch program for treating depression.

Research Question 3

Research question 3 asks: Will patient's levels of spiritual distress be lower from admission to discharge. The purpose of this question is to determine if the Remuda Ranch program is effective in lowering spiritual distress during treatment.

Research Question 4

Research question 4 asks: Is there a correlation between depression and spiritual distress with treatment outcome. This is an important question for determining if a relationship exists between depression and spiritual distress with treatment outcome. This question can also help to determine if depression and spiritual distress scores can demonstrate predictive validity.

Definitions of Terms

For purposes of this study, terms related to eating disorders such as Anorexia Nervosa and Bulimia Nervosa will both be defined and diagnosed according to the guidelines presented in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (APA, 1994). Terms related to spirituality and religion will be defined based on a consensus of literature.

Anorexia: The diagnostic criteria for Anorexia Nervosa as set forth by the DSM-IV is as follows (APA, 1994, pp. 554-555):

A. Refusal to maintain body weight at or above a minimally normal
weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of 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 or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.

D. In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration).

In addition, the DSM-IV differentiates between two subtypes of anorexia nervosa:

Restricting Type: during the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

Binge-Eating/Purging Type: during the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

In summary, anorexia nervosa is characterized by refusal to maintain a minimal normal body weight, intense fear of weight gain, significant disturbance in the perception of one’s body, and amenorrhea for postmenarcheal females.

Bulimia Nervosa: The diagnostic criteria for Bulimia Nervosa as determined by the DSM-IV is (APA, 1994, pp. 549-550):

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:

(1) eating, in a discrete period of time (e.g., within any 2-hour
period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances

(2) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating)

B. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.

C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.

D. Self-evaluation is unduly influenced by body shape and weight.

E. The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

Similar to Anorexia Nervosa, the DSM-IV differentiates between two subtypes.

**Purging Type:** during the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

**Nonpurging Type:** during the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory behavior, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

**Christian:** Any attempt to adequately define the term *Christian* or *Christianity* is far beyond the scope of this paper. Nonetheless, for clarification purposes an attempt is warranted. As applied in this paper, Christian will refer to a follower or disciple of Jesus Christ. The term might also refer to the concepts or teachings of Jesus Christ based solely on what is presented in the Bible.

**Eating Disorder:** The term eating disorder may include Anorexia Nervosa, Bulimia Nervosa, or criteria set forth by the DSM-IV under the heading Eating...
Disorder Not Otherwise Specified. Examples provided by the *DSM-IV* (APA, 1994, p. 550) include:

1. For females, all the criteria for Anorexia Nervosa are met except that the individual has regular menses.

2. All of the above criteria for Anorexia Nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.

3. All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur at a frequency of less than twice a week or for a duration of less than 3 months.

4. The regular use of inappropriate compensatory behavior by an individual of normal body weight after eating small amounts of food (e.g., self-induced vomiting after the consumption of two cookies).

5. Repeatedly chewing and spitting out, but not swallowing large amounts of food.


**Religion:** In general, the term *religion* and its derivatives refer to the external manifestations of spirituality (Harris et al., 1999; King, Speck, & Thomas, 1999). Examples might include attending a place of worship, participating in an organized ritual, or praying. Hence, for purposes of this paper, religion may refer to the sacred behaviors and activities of a person or community.

**Spiritual:** The term *spiritual* or *spirituality* is more difficult to define than religion. Generally the term *spiritual* is used in reference to a person’s experiences with the transcendent or existential features of life. Higher Power, or Divine Being (Harris et al., 1999; King et al., 1999; Worthington et al., 1996). Examples might include connectedness, values, beliefs, meaning, and sense of purpose. Where
religion usually refers to the external, spirituality usually refers to the internal. It should be noted that a person can be spiritual without being religious, and vice-versa. For purposes of this paper, spiritual may refer to the internal experiences and conditions of a person in relation to a Higher Power.

**Limitations**

Weaknesses in this study's methodology were created by procedures and subject selection. Pertaining to procedures, this study did not differentiate between the three *DSM-IV* diagnoses for eating disorders. For example, no differentiation was made between patients who were given a diagnosis of Anorexia Nervosa restrictive type and Bulimia Nervosa purging type. Differences between eating disorder diagnoses have previously been noted. However, in that no differentiation was made in this study, it is almost impossible to determine which group of patients experienced the most profound effect of treatment and in which areas. For example, it is likely that patients who were given a diagnosis of Bulimia Nervosa had a more profound decrease in symptoms on subscale B, bulimia, from the Eating Disorder Inventory-2, than patients who were given a diagnosis of Anorexia Nervosa at the time of admission. However, the procedural design of this study makes this statement only speculative.

A second procedural limitation pertains to the fact that no effort was made to determine why approximately 25% of the patients who were sent the EDI-2 at 1-year post-discharge did not return the test and thus were not included in null hypotheses 1 and 4.
Regarding subject selection, and because Remuda Ranch only admits women with eating disorders, this study did not include men. Indeed, while eating disorders are much more prevalent with women than men, there are men who have eating disorders. Consequently, generalizing results from this study to both genders should be done cautiously. In addition, this study was limited to those patients who were at least 12-years old at the time of admission.

Finally, null hypotheses 3 and 4 were limited to those patients who chose Form A of the Remuda Ranch Spiritual Inventory, and hence only included patients who professed to have or have had a personal relationship with Jesus Christ. No conclusions can be made regarding how spiritual distress issues are related to treatment outcome in patients who have never had a personal relationship with Jesus Christ.

**Delimitations**

The following factors were a potential threat to the internal and external validity of the study in that it might be difficult to separate treatment effects from the effects of the confounding variables.

These factors were:

1. *Relatively brief period between pre-test data during treatment, and outcome data post-discharge.* Outcome data obtained approximately 1-year post-discharge are not long enough to determine long-term results.

2. *Varied aftercare provisions.* Patients received different aftercare treatment ranging from, for example, residential day treatment to outpatient treatment. In addition, patients received aftercare treatment from different providers.
3. **Differential post-treatment environmental changes.** Some patients may have experienced life changes or events not attributable to treatment effects that might confound post-treatment results.

4. **Parallel programming.** All subjects were required to participate in a variety of treatment programs that address spiritual and therapeutic interventions. Thus, it was impossible to determine which aspect of the treatment program was responsible for promoting changes in the patient.

**Organization of the Dissertation**

Chapter 1 includes the introduction, statement of the problem, purpose of the study, research questions, definitions of terms, limitations, delimitations, and organization of the study. Chapter 2 contains the literature review. Chapter 3 describes the research methodology and design of the study. Chapter 4 presents the data and statistical analyses. Chapter 5 discusses and summarizes the findings of the study, and presents conclusions and recommendations for future research.
CHAPTER 2

REVIEW OF THE LITERATURE

This review of literature includes a discussion of eating disorders and spirituality. Specific emphasis will be placed on the history, current demographics, and trends of eating disorders and spirituality. Consequences of eating disorders and outcome studies related to both eating disorders and spiritual factors will also be discussed. Finally, research that relates to the treatment of eating disorders, and to the interaction between eating disorders and spirituality will be examined.

Eating Disorders

History

Voluntary self-starvation is a phenomenon that has occurred throughout history, particularly among various religious groups. Moses fasted for 40 days before receiving the Ten Commandments, and Jesus fasted for 40 days before beginning his ministry. In Eastern religions, fasting was often prolonged to the point of death as part of an attempt to totally withdraw from a perceived evil materialistic world (Bemporad, 1996). In Hinduism, there is the myth that the god Siva starved himself for 36,000 years (Bemporad, 1996), and Buddha reportedly went through a phase of self-starvation in search of enlightenment (Mogul, 1980).

The spread of asceticism during early Christianity resulted in hermits who would abandon civilization for a solitary life of seclusion. Most of these early
hermits were men. However, possibly the first documented female to voluntarily die from self-starvation took place around the late fourth century when Blessila, sister to a student of St. Jerome, took St. Jerome's message of abstinence and prayer to heart, and died at the age of 20 (Bemporad, 1996).

During the Dark Ages when common life was a struggle for survival against pestilence and famine, self-starvation seemed to be nearly non-existent (Bemporad, 1996). This is consistent with the view that eating disorders tend to be culture-bound, and occur only when sufficient food is available that being overweight is possible (Andersen, 1999; Bemporad, 1996).

Nonetheless, reports of self-starvation began to surface again during the Middle Ages and renaissance. Rudolf Bell, for example, documented 261 cases of "holy fasting" between 1206 and 1934 (Bell, 1985). Publications can be found in the late 1600s addressing what might now be considered anorexia (Bemporad, 1996; Hsu, 1990). More importantly, it is around this time that documented attempts to use a medical model to explain forms of self-starvation can be found (Bemporad, 1996).

In the late 1800s, French psychiatrist Ernest-Charles Lasegue and English physician Sir William Withey Gull simultaneously and independently described clinical components (e.g., amenorrhea, constipation, reduced food intake without established organic causes) of female patients whose eating habits were severely disturbed (Hof. 1994). In 1873, Lasegue coined the term Anorexia Hysterique. Gull preferred the term Anorexia Nervosa.

Interest in eating disorders remained minimal, however, until the late 1950s. It was at this time that descriptions of both food restricting and binging and vomiting
became more popular. In 1976, Beumont, George, and Smart suggested that there are two subgroups of anorectic patients: restrictors and purgers (1976). In 1980, the *DSM-III* distinguished Bulimia from Anorexia Nervosa (APA, 1980), and in 1987 the *DSM-III-R* changed the term to Bulimia Nervosa (APA, 1987).

Currently, the *DSM-IV* has divided Bulimia Nervosa into two subtypes: purging and nonpurging (APA, 1994). Likewise, the *DSM-IV* has subdivided Anorexia Nervosa into two categories: restricting and binge-eating/purging type. The *DSM-IV* also includes greater specificity for eating disorder, not otherwise specified (EDNOS). Finally, a new proposed disorder, binge-eating disorder, has been proposed.

**Etiology**

Any clinician who has treated a large number of eating disorder patients realizes that there is not a single event or factor which precipitates an eating disorder. Instead, any number of different factors may contribute to the development of an eating disorder. Because of this, researchers often describe the etiology of eating disorders as multifactorial (Hsu, 1990). Nonetheless, some common factors may be noted.

For any patient who meets an eating disorder diagnosis, an unusual morbid preoccupation with weight and body image will be present (Heatherton et al., 1997; Johnson et al., 1996; Kaye et al., 1999). This may lead to some attempt at dieting (Heatherton et al., 1997; Hsu, 1990; Stice, 1999). In fact, Stice (1999) argues that research supports the notion that body dissatisfaction can lead to restrictive dieting, and predict eating pathology and onset of bulimic pathology.
Indeed, a large number of patients with eating disorders may present with similar preoccupations with weight. Most of the individuals who will develop eating disorders began dieting several years before meeting diagnostic criteria, and likely were preoccupied with weight as early as age 7 (Andersen, 1999). Andersen writes that up to 40% of 9-to-10 year olds are worried about becoming fat (1999). Moreover, between 10% to 40% of individuals who develop anorexia will later meet the diagnostic criteria for Bulimia Nervosa (Crisp, Hsu, Harding, & Hartshorn, 1980; Fichter & Quadflieg, 1999).

This proclivity to be preoccupied with weight and dieting seems to continue into adulthood. Heatherton and colleagues, in a 10-year longitudinal study that examined body weight, dieting, and eating disorder symptoms involving 509 women, concluded that disordered eating might be normative for college women before substantially diminishing after graduation (Heatherton et al., 1997). Unfortunately, they also found one in five women who met criteria for an eating disorder in their study also met criteria for an eating disorder 10 years later.

George Hsu (1990), similar to Stice (1999) mentioned above, postulates that dieting provides the entrée into an eating disorder. However, he also correctly notes that most individuals who embark on a diet do not develop an eating disorder. Thus, he further hypothesizes that genetic, psychological, biological, personality, and family factors may increase the propensity to develop an eating disorder (Hsu, 1990).

Any or all of these factors may indeed contribute to the propensity to develop an eating disorder. Support for a biological and genetic component to eating disorders is certainly re-emerging, with mixed results (Bulik, Sullivan, Wade, &
Kendler, 2000; Wade et al., 2000; Ward, Tiller, Treasure, & Russell, 2000). Bulik and colleagues, in particular, reviewed a number of twin studies and concluded that it was not possible to draw firm conclusions regarding the contribution of genetic and environmental factors to Anorexia Nervosa (Bulik et al., 2000). They did conclude, however, that Bulimia Nervosa is familial and that genetic effects and shared environmental factors can be a liability for Bulimia Nervosa (Bulik et al., 2000).

In addition, factors such as perfectionism, sexuality, neuroticism, trauma, impulsivity, family interactions and dynamics, and societal pressures have all been postulated as potential contributors to the development of eating disorders (Arnow, 1999; Hsu, 1990; Podar et al., 1999; Pryor, Wiederman, & McGilley, 1996; Stice, 1999). Certainly, any attempt at determining the contributing developmental factors of an eating disorder must consider sociocultural factors. This includes not only pressures to be thin from family members, but also coercion from friends and the mass media. There is, for example, evidence that exposure to media images, where thinness is idealized, can maintain eating disorder thinking (Stice, 1999). Moreover, one only has to look at the statistical demographics of eating disorders to understand that sociocultural factors are an important element in the development of eating disorders.

Current Demographics

Presently eating disorders are prevalent mainly among industrialized cultures, most notably Western societies, where sufficient food exists and thinness is valued (Andersen, 1999; Bemporad, 1996; Hsu, 1990). Epidemiological studies have also confirmed that eating disorders are more prevalent among young Caucasian females
from middle to upper classes (Hsu, 1990; Pawluck & Gorey, 1998; Stice, 1999).
Certainly, any attempt to explain the etiology of an eating disorder must take these
demographics into consideration. It would be difficult to explain, for example, that
genetic causes alone contribute to the development of eating disorders when eating
disorders are primarily manifested in certain segments of populations.

Most studies estimate the prevalence of eating disorders to range from 0.3% to
3% for Anorexia Nervosa, and 1% to 5% for Bulimia Nervosa (APA, 2000; Hsu,
1990; Johnson et al., 1996; Kaye et al., 1999; Stice, 1999). The ratio of women to
men is about 10 to 1 (APA, 2000; Hsu, 1990).

It is generally believed that the incidence rate of Anorexia Nervosa has
steadily increased over the last several decades. However, there is some support that
most of this increase has occurred among older women (Hsu, 1990; Pawluck &
Gorey, 1998). For example, Pawluck and Gorey (1998) examined 12 cumulative
studies covering a 40-year period and found that a statistically non-significant
increase of 10% occurred among teenagers. However, among women in their 20s and
30s, a threefold increase was found.

Nonetheless, the peak incident rate for both Anorexia Nervosa and Bulimia
Nervosa remains from 16 to 18 years old (APA, 1994; Hsu, 1990; Stice, 1999).
Pawluck and Gorey (1998), in their study mentioned above, noted the incidence rate
of Anorexia Nervosa to be five times greater among teenagers than women age 20 or
older. These numbers can be disconcerting when the consequences of eating
disorders are considered.
Consequences of Eating Disorders

Health Risks

Most health risks for individuals with eating disorders result from complications related to starvation and purging (De Zwaan & Mitchell, 1999). Attempts at starvation can take many forms, including vomiting, laxative and diuretic abuse, and simply not eating for long periods of time.

Symptoms commonly associated with anorexic patients include amenorrhea, irritability, headaches, dizziness, abdominal pain, emaciation, bradycardia, hypotension, dry skin, brittle hair and nails, lanugo hair, edema, gastroparesis, and intolerance of cold (De Zwaan & Mitchell, 1999; Hsu, 1990; Waldholtz, 1999). Other complications for the anorexic may include abnormalities in neuroendocrine function (Schlechte, 1999). Patients may present with thyroid and glucose abnormalities. Alterations in growth and reproductive hormones may also be present. Finally, pituitary, pancreatic, and adrenal abnormalities may also be present (Schlechte, 1999).

Common symptoms for the individual with bulimia include irregular menses, esophageal burning, abdominal bloating, fatigue, headaches, constipation or diarrhea, bloating, sore throat, erosion of dental enamel, periodontal disease, mouth ulcers, abdominal bleeding, and swollen cheeks (De Zwaan & Mitchell, 1999; Hsu, 1990; Waldholtz, 1999). Other complications might include peptic ulcer disease, parasitic intestinal infections, and inflammatory bowel disease (Waldholtz, 1999).

For both the anorexic patient who purges and the bulimic patient, electrolyte abnormalities are distinct possibilities (Powers, 1999; Schulte & Mehler, 1999).
Changes in sodium, potassium, chloride, and bicarbonate can lead to hypokalemia, hypomagnesemia, and hypocalcemia, leading to cardiac complications.

Cardiac complications are both dangerous and common for eating disorder patients (Powers, 1999). Pauline Powers suggests that anorexic patients have the highest premature mortality rate of any diagnostic group of psychiatric patients (1999). For the bulimic patient, death is less frequent, but still a possibility.

Cardiac problems can occur not only at low weights, but also during weight restoration. Vulnerability to cardiac complications may be exacerbated by the nature of weight loss and weight gain, and purge methods. For example, rapid weight loss facilitated by the use of laxatives may increase the risk for cardiac complications. The intensity of the purge method (i.e., self-induced vomiting 12 times a day) can also be a factor. In short, methods of starvation and purging can place the very lives of eating disorder patients in jeopardy.

Mortality Rates

It is estimated that about half of the deaths of anorexic patients are related to cardiac complications, with suicide a close second (Hsu, 1990; Powers, 1999; Sullivan, 1995). Mortality rates for Anorexia Nervosa range from 3% to 21% with most estimates falling within a range of 3% to 8% (Arnow, 1999; Crow et al., 1999; Fichter & Quadflieg, 1999; Hsu, Crisp, & Callender, 1992; Johnson et al., 1996; Steinhausen & Glanville, 1983; Sullivan, 1995). In a study previously discussed, in which 42 published studies of mortality were reviewed, Sullivan (1995) found a 5.6% mortality rate at 10-year follow-up. Fifty-four percent died as a direct result of their illness. 27% died from suicide, and 19% from unaccounted causes. In another study

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by Fichter and Quadflieg (1999) in which 103 anorexic inpatient cases were reviewed, six patients had died by the 6-year follow up (5.9%). All deaths were associated with an eating disorder, including cardiac problems and hypocalcemia.

Mortality outcome data for individuals with Bulimia Nervosa is less thorough than for individuals with Anorexia Nervosa. Many follow-up studies only report the percentage of missing cases at the time of follow-up, without identifying why a subject cannot be located. Other studies do not differentiate between subtypes of eating disorders. Nonetheless the data that are available indicate a more favorable outcome for Bulimia Nervosa than for Anorexia Nervosa. When death does occur, it is usually the result of some type of cardiac abnormalities from hypokalemia as a result of some type of purging behavior, or from suicide (De Zwaan & Mitchell, 1999).

Mortality rates for Bulimia Nervosa range from about 0% to 3% (Crow et al., 1999; Hsu, 1990; Keel et al., 2000). In one particular study in which there was a 100% ascertainment rate, the records of 122 consecutive eating disorder patients over a 5-year period were retrieved (Crow et al., 1999). The average age at the time of the visit was 25.7. The percentage breakdown for eating disorders was 44.3% anorexic and 34.4% bulimic, and 21.3% were diagnosed as Eating Disorder Not Otherwise Specified (EDNOS). The crude mortality rate for the entire sample was 4.1%. For subjects initially diagnosed with Anorexia Nervosa it was 7.4%. For those initially diagnosed with Bulimia Nervosa it was 2.4%. Interestingly, when only those subjects 25 years old and older were considered, the crude mortality rate for Bulimia Nervosa and Anorexia Nervosa was 5.2% and 12% respectively.
While Crow and colleagues did not break down the various causes of death in their study, the high rate of suicide has already been noted. This leads us to a third consequence of eating disorders: emotional and social consequences.

**Emotional and Social Consequences**

The emotional and social consequences of eating disorders can be debilitating. Psychosocial consequences such as isolation, withdrawal from family and friends, disruption in school and work performance, interference in dating and marital relationships, and alexithymia are commonly associated with eating disorders (De Groot et al., 1995; Keel et al., 2000; Pike, 1998; Sanftner & Crowther, 1998; Sexton et al., 1998).

Keel and colleagues, for example, in a study which examined the social adjustments of 177 women diagnosed with Bulimia Nervosa up to more than 10 years post-baseline, found that the longer a woman had been free of disordered eating symptoms, the more likely she was to report better functioning at work and overall social adjustment (Keel et al., 2000). However, continued difficulties in marital, parental, or family relationships continued independent of disordered eating.

Sanftner and Crowther (1998), in a study involving 78 subjects, found that women who binge experienced greater fluctuations than controls in self-esteem, negative affect, and shame and guilt. They also found that the women who binged in their study reported greater fluctuations in social and performance self-esteem than controls.

In yet another study, Rastam and colleagues (1996) compared 51 subjects with Anorexia Nervosa to 51 sixteen-year-old control subjects. The mean age when the
anorexic subjects were originally examined was 16 years old. At the 6-year follow-up (mean age of 21) Rastam concluded that most of the anorexic patients were recovered in terms of weight, but outcome in social areas was restricted. Moreover, Rastam found a high rate of companion disorders for the anorexic group.

This is consistent throughout the research literature, which strongly supports the high rate of dual diagnoses such as various depressive disorders, various Axis II disorders, obsessive-compulsive diagnoses, social phobia, and other anxiety disorders (De Groot et al., 1995; Pike, 1998; Podar et al., 1999; Rastam et al., 1996; Sexton et al., 1998; Wiederman & Pryor, 2000). Studies have consistently found, for instance, lifetime prevalence rates of 36% to 68% for major depression, and between 60% and 65% for anxiety disorders (Schork, Eckert, & Halmi, 1994). In the study mentioned above, Rastam and colleagues found that 31% of the anorexic group, compared to 8% of the control group, met criteria for Obsessive-Compulsive Disorder (Rastam et al., 1996). In fact, these researchers found that all the anorexic subjects had met criteria for at least one Axis I diagnosis other than Anorexia Nervosa at least once in their lifetime, compared to 39% of the control group. They also concluded that 41% of the anorexic group met criteria for at least one Axis II disorder compared with 18% in the control group.

**Outcome and Treatment**

Clearly, the debilitating and sometimes morbid effects of eating disorders warrant a search for effective treatment. Outcome data also suggest the need for effective treatment.
Outcome

In general, outcome results for patients with eating disorders are mixed, with most studies indicating that the recovery rate for Bulimia Nervosa is more favorable than for Anorexia Nervosa (Fichter & Quadflieg, 1999; Heatherton et al., 1997). Potential reasons for the disparity in outcomes are differences in sample selection, diagnostic criteria, treatment effects, dropout rate, length of follow-up, and outcome criteria. Outcome criteria are a particularly important consideration because many former subjects may no longer meet diagnostic criteria and yet disordered eating may continue. In addition, debilitating effects of the eating disorder such as body image issues and psychopathology may remain strong.

Many studies, including those cited below, have used or modified the criteria and scale set forth by Morgan and Russell for categorizing the outcome for Anorexia Nervosa (Fichter & Quadflieg, 1999; Morgan & Russell, 1975; Schork et al., 1994). In essence, the Morgan and Russell scale classifies outcome as “good” if normal body weight and normal menses are present, “intermediate” if near normal weight and/or menstrual abnormalities are present, and “poor” if low weight or absent menses exist.

The majority of studies report that approximately 50% to 80% of individuals with Anorexia Nervosa achieve a good to intermediate outcome (Fichter & Quadflieg, 1999; Pike, 1998; Rastam et al., 1996). However, as suggested above, a substantial number of patients continue to struggle with eating disorder symptoms years after treatment.

Fichter and Quadflieg (1999), in a study which examined the 2-year and 6-year outcome of 103 inpatients diagnosed with Anorexia Nervosa, reported substantial
improvement during therapy, moderate decline during the first 2 years post-treatment, and further improvement from 3 to 6 years. More specifically, this study found that at 6-years post discharge, 34.7% of the subjects had a good outcome, 38.6% had an intermediate outcome, 20.8% had a poor outcome, and 5.9% were deceased. This same study also found three prognostic factors that predicted poor outcome. Patients with binge attacks the month before treatment, patients who had another mental disorder besides the eating disorder, and patients with a relatively low body weight at the end of treatment had a less favorable 6-year outcome (Fichter & Quadflieg, 1999).

Another study examined the outcome data 10 years after the initial assessment for 76 patients and classified 35.5% of the subjects as good, 21% as intermediate, 36.8% as poor, and 6.6% as deceased at the 10-year follow-up (Schork et al., 1994). In addition, at the 10-year follow-up 23.7% of the subjects were classified with no diagnosis, 35.5% as Eating Disorder NOS, 22.4% with Bulimia Nervosa, 9.2% with Anorexia Nervosa, 2.6% as anorexic and bulimic, and 6.6% were deceased.

This study in particular demonstrated that a diagnosis of Anorexia Nervosa might later develop into another eating disorder diagnosis. In order to explore differences between eating disorder diagnoses, and to assess psychopathology in eating disorders, Schork and colleagues also administered the Minnesota Multiphasic Personality Inventory (MMPI) to 59 of the surviving 71 patients (Schork et al., 1994). They found no statistically significant difference between the Anorexia Nervosa group and the Bulimia Nervosa group at the time of follow-up. However, they did find that those subjects who had recovered from Anorexia Nervosa and had no other eating disorder showed little or no psychopathology. In contrast, subjects who still
struggled with an eating disorder at follow-up typically displayed serious levels of psychopathology. Specifically, subjects still struggling with an eating disorder showed significantly higher psychopathology on the MMPI scales which consist of somatization and bodily preoccupation, lack of insight, depression and dysphoria, impulsivity, interpersonal distrust, obsessive-compulsive thinking and behavior, and social maladjustment (MMPI scales 1, 2, 3, 4, 6, 7, and 8).

The course and outcome for Bulimia Nervosa is less well known than that for Anorexia Nervosa. The *DSM-IV* in fact states that the long-term outcome for Bulimia Nervosa is not known (APA, 1994) although the *DSM-IV Text Revision* suggests that the symptoms of many individuals with Bulimia Nervosa diminish over time (APA, 2000). This is due in large part to most studies limiting outcome data to less than 2 years. A few long-term studies do exist however.

A study mentioned above, which examined the social adjustments of 177 bulimics from 2 to over 10 years following diagnosis, found that 11% met criteria for Bulimia Nervosa, 0.6% met criteria for Anorexia Nervosa, 18.5% met criteria for Eating Disorder Not Otherwise Specified, and 69.9% were classified as in remission (Keel et al., 2000). However, those subjects who were identified as in remission were not further classified according to degree of symptomatology thereby making it impossible to conclude that disordered eating, thinking, and behaviors had stopped altogether.

Another study collected outcome data on 44 outpatient bulimic subjects with an average follow-up period of 9.3 years (Reas et al., 2000). Thirty-two or 72.7% of the subjects contacted were recovered, while 27.3% were not. While these numbers
are favorable, several methodological shortcomings should be noted. First, subjects diagnosed with both Bulimia Nervosa and sub-threshold bulimia were included. Second, information on only 45% of the original 97 subjects was obtained. Third, again no further classification other than in remission, or not in remission, was presented.

In short, while the long-term outcome for Bulimia Nervosa appears more favorable than for Anorexia Nervosa, there is not enough sound long-term research to reach a definitive conclusion. In contrast, the short-term outcome for Bulimia Nervosa is better researched, along with data on treatment interventions. Moreover, most research that has focused on treating eating disorders has specifically targeted Bulimia Nervosa.

Treatment

Treatment modalities for eating disorders have varied, with most studies comparing the efficacy between cognitive-behavioral therapy, interpersonal psychotherapy, behavior therapy, supportive-expressive therapy, and pharmacological interventions (Garner et al., 1993; Johnson et al., 1996; Peterson & Mitchell, 1999; Spangler, 1999; Steiger & Israel, 1999). Other less-well studied treatment modalities include family therapy techniques and, more recently, dialectical behavior therapy (Hsu, 1990; Kaye et al., 1999; Wiser & Telch, 1999).

Unfortunately, sound studies simply do not exist which compare the efficacy of one treatment modality to another for Anorexia Nervosa. One reason may be that the severity of medical complications in Anorexia Nervosa often limits the use of wait-list or no-treatment control groups. Hence, the majority of treatment studies for
Anorexia Nervosa are single-case designs such as those discussed above. Moreover, Johnson and colleagues (1996) note that while the results are promising for those studies that do compare cognitive-behavioral treatment to other treatment modalities, the lack of control groups, small number of subjects, and short period of time examined result in needing to be cautious when interpreting results. Instead, most studies that include, for example, a control group examine binge-purge behavior.

In general, cognitive-behavioral therapies are found to be superior to other treatment modalities for treating binge-purge behavior (Johnson et al., 1996; Peterson & Mitchell, 1999). Johnson and colleagues reviewed several studies and concluded that cognitive-behavioral therapy alone is more effective than medicine alone in reducing binging and purging (Johnson et al., 1996). They also concluded that cognitive-behavioral interventions endure longer than medications alone, where relapse rates are more common. In addition, Johnson and colleagues found support for cognitive-behavioral therapy being more effective than behavioral therapy in reducing preoccupation with dieting and other comparisons (1996). They also found support for cognitive-behavioral therapy exhibiting faster treatment gains with a lower dropout rate than interpersonal therapy.

Some of these conclusions are supported by a study that assigned 77 bulimic female patients to one of four groups: wait-list control, self-monitoring of caloric intake and purging behaviors, cognitive-behavioral treatment, and cognitive-behavioral treatment combined with response prevention of self-induced vomiting (Agras, Schneider, Arnow, Raeburn, & Telch, 1989). Each of the three treatment groups demonstrated statistically significant improvement in the frequency of purging
from baseline, while the control group did not. However, a chi-square analysis revealed that only the cognitive-behavioral group demonstrated significantly more improvement in purging frequency when compared to the wait-list group. In regard to depression, both the cognitive-behavioral group and the response prevention group were significantly superior to the control group, whereas the self-monitoring group was not.

Another study compared the efficacy between outpatient cognitive-behavioral therapy and supportive-expressive therapy (Garner et al., 1993). In this study, 25 patients in each group completed 18 individual therapy sessions. Results indicated that the supportive-expressive therapy group was just as effective as the cognitive-behavioral group in reducing binge eating. However, the cognitive-behavioral group was found to be marginally superior in reducing self-induced vomiting. Moreover, the cognitive-behavioral group was significantly more effective in ameliorating concerns toward eating and weight, depression, poor self-esteem, general distress, and certain personality traits.

Finally, Thackwray and colleagues compared an 8-week outpatient cognitive-behavioral therapy group to an 8-week behavior therapy group and a nonspecific self-monitoring treatment group (Thackwray, Smith, Bodfish, & Meyers, 1993). Forty-seven women were randomly assigned to one of the three groups and 39 women completed the study. At post-treatment, 100% of the behavioral group, 92% of the cognitive-behavioral group, and 69% of the self-monitoring group were abstinent from binge-purge behavior. In contrast, at the 6-month follow-up, 69% of the cognitive-behavioral group, 38% of the behavioral group, and 15% of the self-
monitoring group were abstinent from binge-purge behavior.

Nonetheless, while cognitive-behavioral therapy alone may be considered an effective treatment for eating disorders, the remission rate is less than adequate. Short-term abstinence rates for binging and purging only average around 40% to 50% for this treatment intervention (Johnson et al., 1996; Kaye et al., 1999; Peterson & Mitchell, 1999). As a result, many treatment modalities consist of a number of interventions. For example, cognitive-behavioral therapy may be used in conjunction with family therapy, art therapy, exposure-response therapy, dialectic behavior therapy, and pharmacological interventions. This is particularly true when a patient is admitted into an inpatient hospital where a clinical team may approach treatment from a biopsychosocial approach.

Indeed, modest evidence exists that a combination of psychopharmacological interventions with cognitive-behavioral therapy may produce greater improvement with bulimic symptoms than either treatment modality by itself (Agras et al., 1992; Johnson et al., 1996; Peterson & Mitchell, 1999). Agras and colleagues (1992) compared five groups consisting of medication alone (desipramine) for 16 or 24 weeks, combined treatment of desipramine and cognitive-behavioral therapy for 16 or 24 weeks, and 15 sessions of cognitive behavioral therapy without desipramine being administered to the subjects.

Results at 16 weeks indicated that both the cognitive-behavioral therapy group and the combined group were superior to medications given for reducing binge eating and purging. At 32 weeks, however, only the combined group consisting of both prescribed medications and cognitive-behavioral therapy was superior to the group
treated only with medications. The combined group was also more effective in reducing dietary preoccupation and hunger. The authors concluded that cognitive-behavioral therapy appeared to prevent relapse in patients withdrawn from medication at 16 weeks. They also concluded that the use of a combination of medication and cognitive-behavioral therapy produced the broadest therapeutic benefits.

Recognizing the complexity of treating eating disorder patients, the concept of a multidisciplinary treatment team has taken on an increasingly vital role. Many outpatient therapists elicit the help of dieticians and physicians who may prescribe medications. Within an inpatient hospital setting, a treatment team may consist of an individual therapist, family therapist, psychiatrist, primary care physician, psychologist, nutritionist, body image therapist, art therapist, nurse, recreation therapist, and mental health workers.

Indeed, as is often the case, approaching treatment from a multifactorial perspective demands the help of a number of disciplines. What has yet to be studied is the efficacy of treating eating disorder patients from a multifactorial approach that also incorporates a biblically based spiritual component into treatment. The possible benefits of integrating spirituality into a treatment setting will be examined next.

Religion and Spirituality

It can be argued that interest in religious acts and spirituality has existed since the beginning of humankind. Religion in particular appears to be a universal social institution, which has been part of every known human society (Nielsen et al., 1983). Ancient Egyptian, Assyrian, Greek, and Hindu writings all contain various religious beliefs and activities (Nielsen et al., 1983). For example, the Pyramid Texts, which
are inscriptions on the walls of the pyramids built for the pharaohs (2700-2200 B.C.).
are concerned with funeral rites and details about the ruler's life in the afterlife.
Likewise, the Coffin Texts, written on the lids of coffins of Egyptians who died
between 2100-1800 B.C., address temple rights and religious myths.

For the Christian, religious acts are believed to be as old as the first humans.
In the Bible, Gen 4 tells the story of Cain and Abel, children of Adam and Eve. In
this chapter we read about jealousy, anger, sin, and murder by Cain who killed Abel
over the Lord's response to each of their offerings. Moreover, if spirituality is
defined as the internal experiences or conditions a person has towards a higher being
or power, arguments certainly can be made about the different spiritual conditions
and relationship Abel and Cain possessed towards their God.

Interest in religion has permeated cultures around the world throughout the
ages and to the present. Here in the United States, surveys have consistently shown
that Americans believe in God and are interested in spiritual matters. For example, a
1995 Gallup Poll asked the question, "Do you believe in God or a universal spirit?" (Gallup, 1996). Ninety-six percent responded in the affirmative. A 1998 Gallup Poll
found that 82% of respondents answered positively to the question, "Do you feel the
need to experience spiritual growth?" (Gallup, 1999). Finally, a more recent Gallup
Poll (Gallup, 2000) found that 86% believe in God. However, an additional 8%
indicated that while they do not believe in God, they do believe in a higher power,
totaling 94% who believe in either God or a higher power.

Moreover, studies have indicated that patients who seek treatment hold similar
views to the vast majority of Americans. Kroll and Sheehan (1989), for example,
examined the religious beliefs and practices of all 52 psychiatric inpatients on a locked psychiatric ward. They compared the inpatient's religious demographics to a Gallup Poll in 1981 and a Minnesota Poll of 1987. To the question addressing belief in God, they found that 95% of their patients, 95% of the Gallup sample, and 95% of the Minnesota poll answered affirmatively. To the question addressing belief in the afterlife, they found that 79% of their patients, 71% of the Gallup poll, and 76% of the Minnesota sample responded positively. Kroll and Sheehan also found that 67% of the inpatients believed in the devil. The two other polls did not ask this specific question but the Gallup sample reportedly asked about the respondents' belief in hell, to which 53% answered affirmatively. Kroll and Sheehan concluded that their survey of inpatients was very much in accord with the country in general.

In spite of the clear interest in religious and spiritual matters by patients, mental health providers have largely ignored this area in the past few centuries. Western perspectives of health have chiefly evolved from such philosophies as elementalism, humanistic reason, rationalism, and empiricism (Slife, Hope, & Nebeker, 1999; Westgate, 1996). Elementalism, in particular, which espouses that human functioning can be divided into separate components of body, soul, and spirit, has contributed to the division between religious or spiritual factors and mental or physical health (Westgate, 1996). Thus, a patient presenting with symptoms of depression might simply receive a prescription for an anti-depressant medication. As a result, while religion and science were often seen as compatible and even synonymous hundreds of years ago, by the 18th Century, reason (sometimes referred to as rationalism) led to making spirituality seem irrational and irrelevant (Gunderson.
Fortunately, interest in religious and spiritual matters by the mental health community did not completely disappear. William James, sometimes referred to as the father of psychology, devoted an entire book to the subject of religious experiences (James, 1902). Others such as Carl Jung, Gordon Allport, Viktor Frankl, and Erik Eriksen have recognized the importance of spiritual and religious aspects in human development and health.

More recently, interest in religion and counseling has grown considerably (Hawkins et al., 1999; Johnson, Devries, Ridley, Pettorini, & Peterson, 1994; Worthington et al., 1996). Professional organizations such as the American Association of Christian Counselors, for instance, grew from 2,000 to over 16,000 members between 1993 and 1995 (Worthington et al., 1996).

Nonetheless, this view of God by health-care patients, and the importance it may play in one’s own life and the healing process, appears pointedly different from what is often found among health-care providers. Hawkins and colleagues write, “The role of religion may not have previously gained wide attention or favor among the psychological community since this is a group that has traditionally been among the least religious of academicians” (Hawkins et al., 1999, p. 309). Descriptive data seem to support this notion.

Kroll and Sheenan (1989), for example, cite surveys that suggest that while over 90% of the general public profess a belief in God, only 40% to 70% of psychiatrists and roughly 43% of psychologists hold this same belief. Donald Grimm (1994) reviewed several studies and concluded that most mental health professionals...
have spiritual and religious values, though not as high as for the general population. One study he reviewed randomly sampled 1,000 clinical psychologists (as cited in Shafranske & Malony, 1990). This study found that 65% of the psychologists surveyed reported that spiritual issues were personally relevant. 40% had a personal, transcendent God orientation, and 26% believed that religious ideologies were illusory but had meaning.

Finally, Bergin and Jensen (1990) found in a survey of 414 therapists that 32% of the psychiatrists they surveyed attended regular religious services, while 50% of the marital and family therapists did likewise. In addition, these researchers found that 85% of marital and family therapists, 83% of social workers, 74% of psychiatrists, and 65% of psychologists reported that they tried to live up to their religious or spiritual beliefs. Bergin and Jensen concluded that there might be substantial interest in spirituality and religious practice when broadly defined. However, these same researchers also found that while 72% of the general population claimed religious faith as the most important influence in their lives, only 29% of the mental health providers viewed religious matters as important for therapeutic work with clients (Bergin & Jensen, 1990).

In contrast, evidence suggests that mental health recipients desire opportunities for their spiritual and religious beliefs to be addressed by mental health-care providers from similar religious beliefs (Johnson et al., 1994; Worthington et al., 1996). Worthington and colleagues (1996) reviewed a decade of research on counseling and religion, consisting of 148 articles, and concluded that highly religious people may prefer religious counselors and explicitly religious counseling.
even though they might rate their provider as less qualified than a secular counterpart. In particular, they found that highly religious Jews, Mormons, Protestants, and Catholics usually preferred counseling with counselors who hold similar religious views. On the other hand, they found that non-Christians usually did not differ in preferring Christian or non-Christian counseling, and if they did, they would mildly prefer a Christian counselor, provided the counselor is accepting of spiritual experiences. These researchers also found that Christians usually anticipate negative outcomes in counseling if they attend counseling with nonreligious counselors who believe that a problem may be spiritual. Worthington and colleagues argue that this is an important distinction because, while a minority of counselors are traditionally religious, many are spiritual but not religious.

**Religion and Spirituality: Towards a Definition**

Historically there has been little interest in differentiating between religion and spirituality. Instead the two concepts have often been intertwined in their cultural meaning, and only recently has spirituality begun to acquire meaning separate from religion (George et al., 2000; Mahoney & Graci, 1999). One explanation for the lack of interest in differentiating between the two concepts may be the common elements both words hold. For example, both spirituality and religion can refer to the sacred, beliefs about the divine, practices used to express or obtain a sense of the divine and sacred, or experiences of altered states of consciousness (George et al., 2000).

It is only recently that research has begun to distinguish between the two concepts. One possible explanation for the need to distinguish between the two concepts is secularism and the disillusionment with religious institutions, which has
led to an increased interest in spirituality without necessarily involving any religious affiliation (George et al., 2000). Whatever the reason, differentiating between the two concepts is important if for no other reason than a person may be considered spiritual but not religious and vice versa. Indeed, in the study mentioned above, Worthington and colleagues (1996) indicated that many counselors might be spiritual but not religious, and that this may in turn affect how counselees perceive the likely outcome of treatment.

Considering the similarities between religion and spirituality, what are the differences then? Donald Grimm writes, “Spirituality refers to a personal inclination or desire for a relationship with the transcendent or God; religion refers to the social or organized means by which we express spirituality” (Grimm, 1994, p. 154). King and colleagues state, “Religion pertains to the outward practice of a spiritual understanding and/or framework for a system of beliefs, values, codes of conduct and rituals” (King et al., 1999, p. 1292). King continues, “The term spiritual refers more broadly to a person’s belief in a power apart from their own existence. It is the sense of relationship or connection with a power or force in the universe that transcends the present context of reality” (p. 1292). Worthington and colleagues, for the purposes of their article, write, “Religious applies to any organized religion. . . . Religious should be differentiated from spiritual, which generally is taken to mean believing in, valuing, or devoted to some higher power than what exists in the corporeal world” (Worthington et al., 1996, p. 449). Finally, Harris and colleagues define spirituality somewhat more broadly when they write, “Spirituality refers to a person’s orientation toward or experiences with the transcendent or existential features of life. . . .
Religion can be seen primarily as the external manifestations of spiritual experience" (Harris, Thoresen, et al., 1999, p. 414).

According to these definitions, then, the term *religion* and its derivatives may refer to the external manifestations of spirituality. That is, religion may refer to a set of standard beliefs or behaviors manifested through such means as participating in an organized ritual, attending a specific and structured place of worship, or praying. Hence, for purposes of this paper, the term religion may refer to the sacred behaviors and activities of a person or group of people.

In contrast, the term *spirituality*, though more difficult to define, when defined broadly, may refer to a person’s experiences with the transcendent or existential features of life, higher power, or divine being (God). Examples of spirituality might include connectedness, values, beliefs, meaning, and a sense of purpose. When defined more narrowly, examples might include a sense of connectedness, relationship, and meaning pertaining to a higher power or divine being.

Hence, where religion usually refers to the external, spirituality usually refers to the internal. Where religion might refer to overt behavior, spirituality usually refers to a more covert, inner state of being. As a result, a person may be spiritual and not religious. For example, a person may meditate and pray silently in an effort to “connect” with a higher power, but not attend or adhere to any organized religion or practice. In contrast, a person might be considered religious based on their attendance and ritualistic participation in an organized religion out of tradition, without necessarily pursuing a relationship with a higher power or divine being.

Hence, for purposes of this paper, spirituality may be defined as the internal
experiences and conditions of a person in relation to a higher power or divine being. This definition is somewhat more narrow than that presented by Harris (1999) above, which does not necessitate a reference to a higher power (Harris, Thoresen, et al., 1999). However, in that this study will be examining spirituality in reference to individuals who currently have, or have had, a personal relationship with Jesus Christ, the present definition seems most appropriate.

**Religious and Spiritual Research and Health**

Research is still in the infancy stage when it comes to examining the relationship between health, and religious and spiritual components. One systematic analysis of case reports involving religious or spiritual issues in the Medline bibliographic database from 1980 to 1996 located only 364 abstracts, indicating that a mere .008% of published articles addressed religious or spiritual issues (Lukoff, Lu, & Turner, 1998). Moreover, what little research that has been conducted usually at best established correlations between religious or spiritual factors and improved health. In a study conducted by Worthington and colleagues, only 6% of the 148 empirical articles examined on religion and counseling variables discussed interventions (Worthington et al., 1996). Similarly, Harris and colleagues write:

*Virtually no well-controlled intervention studies have yet focused primarily on changing a spiritual or religious factor, that is, none have used such factors as the major focus or dependent variable of an intervention. Nor have spiritual or religious factors served as the main intervention or treatment*” (Harris, Thoresen, et al., 1999, p. 415).

Yet a growing body of evidence suggests that religious and spiritual involvement is associated with health outcomes (Ai et al., 1998; Ellison & Smith, 1991; Gartner et al., 1991; Harris, Thoresen, et al., 1999; Riley et al., 1998;
Westgate, 1996). This section will first examine physical health findings as they relate to religion and spiritual factors. Next, the relationship between religious and spiritual factors to the mental health field, including information on Christian counseling, will be addressed. Finally, religious and spiritual factors as they pertain to eating disorders will be explored.

Physical Health

Evidence suggests a positive relationship between religious participation and general health (Ai et al., 1998; Gartner et al., 1991; Levin, 1994). One article reviewed 27 studies that used frequency of religious attendance as a religious indicator (Levin & Vanderpool, 1989). Results found that 22 of the studies revealed a positive and statistically significant relationship with health. In this same study outcomes included hypertension, cervical cancer rates, atherosclerotic and degenerative heart disease, overall mortality, and many other health considerations.

In fact, religiously committed people as a whole tend to live longer than their counterparts (Ai et al., 1998; Gartner et al., 1991; Levin, 1994). Linda Gundersen (2000) cites a Duke University study, which used church and synagogue attendance as a measure of religiosity. During a 6-year period, researchers studied 3,968 residents of northern California who ranged in age from 64 to 104. At follow-up 29.7% of the participants had died. The risk of death was 46% lower for those who attended religious services frequently than for those who attended infrequently. Gundersen writes that even after significant variables such as socialization and type of comorbid conditions were controlled for, the mortality rate of churchgoers was still 28% lower than for persons who did not attend church.
Evidence also suggests that religious and spiritual activity by someone other than the patient can be conducive for improved health for the patient. One study of particular interest examined the effects of intercessory prayer on outcomes for 990 consecutive patients who were newly admitted to the coronary care unit (CCU) at a private, university-associated hospital (Harris, Gowda, et al., 1999). Both patients and staff were completely blind to the existence of the study. At the time of admission, patients were randomized to receive remote intercessory prayer (prayer group) or not (usual care group). Mean length of stay in the CCU and the hospital were not different for the two groups. The first names of the patients in the prayer group were given to a team of outside intercessors who prayed for them daily for 4 weeks. Those who prayed for the patients never met the patients, and those being prayed for were unaware that they were being prayed for. The intercessors were not from any particular denomination, and only needed to agree to a statement that indicated a belief in God and the power of prayer to heal on the behalf of the sick. While not statistically different ($6.35 \pm 0.26$), there was an 11% reduction in scores in the prayer group compared with the usual care group. The researchers concluded that remote, intercessory prayer was associated with lower CCU scores and that prayer may be an effective adjunct to standard medical care.

Finally, one study examined the relationship of prayer, a form of spiritual coping, to the psychological recovery of a physical ailment, in this case coronary bypass surgeries (Ai et al., 1998). From the University of Michigan Medical Center, 151 patients completed questionnaires one year after coronary bypass surgery. After controlling for the effects of noncardiac health conditions, first month depression, and
social support, a significant main effect of private prayer predicting lower levels of current general distress was found. A paired t test also showed a markedly reduced level of current depression compared with depression levels one month following surgery. The authors concluded that private prayer appears to significantly decrease depression and general distress 1-year post-coronary bypass surgery. Hence, religious and spiritual factors appear to be positively associated with not just general health, but, quite possibly, with mental health as well.

Mental Health

Like physical health, mental health has been positively associated with religious and spiritual factors (Gartner et al., 1991; Harris, Thoresen, et al., 1999; Mitchell et al., 1990). Gartner reviewed approximately 200 studies on the relationship between religious factors and psychopathology and found considerable evidence for a positive relationship between religious factors and mental health (Gartner et al., 1991). For instance, all 6 studies that examined religious commitment demonstrated improvement in psychological functioning following religious participation or religious intervention. One study found lower rates of re-hospitalization for schizophrenics who attended church. Four studies found a negative relationship between religious commitment and depression. All 7 studies, which examined the relationship between church attendance and marital satisfaction, found a positive relationship. Finally, the articles reviewed by Gartner et al. suggested that there is a negative relationship between religious participation and psychological distress.

It should be noted that not all religious and mental health factors were
positively associated. Anxiety and self-esteem, for example, had mixed results; while there was evidence that self-actualization was negatively correlated with religious commitment. However, Gartner et al. makes the argument that most of the studies that found a positive relationship between religion and mental health used "hard variable," while most of the results linking religious commitment to psychopathology utilized "soft variables." Gartner makes the distinction between the two variables by noting that soft variables are, for example, paper and pencil personality tests whereas hard variables are real-life behavioral events that can be directly observed and reliably measured. For example, physical health, mortality, suicide, and divorce are examples of hard variables. In contrast, soft variables are used to measure self-actualization, suggestibility, and the like.

In support of Gartner et al.'s review, Fehring and colleagues looked at the psychological and spiritual well-being of college students in response to life change (Fehring, Brennan, & Keller, 1987). Several instruments were administered to two separate groups of students (95 freshmen and 75 randomly selected students from the entire population) including the Spiritual Well-Being Index, Beck Depression Inventory, a spiritual outlook scale, and the Profile of Mood States. The authors found that spiritual well-being, existential well-being, and spiritual outlook showed strong inverse relationships with negative mood states, and concluded that spiritual variables may influence psychological well-being.

Another study by Loewenthal and colleagues examined the relationship between cognitive aspects of coping with stress to religiosity and positive mood and distress (Loewenthal, MacLeod, Goldblatt, Lubitsh, & Valentine, 2000). Sixty-eight
Protestants and 58 Jews, all suffering from high levels of stress, participated in the study. No significant differences on the religiosity and cognition variables, and positive mood and distress measures between the Protestant and Jewish subjects were found. Results indicated that religiosity affected ways of thinking about the stressful situation. An example of how religiosity affects the way that we think would be the view that God is enabling the individual to bear his or her troubles. Moreover, while religiosity was not associated with lower distress, it was associated with raised positive affect, which in turn was associated with lower distress. Thus, the authors concluded that religiously based cognitions might be indirectly related to lowered distress.

As indicated previously, not all studies have consistently found positive associations between religious and spiritual factors and mental health (King et al., 1999). One explanation previously argued was the use of soft variables versus hard variables. Another explanation may be the spiritual view and state an individual holds.

Pargament, Koenig, and Perez (2000) developed and validated an instrument designed to measure the full range of religious coping methods (RCOPE) including potentially helpful and harmful religious expressions. The RCOPE consists of 21 sub-scales which address both positive (helpful) and negative (harmful) religious components. Two examples of a "negative" subscale is Reappraisal of God's Power, which questions God's power to affect the situation, and Punishing God Reappraisal, which redefines the situation as a punishment from God.

A total of 540 college students made up the first sample. College respondents...
reportedly experienced a variety of serious negative events such as the death of a family member (22.1%) over the past 3 years. Data were also collected on 551 elderly hospital patients. After demographic and religious variables (i.e., frequency of prayer, church attendance) were controlled for, results of regression analyses showed that religious coping accounted for significant variance in measures of adjustment. For example, within the college student sample, poorer physical health and mental health were associated with three “negative” subscales: Punishing God Reappraisals, Reappraisals of God’s Power, and Spiritual Discontent. In contrast, stress-related growth and better religious outcomes were associated with positive methods of coping (i.e., Religious Helping, Religious Forgiveness/Purification, and Benevolent Religious Reappraisals). The researchers concluded that assessing both negative and positive religious coping methods was important, “calling attention to the need for further assessment and discussion of religious issues in the counseling process” (p. 539).

Christian Counseling

It has already been argued that many religious clients and patients who seek treatment prefer counseling from someone who holds similar religious and spiritual views. The question remains, then, as to whether Christian counseling, for example, is any more effective in treating mental illnesses than counseling provisions that do not incorporate biblical principles and interventions.

Recently there has been a surge of articles and books describing religious and spiritual approaches to therapy (Harris, Thoresen, et al., 1999; Hawkins et al., 1999). Therapy which integrates prayer, Scripture, religious imagery, and religious
homework, to name but a few examples, have all been advocated for effective use in therapy (Maltby et al., 1999; Worthington et al., 1996). Moreover, addressing such issues as self-worth, forgiveness, guilt and shame, dishonesty, search for meaning, agape love, and faith have been identified as appropriate areas to deal with from a spiritual or religious vantage point (Pargament et al., 2000; Richards et al., 1997; Tan, 1987). However, few studies to date have been conducted which compare the efficacy of religiously oriented treatment to non-religious treatments (Harris, Thoresen, et al., 1999; Hawkins et al., 1999).

Harris and colleagues found only five psychotherapy outcome studies that compared cognitive-behavioral interventions modified to be more religiously or spiritually focused to non-religious cognitive-behavioral interventions (Harris, Thoresen, et al., 1999). Similarly, Johnson et al. (1994) found only four studies that examined religious accommodations in psychotherapy. The findings by these two research teams provided strong evidence that psychotherapy, including cognitive-behavioral therapy, can be effectively accommodated to religious samples. However, evidence that religiously incorporated counseling with religious patients is superior to non-religious interventions was inconsistent.

Some promising evidence does exist nonetheless. Propst (1980), for example, found that religious imagery, administered by nonreligious therapists, reduced depression more than nonreligious imagery in a sample of non-clinically depressed students. Later, Propst, Ostrom, Watkins, Dean, and Mashburn (1992) found that religious clients in a religiously oriented cognitive-behavioral group reported
significantly less post-treatment depression and maladjustment than did clients in a nonreligious cognitive-behavioral treatment group or wait-list group.

Propst and colleagues designed a study in which the Hamilton Rating Scale for Depression was administered (Propst et al., 1992). Fifty-nine subjects completed the study making up three groups: cognitive behavioral therapy with religious content (RCT), standard protocol group (NRCT), and a wait-list control group (WLC). Subjects not in the wait-list group were seen for 18 sessions. The RCT group incorporated religious rationale for procedures, used religious arguments to counter irrational thoughts, and used religious imagery. Both religious and nonreligious therapists were utilized for both therapy groups. Results indicated that only the RCT group (84.2%) had significantly more symptom free patients than did the WLC (40%) as indicated by the Hamilton Rating Scale for Depression ($p < .05$). Moreover, with regard to the Beck Depression Inventory, again only the RCT group demonstrated a statistically significant difference from the wait-list group. The NRCT group demonstrated only a trend in this direction. Finally, Propst found that subjects receiving religious cognitive-behavioral therapy reported greater improvement in social adjustment and general symptomatology, as measured by the Global Severity Index and the Social Adjustment Scale, than did patients in the standard cognitive-behavioral group.

Similarly, Hawkins and colleagues compared Christian cognitive-behavioral therapy (CCBT) to traditional cognitive-behavioral therapy (CBT) with a sample of clinically depressed Christian adults in an inpatient setting (Hawkins et al., 1999). The Christian group contained 18 participants, and the traditional therapy group

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consisted of 11 subjects. Both groups remained in separate programs except for art therapy, music therapy, and a weekly outing. The Christian program approached treatment from an interdenominational focus with the basis of the program being that the Bible is divinely inspired and Jesus is Lord and Savior.

Both groups demonstrated significant reduction levels in depression and increased levels of spiritual well-being, with depression scores correlating significantly with overall change in spiritual well-being. Even when program effect, initial ratings of the importance of religion, and frequency of attendance at worship services were controlled for, the effect was still significant. In addition, the researchers found a greater improvement in spiritual well-being for patients in the CCBT group than for those in the CBT group. A trend was also found for a significant difference in the level of reduction in depression between groups ($p = .077$), with the CCBT group demonstrating more favorable results. The researchers noted the sample size and mentioned that with a sample of 50 participants, a significant difference in the reduction of depression would have been found at the .05 level. The authors concluded that their study provides encouragement for the use of therapy that matches and utilizes religious values.

As noted above, not all research studies found Christian therapy to be superior to more traditional therapy. Johnson et al. (1994) compared the efficacy of Christian and secular rational-emotive therapy with Christian clients. Thirty-two clients were randomly assigned to one of the two groups, totaling 16 subjects in each group. Treatment entailed eight 1-hour individual sessions. Several instruments were administered including the Beck Depression Inventory and the Symptom Checklist.
90-R before treatment, after completion of treatment, and 3 months following treatment. Results suggested that both treatment modalities were effective in significantly reducing depression, negative thinking, and general pathology. However, no significant difference was found between groups.

Nonetheless, therapy that integrates religious material into treatment appears to be an effective mode of intervention. Moreover, evidence suggests that Christian cognitive-behavioral therapy is at least as effective as more traditional therapies, with some support that Christian therapy can be more effective.

**Religion, Spirituality, and Eating Disorders**

There appears to be a long-standing association between religion and eating disorders as noted above (Bell, 1985; Blinder & Chao, 1994). However, almost no empirical research exists which examines the relationship between eating disorders and religion or spirituality. Nonetheless, the few studies which do exist seem to indicate that religious and spiritual issues may be important to the etiology and treatment of eating disorders (Richards et al., 1997).

In a follow-up study of patients with bulimia nervosa, the single most common write-in answer as to the factor which was most helpful for recovery had to do with faith, pastoral counseling, and prayer (Mitchell et al., 1990). In order to investigate this further, Mitchell et al. (1990) sent out surveys to 50 bulimic women. Ninety-two percent indicated some affiliation with a religion, and 88% indicated they believe in God or some sort of supernatural being. Only 16% indicated they had not attended church in the past year. Likewise, only 16% indicated they did not pray. Nine of the subjects (18%) indicated that they had sought help from a representative of a church,
synagogue, or place of worship. Regarding these nine subjects, when asked what they were hoping to get from their interaction with a religious representative, renewed faith and forgiveness were among the most common answers.

In a second survey, Mitchell et al. (1990) sent out 200 questionnaires to members of the clergy, and received 84 responses. This survey found that 41 (48.8%) had met with patients with eating disorders at least once over the past year. The survey also indicated that 23 (56.1%) indicated that they always refer eating disorder patients to be evaluated by a medical doctor, while 27 (65.9%) indicated that they always suggest these patients to seek further counseling. Mitchell and colleagues concluded, “Clearly religious issues are important for many patients with Bulimia Nervosa” (Mitchell et al., 1990, p. 592).

Joughin et al. (1992) examined the relationship between religious belief and Anorexia Nervosa. Using the Eating Disorder Inventory (EDI) and the Religious Belief Questionnaire, 2,300 packets were sent out to members of the Eating Disorders Association, an organization that offers information and advice to the families of eating disorders sufferers. All subjects were residents of the United Kingdom. Nine hundred twenty-four replies were received. Eight hundred and fifty-one of these respondents met the inclusion criteria. The final sample size was limited to 584 subjects, which included 204 subjects who stated that they had no religion, and 232 who identified an association with 1 of the 3 common religions: Anglican, Roman Catholic, and Free Church. The most common religious group was Anglican (232), mainly members of the Church of England and the established Protestant church in the United Kingdom. The next largest sample was from the Roman Catholic Church.
Finally, 51 subjects from the Free Church, a grouping of varied Protestant churches, were included in the sample.

Results indicated that subjects with a religion, particularly those with strong beliefs from the Anglican Church, reported lowest-ever adult Body Mass Indices (BMI). There was also a small correlation between the subscale ‘Drive for Thinness’ from the EDI, and decreasing importance of religion. Lowest BMI did not differ between subjects whose parents had or did not have religious beliefs.

In contrast, the “bulimia” subscale from the EDI demonstrated a significant correlation between increasing pathology and decreasing importance of current religion. Hence, a reverse finding was found between anorexic and bulimic indicators. The authors concluded that “religion is important to a majority of subjects with eating disorders, and that religious beliefs and eating disorders interact” (p. 404).

In summary, while there is a paucity of research which addresses the relationship between religious or spiritual factors and eating disorders, the research which does exist suggests that many patients who present with eating disorders are interested in religious and spiritual matters. Moreover, there is some evidence, though extremely limited at this point, that religious and spiritual factors do interact with eating disorders. While the available studies in this area are helpful, they merely begin to address the relationship between religious and spiritual factors with eating disorders. Indeed, many other studies are needed to examine, for example, how religious and spiritual factors interact with treatment outcomes.
CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to determine if the Remuda Ranch Center for Anorexia and Bulimia, Inc., which incorporates Christian cognitive-behavioral therapy as the foundation for its treatment modality, is an effective program for treating eating disorders. This study also sought to determine if the Remuda Ranch program is effective in treating both depression and spiritual distress. Finally, this study examined the relationship between both depression and spiritual distress with treatment outcome. In the process of examining spiritual distress, the study also examined the Remuda Ranch Spiritual Inventory to ensure that this instrument was valid and reliable for research and clinical purposes. Thus, this chapter addresses population and sample, procedures and design, instrumentation, validation of the Remuda Ranch Spiritual Inventory, null hypotheses, data analyses, and finally a summary of the chapter.

Population and Sample

The Remuda Ranch Center for Anorexia and Bulimia, Incorporated, in Wickenburg, Arizona, currently consists of a 46-bed adult intensive inpatient center named Rio, a 19-bed adult intensive inpatient center called Vista, and a 36-bed adolescent intensive inpatient center named Del Sol. In addition, Remuda Ranch has
a 40-bed residential extended care center, and an outpatient program located in Chandler, Arizona.

The philosophy for all three inpatient centers located in Wickenburg, Arizona is the same resulting in a very similar treatment modality. For example, all three approach treatment from a medical, nutritional, psychological, spiritual, and experiential approach. In addition, all spiritual components of therapy are approached from a non-denominational Christian perspective and integrated throughout the program. Some differences are worth mentioning however.

First and most obvious, the adolescent center only admits patients who are 17 years old or less. In contrast, both adult centers only admit patients who are at least 18 years old. The adolescent center also places a greater emphasis on developmental issues than the two adult centers. Certain groups at the adolescent center are also tailored in such a way that the language is more understandable for a younger population. The adolescent center also incorporates between 8 hours and 12 hours of schooling weekly for patients who are currently enrolled in school. Finally, an extra counseling session is held each week for adolescent patients in which families participate via phone conference for a family therapy session.

Regarding differences between the two adult centers, Vista, the 19-bed facility, tends to take more acute patients than Rio, the 46-bed adult center. For example, a patient whose weight is extremely low and health thus dangerously compromised would more likely be admitted to Vista than Rio assuming both centers have openings. If Vista were to be full however, the patient whose weight is compromised would likely be admitted at Rio. The staff-to-patient ratio also tends to be lower at
Vista. However, both centers are similar to the point that most all patients are simply admitted to whichever facility is proportionally lowest in their census.

All subjects for this study entered one of the three intensive inpatient centers located in Wickenburg. Remuda Ranch admits only females who have met a *DSM-IV* diagnosis of an eating disorder. Additional diagnoses (i.e., Major Depression) may also be made. Subjects from the Adolescent Center were limited to those ages 12 and older at the date they were admitted. The reason subjects were limited to those ages 12 or older is because the provisional subscales from the Eating Disorder Inventory-2 (scales A, IR, and SI) have not been validated on subjects under the age of 12 (Garner, 1991). Hence, the target population for the three centers is females with eating disorders of all ages. The target population for this study was all patients from the three centers who were at least 12 years old at the time they were admitted between July 1, 1999, and June 30, 2000.

Upon discharge from the intensive inpatient centers, all patients are recommended for further treatment, usually seeking either outpatient treatment or residential day-treatment. Some of the subjects will have transferred to Remuda Life for 14 to 90 days before being recommended for outpatient treatment. Remuda Life is the residential day-treatment center located in Chandler, Arizona. A smaller number of subjects will then enter Remuda Ranch’s outpatient program.

**Procedures**

The research procedures herein consist of three phases. The first phase occurred upon admittance to one of the three intensive inpatient centers, and was completed within 5 days. During this time, each patient underwent a variety of tests.
Assessments by the patients' psychologists, psychiatrist, registered dietician, and primary therapist were also completed during this time. A registered dietician determined and monitored caloric intake and weight gain goals based on frame size, percentage of body fat, muscle mass, and ideal body weight as determined by a body composition analysis. In addition, a physical examination by the primary care physician or nurse practitioner was conducted. Baseline laboratory studies and EKGs were performed on all patients. Patients were further monitored for mineral and electrolyte imbalance, anemia, gastrointestinal disturbance, re-feeding and edema, and other medical complications.

Within the first 5 days, patients were expected to complete a battery of psychological tests. These tests include the Remuda Ranch Spiritual Inventory, Beck Depression Inventory-II, and the Eating Disorder Inventory-2 for adult patients admitted to 1 of the 2 intensive adult centers. Similarly, tests administered to adolescents ages 14 to 17 included the Eating Disorder Inventory-2, Beck Depression Inventory-II, and the Remuda Ranch Spiritual Inventory. Once all the assessments and tests were completed, the patient began full programming by attending all groups.

At this point, in which the patient becomes fully involved in treatment, the second phase began. Treatment at Remuda Ranch incorporates a number of different components involving different members from their treatment team. Patients were assigned a psychiatrist who meets with his or her patients at least once a week. One of the main responsibilities for the psychiatrist is psychotropic medication evaluation and administration. The patient's nutritionist, who met with the patient at least once a week individually, is primarily responsible for food and caloric education and weight
monitoring. In addition, the dietician and patient engaged in various experiential therapies together, which were designed to process and overcome food fears. The patient's primary therapist met with each of his or her patients at least twice a week individually. The adolescent patients also had an additional “family session” with their therapist, in which the patients’ families participated via phone conference. In addition, each patient attended group therapy four times a week with her therapist, at least one other therapist, and each of the therapist’s patients.

Patients also attended a variety of other groups and programs. Weekly, patients attended equine therapy twice a week, art therapy twice a week, body image therapy one to two times a week, addictions group once a week, relapse prevention group once a week, and psychoeducational didactics three to four times a week. Other programming may have included a walking program, community meetings, and a health issues group. In addition, patients at the adolescent center may have participated in 8 to 12 hours of academic work.

At some point near the middle of each patient’s stay, the patient and her family participated in “family week.” During family week, the primary therapist met with the patient and her family, along with a family therapist, for a 2 1/2-hour truth-in-love session. A follow-up session was also scheduled for each family. Patients and their families also attended a variety of didactic and process groups, as well as watch other families participate in truth-in-love sessions. The main purpose for family week was, in general, to educate families on eating disorders, address family dynamics and communication patterns, and facilitate healing and health between the patient and her family. Aftercare considerations were also commonly addressed at this time.
Finally, because Remuda Ranch is a non-denominational biblically based, Christ-centered treatment facility, a great deal of spiritual emphasis was placed on treatment. Each patient was expected to attend chapel five days per week provided by Remuda staff and special guest speakers. In addition, each patient attended a weekly spiritual growth group. An optional weekly Bible study led by Remuda staff was also available. Finally, all Remuda staff who had patient contact were expected to have a personal relationship with Jesus Christ. Hence, while no systematic procedures existed which dictate that a therapist must follow a prescribed treatment modality, therapists were free to address treatment issues from a biblical basis. For example, a therapist might have addressed the topics of unconditional love and forgiveness from the perspective that God loves us regardless of our past or love for Him, and He has provided a way for the forgiveness of any wrongdoings (i.e., 1 John 4:10). This resulted in a treatment program which incorporated biblical principles in all aspects of its programming, including individual and group counseling sessions.

Once treatment at Remuda Ranch was completed, each patient was discharged, usually to a lower level of care such as outpatient treatment. At approximately 1-year post-discharge, the third phase of this study began. At this point, patients were sent the Eating Disorder Inventory-2.

Design

A one-group pretest-posttest design was used to test the hypotheses. This is in fact a type of repeated measures or within groups design which is often used when the researcher is interested in studying the effects of treatment over time (Neter, Wasserman, & Kutner, 1990; Shavelson, 1988). One major advantage of a within
subjects design is that it is a more powerful test of the null hypothesis than a between-subjects design (Shavelson, 1988). This is because all sources of variability between subjects are excluded from experimental error (Neter et al., 1990). This design, as with the present study, is also often chosen out of convenience. For example, with the present study it was not possible nor was it ethical to exclude some patients from receiving treatment. Thus, a one-group design in which all patients were included was utilized.

This however also leads to a major disadvantage of this type of design and thus presents a threat to the internal validity of the study. Because all patients received treatment, no control group existed. That is, no subjects were studied who did not receive treatment which could then be compared to subjects in the treatment or experimental group. Consequently, causal interpretations about the effects of treatment were done with caution.

Threats to external validity were not as pronounced as with internal validity. This is largely due to the assumption that, because Remuda Ranch admits patients from all over the United States of America as well as from other countries, the patients represented a random sample of the population of individuals with eating disorders. Nonetheless, one obvious threat was present. Because Remuda Ranch only admits females, generalizing the results to males should likely be avoided. Second, because this study only included individuals who were at least 12 years old at the time they were admitted, generalizing results to a younger population should be avoided. Finally, because the subjects received multiple treatment interventions while in treatment it is almost impossible to determine what specific factors
contributed to any change noted. In summary, however, the greatest threat to validity is with internal validity due mostly to the lack of a control group.

**Instrumentation**

Beck Depression Inventory II

The Beck Depression Inventory, second edition (BDI-II). constitutes a substantial revision of the original BDI developed by Beck, Ward, Mendelson, Mock, and Erbaugh (1961) (Beck, Steer, & Brown 1996). Four items from the BDI were dropped (weight loss, body image change, somatic preoccupation, and work difficulty) and four new items added (agitation, worthlessness, concentration difficulty, and loss of energy). Two items were also changed to allow increases as well as decreases in appetite and sleep. Many of the statements used in rating the symptoms were also reworded.

The BDI-II was developed as an indicator of the presence and degree of depressive symptoms as suggested by the *DSM-IV* (Beck et al., 1996). The BDI-II, similar to its predecessors, is a 21-item instrument. Each item is rated on a 4-point scale ranging from 0 to 3. Cut score guidelines by the manual (Beck et al., 1996) suggest totals between 0 to 13 indicate minimal depression, 14-19 indicate mild depression, 20-28 indicate moderate depression, and 29-63 indicate severe depression. Administration time is between 5 and 10 minutes. The BDI-II is scored by summing the ratings of the 21 items.

Based on four outpatient samples totaling 500 subjects, the coefficient alpha for the BDI-II was .92, indicating very good internal consistency (Beck et al., 1996). Item correlations ranged from .39 to .70. Various analyses also indicate that construct
validity, factorial validity, and discriminate validity are good (Beck et al., 1996; Whisman, Perez, & Ramel, 2000).

Eating Disorder Inventory-2

The Eating Disorder Inventory-2 (EDI-2) is a widely used instrument that has been used both as an outcome measure and a prognostic indicator in treatment studies (Garner, 1991). It is a self-report measure of symptoms commonly associated with anorexia nervosa and bulimia nervosa (Garner, 1991). Based largely on the original Eating Disorder Inventory (EDI) developed in 1983, the EDI-2 retains the original 64 items from the EDI. The original EDI was developed on the premise that eating disorders are multidetermined and multidimensional (Garner, 1991; Garner, Olmstead, & Polivy, 1983).

Thus, the EDI-2 consists of the same eight subscales that the EDI does (drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfection, interpersonal distrust, interoceptive awareness, and maturity fears). In addition, the EDI-2 contains 27 more items resulting in three new subscales: asceticism, impulse regulation, and social insecurity. The 91 items are presented in a 6-point format requiring respondents to answer either “always,” “usually,” “often,” “sometimes,” “rarely,” or “never.” Responses for each item are weighted from 3 to 0, with the latter 3 responses scored as zero. Hence, “sometimes,” “rarely,” and “never” are scored as a zero.

Raw scores for EDI-2 subscales are plotted on profile forms that allow comparison to norms. Norms are based on plus or minus 1 standard deviation of the standard error of measurement (68% confidence intervals) for the particular

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population being studied. Norms are available for the original total eating disorder sample as well as for specific eating disorder diagnostic groups. Norms are also available for non-patients, female college samples, male college samples, 14-18-year-old high-school students, and 11-18-year-old non-patient female students. However, Garner (1991) has noted that the overlap among distributions is sufficient to warrant use of the combined eating disorder norms for most purposes. For purposes of this study, clinical norms were examined by comparing the combined eating disorder norms with the college female norms. It is worth noting that norms for the eating disorder sample and the college female sample overlap on scales BD, P, MF, and IR (body dissatisfaction, perfectionism, maturity fears, and impulse regulation). As a result, for these four scales, the top of the female college normative range overlaps with the bottom of the eating disorder normative range.

Reliability coefficients for the original EDI subscales have been between .83 and .93 (Gamer & Olmstead, 1984). Several studies have indicated adequate test-retest reliability, with most results on the individualized subscales containing scores above .80 (Gamer, 1991). Likewise, Garner (1991) offers solid support for good content, concurrent, construct, and criterion-related validity.

**Spiritual Well-Being Scale**

The Spiritual Well-Being Scale (SWBS), developed by Paloutzian and Ellison, was designed to measure both religious and existential well-being (Ellison, 1983). According to Ellison (1983), religious well-being pertains to well-being as it relates to the concept of God. Existential well-being refers to well-being in reference to life satisfaction and purpose independent of religion. Ellison differentiated spiritual well-
being from spiritual health. Ellison conceptualized spiritual well-being as an underlying state, and spiritual health as an expression of this state. For Ellison, spiritual well-being is also viewed as a continuous variable, and something different from spiritual maturity.

To date, the SWBS is the most researched instrument assessing spirituality (Standard, Sandhu, & Painter, 2000). The SWBS consists of 20 items, each with six possible responses ranging from “strongly agree” to “strongly disagree.” The 10 odd-numbered items assess religious well-being (RWB), and the 10 even items assess existential well-being (EWB). Each item is assigned a score from 1 to 6 and summed to provide a spiritual and existential well-being score. The higher the score, the greater the well-being. The scores for the two subscales are then totaled to provide an overall spiritual well-being score (SWB).

The correlation between subscales is .32. There is a high correlation between spiritual well-being and religious well-being (.90). A moderate correlation exists between spiritual well-being and existential well-being (.59). Test-retest reliability for the SWBS is good with correlation coefficients of .96 for religious well-being, .93 for spiritual well-being, and .86 for existential well-being. Coefficient alphas indicating internal consistency were also good at .89, .87, and .78 for spiritual well-being, religious well-being, and existential well-being respectively. Concurrent validity appears to be good as well. However, Standard and colleagues warn that a lack of norms and a possible ceiling effect, in which the SWBS is not as sensitive to scores above the mean as it is to scores below the mean, may limit its clinical usefulness (Standard et al., 2000).
Development of the Remuda Ranch Spiritual Inventory

The final instrument utilized in this study was the Remuda Ranch Spiritual Inventory (RRSI). The RRSI was developed in 1995 by a group of eating disorder specialists from Remuda Ranch with backgrounds in such areas as psychology, theology, and research. The idea for the instrument was born out of the conceived need to assess the spiritual conditions of patients. This need is based on the philosophy held by Remuda Ranch that the development of the spiritual part of the patients will help to facilitate recovery.

The RRSI was designed to examine both healthy Christians as well as people who struggle with their spirituality. Questions were developed on the basis of four general hypothetical constructs: shame/guilt, motivation, history of past spiritual problems/abuse, and view of closeness/relationship to God.

The RRSI consists of two versions: one for people who currently have or have had a personal relationship with Jesus Christ (Form A), and one for people who do not believe that they have ever had a personal relationship with Jesus Christ (Form B). This study examined only Form A in depth.

The original version of the RRSI consists of 47 questions and usually takes less than 15 minutes to complete. Scores for the first 28 items range from 0 to 3. Questions 29 through 46 are based on a 3-point scale ranging from “very true of me” to “not true of me.” Question 47 is a 7-point scale ranging from “very close” to “very far.” Scoring consists of simply adding up the scores from each individual item. A maximum score of 115 is possible on the RRSI if questions on the inventory were endorsed to reflect the greatest possible distress. Sample items can be found towards...
the back under the heading Appendix C.

Prior to this study, no reliability and validity studies had been conducted on the RRSI. Hence, in order to ensure that the RRSI is a valid, reliable, and useful tool, a variety of statistical procedures were run as a prelude to testing the four hypotheses.

Reliability and validity analyses were conducted only on Form A of the RRSI. This version of the Remuda Ranch Spiritual Inventory is limited to those patients who professed to have or have had a personal relationship with Jesus Christ. Out of a possible 451 subjects, 350 completed Form A. The remaining 101 subjects completed Form B. The mean age for those subjects who chose Form A was 22.56 with a range from 12 to 54 (SD ± 8.59). The average onset age was 15.78 with a range from 7 years to 42 years (SD ± 4.92). The mean number of days these subjects were in treatment was 55.68 with a range from 10 to 126 days (SD ± 12.46). For the largest group, 92.8% of these subjects were Caucasian; 3.7% were Hispanic; .3% were African-American; and 3.2% reported a different ethnicity.

Following standard methodology for developing an instrument, reliability of the RRSI was examined (Cronbach & Meehl, 1955). Establishing good reliability, which refers to the consistency of measurements, can provide support for the homogeneity and stability of test items (Sattler, 1982).

The first step taken to examine the reliability of the Remuda Ranch Spiritual Inventory was conducted by running a principal component analysis. Tabachnick and Fidell (1996) state that factor analysis may be used in psychology for the development of objective tests for measurement. Factor analysis is a common statistical procedure used to examine a single set of variables when the researcher is
interested in discovering what variables, if any, form subscales which are relatively independent of one another (Tabachnick & Fidell, 1996). In other words, factor analysis is a useful computational method for dividing a construct into more meaningful parts (Cronbach & Meehl, 1955).

Principal component analysis was run on the RRSI using scores from patients at the time of admission (pretest scores) which presented item-total correlation statistics for the 47 questions on the RRSI. As is common practice, those items that did not have a factor loading of at least .3, and hence account for 9% of the variance, were deleted (Kline, 1994). This eliminated 12 items, resulting in a 35-question version of the RRSI (see Appendix D).

Next, internal consistency was inspected by computing Cronbach’s coefficient alpha formula. Cronbach’s alpha is commonly used to test internal consistency reliability when a test has no right or wrong answers (Sattler, 1982). Results suggested that internal consistency was excellent as indicated by Cronbach’s coefficient alpha (Alpha = .9391).

Finally, test-retest reliabilities were examined. In 1999, scores from the 47-question form of the RRSI, Version A, were collected from a random sample of 170 Remuda Ranch employees, combined with 38 subjects from a Baptist church in Wickenburg, Arizona. This resulted in a total sample size of 208 subjects. A random sample of 36 subjects from the original pool of 208 subjects was then selected to complete the RRSI one week later. From the random sample of 36 subjects, 33 RRSIs were returned complete.

The average age of each respondent was 42.49 years, with a standard deviation.
of 13.03 and an age range from 17 years to 82 years. Most of the respondents were female (78.8%) and White (97%). Of the sample, 72.1% were married, 11.9% were divorced, 2% were widowed, and 13.9% had never married. Pertaining to education, 2% had less than a high-school diploma, 15.4% had graduated from high school but never attended college, 37.3% had some college education, 25.9% had a 4-year college degree, and 19.4% had received schooling at the graduate level. A wide range of Christian denominations was represented including Baptist, Catholic, Church of Christ, Church of God, Episcopal, Presbyterian, Lutheran, and Methodist.

Data were computed using only the 35 items analyzed above for the RRSI. No significant differences were found between the two test occasions (Table 1). In addition, test-retest correlation results were high, indicating excellent test-retest reliability (.962, p < .001, 2-tailed).

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test-Retest Reliability for the 35-Question Version of the RRSI-R</strong></td>
</tr>
<tr>
<td>Spiritual distress</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Total RRSI 1</td>
</tr>
<tr>
<td>Total RRSI 2</td>
</tr>
<tr>
<td><strong>Note.</strong> t = .754, df = 32, p = .456, 2-tailed.</td>
</tr>
</tbody>
</table>

Next, validity issues were examined on the RRSI. Unrotated factor results from the principal component analyses showed that all 35 items loaded on the first factor and accounted for at least 10% of the variance (see Appendix E). This, along with the high coefficient alpha, suggested the existence of a single underlying construct (Gregory, 1992; Sattler, 1982). In other words, from the results it is
reasonable to derive a general or unidimensional score from the 35 items.

Then convergent validity, similar to concurrent validity, was examined for the RRSI. Concurrent validity is a standard aspect of instrument validation (Cronbach & Meehl, 1955). In their classic article, Cronbach and Meehl state that concurrent validity is studied when a test is proposed as a substitute for another, or when it is desired to demonstrate that a test correlates with another (Cronbach & Meehl, 1955). Convergent validity was examined running a Pearson product-moment correlation. Pearson product-moment correlation is a commonly used statistical procedure used to measure the strength of association between two variables (Norusis, 1993; Shavelson, 1988).

Convergent validity was examined by comparing scores from the 35-item version of the RRSI, Form A, with scores from the Spiritual Well-Being Scale (SWBS). It was hoped that a fairly high correlation would exist between the two scales. At the same time, too high a correlation was not desired because the RRSI was not designed to measure the exact same constructs as the SWBS.

In 1999, a random sample of 172 patients completed the SWBS in addition to the RRSI at the time of admission. The average age of each patient was 22.68 with a standard deviation of 7.87 and a range of 13 to 57. The average onset age for the subject’s eating disorder was 15.35 with a standard deviation of 4.50 and a range of 4 to 42 years. Regarding ethnicity, 92.4% were White, 5.2% were Hispanic, 1.2% were Asian, .6% were American Indian, and .6% were African-American. Pertaining to education, 39% had less than a high-school diploma, 12.2% had graduated from high school but never attended college, 28.5% had some college, 15.1% had graduated
from college with a 4-year degree, and 5.2% had received at least some schooling at the graduate level.

A two-tailed Pearson product-moment correlation was run between the two scales. The correlation was .780 ($p < .01$). The magnitude of this correlation indicates that the RRSI is not only significantly correlated with the SWBS, but also substantially related to the spiritual factors measured by the SWBS. This suggests that the RRSI-R has good convergent validity with the SWBS. At the same time, the correlation was not so high as to suggest that the RRSI is measuring the exact same thing as the SWBS.

Finally, preliminary norms had been developed for the RRSI prior to this study in May 1999. Both Form A and Form B of the RRSI were mailed to 344 employees at Remuda Ranch. Of the 171 questionnaires returned, 170 were Form A (Christian version) and, therefore, constitute the normative sample. A wide variety of Christian denominations were represented in this sample with Christian, Baptist, Catholic, and Protestant being the most popular responses. The majority of respondents were White (97%) and female (146). Although women scored slightly higher than men, using a $t$-test, no significant statistical difference was found between genders (Table 2). As a result, all 170 subjects were utilized in the creation of norms. The mean age was 40 ($SD = \pm 11$ years) with a range of 17 to 66 years old.
Table 2

Total Score Means and Standard Deviation Based on Gender for the 47-Question Version of the Remuda Ranch Spiritual Inventory

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>24</td>
<td>13.2</td>
<td>8.4</td>
</tr>
<tr>
<td>Female</td>
<td>146</td>
<td>14.4</td>
<td>9.4</td>
</tr>
</tbody>
</table>

*Note. t = 0.57, df = 168, p = 0.57*

This study required developing new norms based on the 35-question version of the RRSI. This was accomplished by using the same data as above but only including the previously selected 35 items from the original 47-question version of the RRSI.

The revised preliminary norms based on the mean and standard deviation of the entire sample (9.14 ± 7.17; N = 153) for the 35-standard-question version of the RRSI are presented in Table 3.

Table 3

Norms for the 34-Question Version of the RRSI

<table>
<thead>
<tr>
<th>Level of Spiritual Distress</th>
<th>Statistical Definition</th>
<th>Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>No distress</td>
<td>0 thru 1SD above mean</td>
<td>0-16</td>
</tr>
<tr>
<td>Mild distress</td>
<td>&gt;1SD above mean thru 2SD above mean</td>
<td>17-23</td>
</tr>
<tr>
<td>Moderate distress</td>
<td>&gt;2SD above mean thru 3SD above mean</td>
<td>24-30</td>
</tr>
<tr>
<td>Severe distress</td>
<td>&gt;3SD above mean thru 4SD above mean</td>
<td>31-38</td>
</tr>
<tr>
<td>Extreme distress</td>
<td>&gt;4SD above mean</td>
<td>39-88a</td>
</tr>
</tbody>
</table>

*88 is the maximum possible score if all 35 standard questions on the Remuda Ranch Spiritual Inventory were endorsed to reflect the most distress.

Instrument Application

The Eating Disorder Inventory-2 was utilized for testing hypotheses 1 and 4.

The Beck Depression Inventory-II was used to test hypotheses 2 and 4. The RRSI was utilized to test hypotheses 3 and 4. In addition, the SWBS was used to determine
whether the RRSI demonstrated adequate convergent validity.

**Null Hypotheses**

Null Hypothesis 1: Patients’ level of eating disorder symptomatology will not be significantly lower from admission to discharge and between admission and 1-year post-discharge.

Null Hypothesis 2: Patients’ level of depression will not be significantly lower between admission and discharge.

Null Hypothesis 3: Patients’ level of spiritual distress will not be significantly lower from admission to discharge.

Null Hypothesis 4: Depression and spiritual distress scores will not be significantly correlated with treatment outcome.

**Data Analyses**

All analyses were conducted using SPSS statistical software. Statistical analyses for the four hypotheses are described below.

Null Hypothesis 1 states: Patients’ level of eating disorder symptomatology will not be significantly lower from admission to discharge and between admission and 1-year post-discharge. The purpose of this hypothesis was to examine the efficacy of the Remuda Ranch program in reducing eating disorder symptomatology between admission and discharge and between admission and 1-year post-discharge.

Null Hypothesis 1 was tested using a one-sample Multivariate Repeated Measure Analysis of Variance for purposes of analyzing EDI-2 scores across three time points. Only one sample was used out of convenience because it was not
possible and also would be unethical to admit patients (control group) who would not receive treatment. A Multivariate Repeated Measure Analysis of Variance was chosen because this statistical computation is commonly used when the same measurement is made two or more times for each subject, and when the researcher wishes to determine if within-subject differences between the repeated measurements are influenced by factors other than time (Shavelson, 1988).

Null Hypothesis 2 reads: Patients’ levels of depression will not be significantly lower between admission and discharge. The intention of this hypothesis is to examine the efficacy of the Remuda Ranch program in reducing symptoms of depression between admission and discharge. A one-sample two-tailed paired t-test was used to test this hypothesis. A paired sample t-test was chosen because the same patients were tested over time and because this test is often used to determine if the observed difference between two sample means is the result of chance or represents a true difference (Shavelson, 1988).

Null Hypothesis 3 states: Patients’ levels of spiritual distress will not be significantly lower from admission to discharge. The purpose of the hypothesis was to examine the efficacy of the Remuda Ranch program in reducing spiritual distress symptoms between admission and discharge. A two-tailed paired t-test was chosen to test this hypothesis for reasons explained above.

Null Hypothesis 4 reads: Depression and spiritual distress scores will not be significantly correlated with treatment outcome. The intention of this hypothesis was to examine the relationship between depression and spiritual distress with treatment outcome across three time periods: admission to discharge, admission to 1-year post-
discharge, and discharge to 1-year post-discharge. Three separate multiple regression analyses were run to test this hypothesis. This statistical procedure was chosen because it is a widely used statistical tool used to study the relationship between two or more variables so that one variable (i.e., treatment outcome) can be predicted from others (i.e., depression and Spiritual distress) (Neter et al., 1990).

**Summary**

In summary, this chapter addressed population and sample, procedures and design, instrumentation, validation of the Remuda Ranch Spiritual Inventory, null hypotheses, data analyses, and finally a summary of the chapter. Regarding the Remuda Ranch Spiritual Inventory, the 35-item version appears to have good to excellent reliability and validity, suggesting it may be a useful tool for testing null hypotheses 3 and 4.
CHAPTER 4

RESULTS

Introduction

The purpose of this study was to determine if the Remuda Ranch Treatment Center for Anorexia and Bulimia Inc., which incorporates Christian cognitive-behavioral therapy as the foundation for its treatment modality, is an effective treatment center for women with eating disorders. This study also sought to determine if Remuda Ranch would be an effective treatment center for reducing depression and spiritual distress from the time the patients are admitted to the time they are discharged. Finally, this study sought to further explore how depression and spiritual issues relate to treatment outcome.

In this chapter, sample and demographic analyses are first presented. Then, results from the four hypotheses are presented. Finally, a brief summary of the findings is addressed.

Sample and Demographic Analysis

Five hundred and eighty-two patients were admitted to the Remuda Ranch Treatment Center for Anorexia and Bulimia, Incorporated, between July 1, 1999, and June 30, 2000. However, only 451 patients were included in this study. Of the 131 patients who were completely excluded from the study, 52 completed treatment but did not return their testing, 31 left either against medical advice (AMA) or against
clinical advice (ACA) and subsequently did not return any testing. 28 returned incomplete and unusable testing, 11 were discharged for non-compliant reasons, and data from 9 subjects were excluded for other reasons.

The mean age of the 451 subjects was 22.42 with a range from age 12 to age 54 and a standard deviation of ±8.42. The average onset age for the patient’s eating disorder was 15.78 with a range from 7 to 42 (SD ± 4.96). The mean number of days each subject was treated at Remuda Ranch was 56.05 (SD ±12.91). The range of treatment lasted from 10 days to 126.

For the largest group, 92.7% of the subjects were Caucasian, 3.1% were Hispanic, 1.6% were African-American, and 2.6% were from other ethnic backgrounds. The breakdown of the subjects’ educational level is presented in Table 4.

Table 4

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than High School</td>
<td>21</td>
<td>4.7</td>
</tr>
<tr>
<td>Some High School</td>
<td>161</td>
<td>35.7</td>
</tr>
<tr>
<td>High School Diploma</td>
<td>39</td>
<td>8.6</td>
</tr>
<tr>
<td>Some College</td>
<td>130</td>
<td>28.8</td>
</tr>
<tr>
<td>College Graduate</td>
<td>73</td>
<td>16.2</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>13</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Because hypotheses 3 and 4 were limited to those subjects who chose form A of the Remuda Ranch Spiritual Inventory, and hypotheses 1 included all subjects regardless of whether they chose Form A or Form B of the RRSI, several t-tests were run in order to compare the 350 subjects who chose Form A of the RRSI to the 101
subjects (making up the original pool of 451 subjects) who chose Form B. All
statistical procedures were run using SPSS for Windows, Version 9.0 or newer.

t-tests were run between the sample of patients who chose form A of the
Remuda Ranch Spiritual Inventory and the sample of patients who chose form B for
the variables age, age of onset, and days treated. No statistical difference was found
between groups on these three variables as indicated in Table 5. In addition, Pearson
Chi-Square analyses revealed no significant statistical difference between groups on
the variables ethnicity and education as indicated by Table 6 and Table 7.

Table 5

Two-Tailed t-Test for Equality of Means Between Subjects Who Chose Form A
Versus Form B on Factors Age, Onset Age, and Days Treated

<table>
<thead>
<tr>
<th>Variables</th>
<th>Form A</th>
<th></th>
<th>Form B</th>
<th></th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>349</td>
<td>22.56</td>
<td>8.59</td>
<td>96</td>
<td>21.63</td>
<td>7.35</td>
<td>.968</td>
</tr>
<tr>
<td>Onset Age</td>
<td>329</td>
<td>15.78</td>
<td>4.92</td>
<td>92</td>
<td>15.70</td>
<td>4.94</td>
<td>.137</td>
</tr>
<tr>
<td>Days Treated</td>
<td>344</td>
<td>55.68</td>
<td>12.46</td>
<td>96</td>
<td>57.51</td>
<td>14.59</td>
<td>1.224</td>
</tr>
</tbody>
</table>

Table 6

Ethnic Group N and Percentages

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>N</th>
<th>Form A %</th>
<th>N</th>
<th>Form B %</th>
</tr>
</thead>
<tbody>
<tr>
<td>African-American</td>
<td>1</td>
<td>.3</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Asian-American</td>
<td>3</td>
<td>.9</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Caucasian</td>
<td>326</td>
<td>93.1</td>
<td>91</td>
<td>94.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13</td>
<td>3.7</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>Native-American</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Unspecified</td>
<td>7</td>
<td>2.0</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>350</td>
<td>100.0</td>
<td>96</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note. $x^2 = 4.95, df = 5, p = .422$
Table 7

**Education Group N and Percentages**

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Form A %</th>
<th>N</th>
<th>Form B %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; High School Diploma</td>
<td>40.2</td>
<td>136</td>
<td>46.3</td>
</tr>
<tr>
<td>High School Graduate</td>
<td>9.5</td>
<td>32</td>
<td>7.4</td>
</tr>
<tr>
<td>Some College</td>
<td>28.7</td>
<td>97</td>
<td>32.6</td>
</tr>
<tr>
<td>College Graduate</td>
<td>18.0</td>
<td>61</td>
<td>12.6</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>3.6</td>
<td>12</td>
<td>1.1</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>338</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Note. $X^2 = 4.24, df = 4, p = .374*

**Hypotheses**

Null Hypothesis 1

Null hypothesis 1 predicted that patients' levels of eating disorder symptomatology would not be significantly lower from admission to discharge and between admission and 1-year post-discharge. The Eating Disorder Inventory-2 was the instrument used in this study to test hypothesis 1. Because each EDI-2 scale is intended to measure a conceptually independent trait, the 11 subscales were examined independently of each other at the time of admission, discharge, and 1-year post-discharge (Garner, 1991).

Norms are based on plus or minus 1 standard deviation of the standard error of measurement (68% confidence intervals) for the particular population being studied. For purposes of this study, clinical norms were examined by comparing the combined eating disorder norms with the college female norms. It is worth noting that norms for the eating disorder sample and the college female sample overlap on scales BD, P, IA, and IR (body dissatisfaction, perfectionism, maturity fears, and impulse regulation). In other words, the bottom portion of the eating disorder range
for scales BD, P, MF, and IR overlap with the top portion of the range for the female college sample on these subscales.

The statistical procedure used to test this hypothesis was an SPSS multivariate repeated measure analysis of variance. A random sample of approximately 145 subjects from the original pool of 451 patients was sent the EDI-2 at 1-year post-discharge. One hundred and nine former patients returned the completed EDI-2.

**Factor 1: Drive for Thinness**

The Drive for Thinness subscale was developed to measure the intense drive to be thin or fear of fatness (Garner, 1991). This subscale purportedly assesses excessive concern with dieting, preoccupation with weight, and fear of weight gain (Garner, 1991).

Results indicated that there was an overall statistical difference in drive for thinness across the three test occasions, \( F(2, 216) = 33.495, \ p = .000 \) (Table 8). Pairwise comparisons (Table 9) further indicated that there was a significant statistical reduction in Drive For Thinness mean difference (\( MD \)) scores from admission to discharge (\( MD = 5.761, \ p = .000 \)), and admission to 1-year post-discharge (\( MD = 3.550, \ p = .000 \)). Also, pairwise comparisons demonstrated a significant statistical increase in Drive for Thinness from discharge to 1-year post-discharge (\( MD = -2.21, \ p = .003 \)).
Table 8

Repeated Measures Analysis of Variance Results for Drive for Thinness

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>7410.85</td>
<td>108</td>
<td>68.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>1841.69</td>
<td>2</td>
<td>920.85</td>
<td>33.50</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>5938.31</td>
<td>216</td>
<td>27.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15190.85</td>
<td>326</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9

Means and Standard Deviations at Three Time Intervals for Drive for Thinness

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Differences (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1. At Admit</td>
<td>14.4</td>
<td>5.68</td>
<td>5.76(.64)* 3.55(.77)*</td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>8.7</td>
<td>6.56</td>
<td>-2.21(.72)*</td>
</tr>
<tr>
<td>3. At 1-yr Post-Disch</td>
<td>10.9</td>
<td>6.95</td>
<td></td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.

Scores were compared to clinical norms provided by Garner (1991; see Appendix B). The mean score of 14.46 at the time of admission was clearly in the middle of eating disorder norms. At the time of discharge, the mean score of 8.70 was well below the range of eating disorder norms, and just above female college norms. At 1-year post-discharge, norms still remained below eating disorder range, though they had increased closer to this range. Thus, while there was a significant increase in Drive for Thinness scores from discharge to 1-year post-discharge, the scores did not return to the level at the time of admission, nor did the scores move back up into the eating disorder range.

Hence, not only were the scores on factor DT statistically significant, evidence suggests that the scores were clinically significant as well. That is, scores were reduced from the time of admission to fall below eating disorder norms at both
discharge and 1-year post-discharge.

**Factor 2: Bulimia**

The Bulimia subscale was designed to measure the propensity to think about and engage in bouts of uncontrollable overeating (Garner, 1991). Results on this subscale (Table 10) suggested that there was an overall significant statistical difference across the three test occasions $F(2, 216) = 28.772, p = .000$. Pairwise comparisons (Table 11) also resulted in a statistically significant reduction in this factor from admission to discharge ($MD = 4.596, p = .000$), and admission to 1-year post-discharge ($MD = 1.817, p = .010$). In contrast, scores significantly increased from discharge to 1-year post-discharge ($MD = -2.780, p = .000$).

Table 10

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>5684.78</td>
<td>108</td>
<td>52.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>1168.24</td>
<td>2</td>
<td>584.12</td>
<td>28.77</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>4385.10</td>
<td>216</td>
<td>20.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11238.12</td>
<td>326</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 11

*The mean difference was significant at the .05 level.*

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Comparing the mean scores across the three times (see Appendix B) revealed that none of the scores were in the normative range for eating disorders. At the time of admission, scores were above the normative range for female college students. At the time of discharge, these scores had fallen to within the college student norms. However, while scores did not return to the level at the time of admission at 1-year post-discharge, they did climb back up out of the college norm range. Hence, while there was a significant increase from discharge to 1-year post-discharge, the scores did not return to the level at the time of admission. Furthermore, there was a significant decrease in scores from the time of admission to the time at 1-year post-discharge. This lends some support for the efficacy of treatment on the Bulimia subscale.

Factor 3: Body Dissatisfaction

The Body Dissatisfaction subscale was designed to measure dissatisfaction with the overall size and shape of the body (Garner, 1991). Results (Table 12) indicated that an overall statistical difference was found across the three time occasions for this subscale $F(2, 216) = 13.112, p = .000$. Pairwise comparisons (Table 13) were also significantly reduced from admission to discharge ($MD = 3.945, p = .000$), and admission to 1-year post-discharge ($MD = 3.110, p = .000$). Moreover, while a slight increase was noted from the time of discharge to 1-year post-discharge, the results were not statistically significant ($MD = -.835, p = .313$).
Table 12

Repeated Measures Analysis of Variance Results for Body Dissatisfaction

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>15908.24</td>
<td>108</td>
<td>147.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>942.21</td>
<td>2</td>
<td>471.10</td>
<td>13.11</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>7760.50</td>
<td>216</td>
<td>35.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24610.95</td>
<td>326</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 13

Means and Standard Deviations at Three Time Intervals for Body Dissatisfaction

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At Admit</td>
<td>17.94</td>
<td>8.30</td>
<td>3.95(.74)*</td>
<td>3.11(.87)*</td>
<td></td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>14.00</td>
<td>8.74</td>
<td></td>
<td>-.84(.82)</td>
<td></td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>14.83</td>
<td>8.59</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.

A significant clinical difference was also found when scores were compared to normative data provided by Garner (1991; see Appendix B). That is, scores dropped from being solely in the eating disorder normative sample range to where the eating disorder normative sample and the female college normative sample overlap. At the time of admission, the mean scores were clearly in the eating disorder normative range. However, at both the time of discharge and at 1-year post-discharge, scores had fallen to within the range in which the female college normative sample and the eating disorder normative sample overlap. This provides strong support for the efficacy of treatment on this subscale.

Factor 4: Ineffectiveness

The Ineffectiveness subscale was designed to assess feelings of general inadequacy, worthlessness, emptiness, insecurity, and lack of control over one's life.
(Gamer, 1991). Results (Table 14) demonstrated an overall statistical difference for this factor across the three test occasions, $F(2, 216) = 35.976, p = .000$. Pairwise comparisons (Table 15) further demonstrated a statistical reduction in mean difference scores from admission to discharge ($MD = 6.798, p = .000$), and admission to 1-year post-discharge ($MD = 3.817, p = .000$). However, results indicated that there was a significant increase in scores from discharge to 1-year post-discharge although the scores did not return to the level at the time of admission ($MD = -2.982, p = .000$).

Table 14

**Repeated Measures Analysis of Variance Results for Ineffectiveness**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>$F$</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>10816.44</td>
<td>108</td>
<td>100.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>2531.38</td>
<td>2</td>
<td>1265.69</td>
<td>35.98</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>7599.28</td>
<td>216</td>
<td>35.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20947.10</td>
<td>326</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 15

**Means and Standard Deviations at Three Time Intervals for Ineffectiveness**

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Differences (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At Admit</td>
<td>13.08</td>
<td>7.97</td>
<td>--</td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>6.28</td>
<td>6.26</td>
<td>--</td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>9.27</td>
<td>8.24</td>
<td>--</td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.

Scores across the three times were also compared to normative samples (see Appendix B). At the time of admission, mean scores were at the top of the eating disorder normative range. At the time of discharge, scores had dropped out of this

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range but remained above the female college range. At 1-year post-discharge, scores had moved up to the bottom of the eating disorder range. This suggests that the results were certainly clinically significant and relevant from admission to discharge, and at least marginally clinically relevant from admission to 1-year post-discharge.

**Factor 5: Perfectionism**

The Perfectionism subscale was designed to assess the extent to which one believes that only the highest standards of performance are acceptable and that outstanding achievement is expected by others (Garner, 1991). Results (Table 16) indicated that there was an overall significant statistical difference across the three test occasions, $F(2, 216) = 11.833, p = .000$.

Pairwise comparisons (Table 17) were also run which demonstrated a statistically significant reduction in mean difference scores ($MD$) from admission to discharge ($MD = 1.826, p = .000$, and admission to 1-year post-discharge ($MD = .780, p = .045$). However, pairwise comparisons also revealed that there was a significant increase in scores from discharge to 1-year post-discharge ($MD = -1.046, p = .011$).

When scores were compared to clinical norms provided by Garner (1991; see Appendix B), it was found that at the time of admission, mean scores were near the middle of the eating disorder normative sample range. At the time of discharge, these scores had dropped to near the middle of the female college sample range. At 1-year post-discharge, scores moved back to where the college female normative sample and the eating disorder normative sample overlap. This suggests that, in spite of the increase from discharge to 1-year post-discharge, there is some clinical significance to the reduction in mean scores from the time of admission to discharge and
admission to 1-year post-discharge.

Table 16

*Repeated Measures Analysis of Variance Results for Perfectionism*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>4515.03</td>
<td>108</td>
<td>41.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>182.94</td>
<td>2</td>
<td>91.47</td>
<td>11.83</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>1669.73</td>
<td>216</td>
<td>7.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6367.70</td>
<td>326</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 17

*Means and Standard Deviations at Three Time Intervals for Perfectionism*

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Differences (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At Admit</td>
<td>8.50</td>
<td>4.51</td>
<td>1.83(.34)* .78(.38)*</td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>6.68</td>
<td>4.26</td>
<td>--</td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>7.72</td>
<td>4.33</td>
<td>--</td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.

**Factor 6: Interpersonal Distrust**

The Interpersonal Distrust subscale reportedly measures an individual's general feeling of alienation and reluctance to form close relationships (Garner, 1991). It also assesses the reluctance to express thoughts or feelings to others (Garner, 1991).

Results (Table 18) suggested there was an overall significant statistical difference for Interpersonal Distrust across the three test occasions, \( F(2,107) = 16.060 \). Pairwise comparisons (Table 19) also indicated that there was a significant statistical reduction in mean difference scores from admission to discharge (\( MD = \) \[ \text{Your equation here} \]).
Moreover, while there was a slight increase in scores from discharge to 1-year post-discharge, the results were not statistically significant ($MD = -0.468, p = .311$).

Table 18

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>3312.75</td>
<td>108</td>
<td>30.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>423.80</td>
<td>2</td>
<td>211.90</td>
<td>16.99</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>2694.20</td>
<td>216</td>
<td>12.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6430.75</td>
<td>316</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Differences (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At Admit</td>
<td>6.61</td>
<td>4.47</td>
<td>2.62(.48)* 2.15(.50)*</td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>4.00</td>
<td>3.94</td>
<td>- .47(.46)</td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>4.47</td>
<td>4.49</td>
<td>-</td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.

Mean scores across the three times were compared to normative data. At the time of admission, mean scores fell in the upper half of the eating disorder normative range. At time of discharge, scores fell to the bottom edge of the eating disorder normative range. At 1-year post-discharge mean scores moved up into the lower half of the eating disorder range suggesting only marginal clinical improvement from admission to 1-year post-discharge.
Factor 7: Interoceptive Awareness

The Interoceptive Awareness subscale reportedly was designed to assess confusion and apprehension in recognizing and responding to emotional states, as well as the uncertainty related to hunger and satiety. Results (Table 20) indicated that there was an overall statistically significant difference for this factor across the three test occasions, $F(2, 107) = 26.296, p = .000$.

Pairwise comparisons (Table 21) were also statistically significant from admission to discharge ($MD = 5.486, p = .000$), and admission to 1-year post-discharge ($MD = 3.385, p = .000$). However, pairwise comparison results also indicated a statistically significant increase from discharge to 1-year post-discharge ($MD = -2.101, p = .007$).

When comparisons were made to clinical norms, mean scores at both discharge and 1-year post-discharge dropped out of the eating disorder normative range. At the time of admission, scores were in the upper half of the eating disorder normative range. Thus, although there was a significant increase from discharge to 1-year post-discharge, the scores did not return to the level at the time of admission, nor did they move back into the eating disorder normative range. This provides strong evidence that the reduction in mean scores for Interoceptive Awareness was clinically significant.
Table 20

Repeated Measures Analysis of Variance Results for Interoceptive Awareness

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>10166.85</td>
<td>108</td>
<td>94.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>1670.36</td>
<td>2</td>
<td>835.18</td>
<td>25.76</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>7003.65</td>
<td>216</td>
<td>32.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18840.86</td>
<td>316</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 21

Means and Standard Deviations at Three Time Intervals for Interoceptive Awareness

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At Admit</td>
<td>11.31</td>
<td>7.70</td>
<td>5.49(.76)*</td>
<td>3.39(.79)*</td>
<td></td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>5.83</td>
<td>6.08</td>
<td>--</td>
<td>-2.10(.77)*</td>
<td></td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>7.93</td>
<td>7.92</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.

Factor 8: Maturity Fears

The Maturity Fears subscale was designed to measure the desire to retreat to the security of childhood (Garner, 1991). Results (Table 22) from this subscale demonstrated an overall statistical difference across the three test occasions, $F(2, 107) = 15.523, p = .000$. Pairwise comparisons (Table 23) from admission to discharge ($MD = 2.257, p = .000$) and from admission to 1-year post-discharge ($MD = 1.817, p = .001$) were significantly reduced. In addition, while there was an increase in scores from the time of discharge to 1-year post-discharge, the increase was not statistically significant ($MD = -.440, p = .371$).
Table 22

*Repeated Measures Analysis of Variance Results for Maturity Fears*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>5329.90</td>
<td>108</td>
<td>49.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>312.00</td>
<td>2</td>
<td>156.00</td>
<td>12.79</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>2635.33</td>
<td>216</td>
<td>12.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8277.23</td>
<td>316</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 23

*Means and Standard Deviations at Three Time Intervals for Maturity Fears*

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At Admit</td>
<td>6.08</td>
<td>5.38</td>
<td>--</td>
<td>2.26(.41)*</td>
<td>1.82(.51)*</td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>3.83</td>
<td>4.70</td>
<td>--</td>
<td></td>
<td>-.44(.49)</td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>4.27</td>
<td>4.78</td>
<td>--</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.

The reduction in mean difference scores was compared to normative data. At the time of admission, mean scores were slightly above the eating disorder norms. At the time of discharge, scores had dropped significantly to fall within the female college range. At 1-year post-discharge, the mean scores moved back up to just inside the eating disorder range. However, there was not a significant increase from discharge to 1-year post-discharge, nor did the scores return to the level at the time of admission. This suggests some clinical significance from admission to 1-year post-discharge on this subscale.

**Factor 9: Asceticism**

The factor entitled Asceticism was designed to assess the tendency to seek virtue through such ideals as self-discipline, denial, restraint, and control of bodily
urges. An overall significant statistical difference (Table 24) was noted for Asceticism across the three test occasions, $F(2, 107) = 25.201, p = .000$.

Pairwise comparisons (Table 25) suggested that there also was a statistical significant reduction in mean scores from admission to discharge ($MD = 2.826, p = .000$) and admission to 1-year post-discharge ($MD = 1.367, p = .008$). However, there was also a significant increase in scores from discharge to 1-year post-discharge ($MD = -1.459, p = .001$). When mean scores were compared to normative data, only questionable clinically significant reductions from admission to discharge and admission to 1-year post-discharge were noted as mean scores across all three times were in the midst of the eating disorder normative range.

### Table 24

*Repeated Measures Analysis of Variance Results for Asceticism*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>3941.73</td>
<td>108</td>
<td>36.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>435.31</td>
<td>2</td>
<td>217.65</td>
<td>20.26</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>2320.69</td>
<td>216</td>
<td>10.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6697.73</td>
<td>316</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 25

*Means and Standard Deviations at Three Time Intervals for Asceticism*

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Differences (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At Admit</td>
<td>8.89</td>
<td>4.58</td>
<td>--</td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>6.06</td>
<td>3.65</td>
<td>2.83(.41)*</td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>7.52</td>
<td>4.87</td>
<td>-1.46(.41)*</td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.*
Factor 10: Impulse Regulation

The Impulse Regulation subscale reportedly measures the tendency toward impulsivity, substance abuse, recklessness, hostility, destructiveness in interpersonal relationships, and self-destructiveness (Garner, 1991). An overall statistical significance (Table 26) was found for Impulse Regulation across the three test occasions, \( F(2, 107) = 10.401, p = .000 \). Pairwise comparisons (Table 27) were also significantly reduced from admission to discharge \( (MD = 2.128, p = .000) \), and admission to 1-year post-discharge \( (MD = 3.018, p = .000) \). Furthermore, while there was not a statistically significant decrease in scores from discharge to 1-year post-discharge, the scores decreased nonetheless \( (MD = 0.890, p = .170) \). Indeed, this was the only subscale in which pairwise results indicated a decrease across all three test occasions.

Table 26

Repeated Measures Analysis of Variance Results for Impulse Regulation

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>5542.75</td>
<td>108</td>
<td>51.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>524.39</td>
<td>2</td>
<td>262.19</td>
<td>11.48</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>4931.62</td>
<td>216</td>
<td>22.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10998.76</td>
<td>316</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 27

Means and Standard Deviations at Three Time Intervals for Impulse Regulation

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Differences (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1. At Admit</td>
<td>5.69</td>
<td>6.26</td>
<td>--</td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>3.56</td>
<td>4.61</td>
<td>2.13(.56)*</td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>2.67</td>
<td>6.04</td>
<td>3.02(.71)*</td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.
Comparing the means across the three times to normative data also revealed significant clinical reductions in mean scores. At the time of admission, mean scores fell within the eating disorder normative range. At the time of discharge and at 1-year post-discharge, mean scores fell to within the female college range suggesting a clinically significant reduction in impulse regulation scores.

**Factor 11: Social Insecurity**

This subscale reportedly measures the belief that social relationships are disappointing, insecure, tense, unrewarding, and generally poor in quality (Garner, 1991). Results (Table 28) indicated an overall significant statistical difference for Social Insecurity across the three test occasions, $F(2, 107) = 28.879, p = .000$.

Pairwise comparisons (Table 29) suggested that there was a statistically significant reduction in mean difference scores from both admission to discharge ($MD = 3.495, p = .000$), and admission to 1-year post-discharge ($MD = 2.862, p = .000$). However, an increase in scores was noted from discharge to 1-year post-discharge although the results were not statistically significant ($MD = -.633, p = .190$).

A comparison of mean scores to normative data also provided evidence that the reduction in mean scores was clinically significant as well. At the time of admission, mean scores were well within the eating disorder normative sample range. At both the time of discharge and 1-year post-discharge, mean scores had fallen out of the eating disorder normative range.
Table 28

Repeated Measures Analysis of Variance Results for Social Insecurity

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>3690.72</td>
<td>108</td>
<td>34.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasions</td>
<td>756.17</td>
<td>2</td>
<td>378.08</td>
<td>27.86</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>2931.84</td>
<td>216</td>
<td>13.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7378.73</td>
<td>316</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 29

Means and Standard Deviations at Three Time Intervals for Social Insecurity

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Differences (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1. At Admit</td>
<td>8.72</td>
<td>4.90</td>
<td>-- 3.50(.46)* 2.86(.55)*</td>
</tr>
<tr>
<td>2. At Discharge</td>
<td>5.22</td>
<td>4.05</td>
<td>-- -.63(.48)</td>
</tr>
<tr>
<td>3. At 1-yr Post-Discharge</td>
<td>5.85</td>
<td>4.57</td>
<td>--</td>
</tr>
</tbody>
</table>

*The mean difference was significant at the .05 level.

In summary, the statistical results from all eleven factors demonstrated a statistically significant reduction in mean scores from admission to discharge, and admission to 1-year post-discharge. In contrast, ten of the eleven factors demonstrated an increase in scores from discharge to 1-year post-discharge. However, five of these factors, factors BD, ID, MF, IR, and SI, did not demonstrate a statistically significant increase in scores from discharge to 1-year post-discharge. Moreover, none of the 11 factor scores at 1-year post-discharge returned to the levels at the time of admission. In addition, factor IR (Impulse Regulation), demonstrated a decrease in scores across all three test occasions. In fact, Impulse Regulation was the only factor from the EDI-2 in which scores were reduced from discharge to 1-year post-discharge. The other ten factors all exhibited some increase in mean scores from...
discharge to 1-year post-discharge although no scores at 1-year post-discharge returned to the level of scores at the time of admission.

When compared to clinical norms, there was strong evidence that the overall reduction in mean scores was clinically significant from admission to discharge and admission to 1-year post-discharge. Only factors I, ID, and MF demonstrated a return to mean scores in the eating disorder range from discharge to 1-year post-discharge, while factor A never dropped out of the eating disorder normative range. However, none of these four factors returned to the level that they were at the time of admission. Moreover, the other seven factor mean scores either dropped below the eating disorder normative range, or fell into the female college normative range at 1-year post-discharge.

Hence, null hypothesis 1 was rejected. Instead, there was strong evidence that suggests that the Remuda Ranch Treatment Center for Anorexia and Bulimia, Inc., was an effective treatment facility for the treatment of eating disorders.

Null Hypothesis 2

Null hypothesis 2 predicted that patients' levels of depression would not be significantly lower between admission and discharge. An SPSS paired t-test was run to examine for mean differences between depression scores at the time of admission and depression scores at the time of discharge as measured by the Beck Depression Inventory-II.

Four hundred and thirty subjects out of a possible pool of 451 completed both Beck Depression Inventories. A statistically significant difference was found between BDI-II scores at the time of admission and discharge, $t(429) = 29.139, p =$
Further examination (Table 30) revealed that the mean score on the BDI-II had dropped considerably from admission (29.45) to discharge (11.12). When compared to clinical norms provided by Beck et al. (1996), a significant clinical reduction in depression scores was also noted (see Appendix A). The mean score of 29.45 at the time of admission fell at the bottom of the severe range. At the time of discharge, however, the mean score of 11.12 dropped to within the minimal range for depression.

Table 30

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>n</th>
<th>SD</th>
<th>MD</th>
<th>df</th>
<th>t</th>
<th>P (2 tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI-II admit</td>
<td>29.45</td>
<td>430</td>
<td>13.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI-II discharge</td>
<td>11.12</td>
<td>430</td>
<td>10.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI-II admit &amp; discharge</td>
<td>430</td>
<td>13.05</td>
<td>18.34</td>
<td>429</td>
<td>29.139</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Thus, the null hypothesis that there would not be a significant difference in depression between admission and discharge was rejected. Instead, strong support exists that the Remuda Ranch Treatment Center for Anorexia and Bulimia, Inc., was an effective treatment center for reducing clinical levels of depression over the course of treatment.

Null Hypothesis 3

Null hypothesis 3 predicted that patients' level of spiritual distress would not be significantly lower from admission to discharge. The 35-item Remuda Ranch
Spiritual Inventory (RRSI-R) was the instrument previously validated, and used to assess spiritual distress. An SPSS two-tailed paired $t$-test was used to test for significant statistical differences between mean scores at admission and mean scores at discharge. Out of a possible 451 subjects, 351 chose Form A (for those who profess to have or to have had a personal relationship with Jesus Christ) over Form B (those who stated that they have never had a personal relationship with Jesus Christ). Two hundred and forty-one of these subjects answered all 35 questions on the Remuda Ranch Spiritual Inventory at both the time of admission and discharge.

Results (Table 31) indicated a significant statistical difference on the RRSI between admission and discharge, $t(1, 241) = 12.03, p = .000$. The mean score at the time of admission was 25.8589 compared to a mean score of 15.2365 at the time of discharge, suggesting a significant statistical reduction in patients' spiritual distress scores while in treatment.

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>n</th>
<th>SD</th>
<th>MD</th>
<th>df</th>
<th>$t$</th>
<th>P (2 tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RRSI admit</td>
<td>25.86</td>
<td>241</td>
<td>15.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRSI discharge</td>
<td>15.24</td>
<td>241</td>
<td>12.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRSI admit &amp; discharge</td>
<td>241</td>
<td>13.51</td>
<td>10.62</td>
<td>240</td>
<td>12.027</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Further examination also revealed a significant clinical reduction in spiritual distress scores from admission to discharge. At the time of admission, the mean score of 25.86 fell at the bottom of the moderate distress range. At the time of discharge.
the mean score of 15.24 dropped to the no distress range. Hence, it appears that The Remuda Ranch Center for Anorexia and Bulimia, Inc., was an effective treatment center for reducing spiritual distress scores during the course of treatment.

Null Hypothesis 4

Null hypothesis 4 predicted that depression and spiritual distress scores would not predict treatment outcome. That is to say, scores from the BDI-II and the RRSI would not significantly account for the variance in EDI-2 scores. In order to test this hypothesis, three separate multiple regression analyses were run. The first examined the relationship between Beck Depression Inventory-II scores at the time of admission and scores from the Remuda Ranch Spiritual Inventory at the time of admission to scores from the Eating Disorder Inventory-2 at the time of discharge. The second regression analysis examined the relationship between BDI-II scores at the time of admission and RRSI scores at the time of admission to scores from the EDI-2 at 1-year post-discharge. The third regression analysis examined BDI-II scores at the time of discharge and RRSI scores at the time of discharge to EDI-2 scores at 1-year post-discharge. Descriptive statistics and correlation results are presented in Tables 32 and 33.
Table 32

Means, Standard Deviations, and N

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI-II (at admit)</td>
<td>29.02</td>
<td>12.52</td>
<td>339</td>
</tr>
<tr>
<td>BDI-II (at discharge)</td>
<td>10.84</td>
<td>10.07</td>
<td>330</td>
</tr>
<tr>
<td>RRSI (at admit)</td>
<td>26.56</td>
<td>15.57</td>
<td>285</td>
</tr>
<tr>
<td>RRSI (at discharge)</td>
<td>15.77</td>
<td>12.31</td>
<td>286</td>
</tr>
<tr>
<td>EDI-2 (at discharge)</td>
<td>60.32</td>
<td>38.84</td>
<td>335</td>
</tr>
<tr>
<td>EDI-2 (at 1-yr post-discharge)</td>
<td>76.33</td>
<td>49.32</td>
<td>87</td>
</tr>
</tbody>
</table>

Table 33

Zero-Order Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BDI-II (at admit)</td>
<td>--</td>
<td>.384*</td>
<td>.589*</td>
<td>.214*</td>
<td>.398*</td>
<td>.259*</td>
</tr>
<tr>
<td>2. BDI-II (at discharge)</td>
<td>--</td>
<td>.327*</td>
<td>.594*</td>
<td>.745*</td>
<td>.423*</td>
<td></td>
</tr>
<tr>
<td>3. RRSI (at admit)</td>
<td>--</td>
<td>.527*</td>
<td>.285*</td>
<td>.269*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. RRSI (discharge)</td>
<td>--</td>
<td>.549*</td>
<td>.327*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. EDI-2 (at discharge)</td>
<td>--</td>
<td>.487*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. EDI-2 (at 1-yr post-discharge)</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next, three regression analyses were run. The first two-predictor regression model examined whether the variance in EDI-2 scores could be significantly accounted for by BDI-II scores and RRSI scores at the time of admission. Results (Table 34 and 35) indicated that there was a significant relationship between BDI-II and RRSI scores at admission and EDI-2 scores at discharge, $F(2, 270) = 27.752$, $p = 0.000$. However, standardized beta weight results indicated that of the two independent variables, only depression was the sole significant predictor.
Table 34

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI-II at admit</td>
<td>28.92</td>
<td>12.76</td>
<td>273</td>
</tr>
<tr>
<td>RRSI at admit</td>
<td>26.97</td>
<td>15.59</td>
<td>273</td>
</tr>
<tr>
<td>EDI-2 at discharge</td>
<td>60.56</td>
<td>40.03</td>
<td>273</td>
</tr>
</tbody>
</table>

Table 35

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SE</th>
<th>B</th>
<th>t</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI (at admit)</td>
<td>1.160</td>
<td>.215</td>
<td>.370</td>
<td>5.393</td>
<td>0.000</td>
</tr>
<tr>
<td>RRSI (at Admit)</td>
<td>.173</td>
<td>.176</td>
<td>.067</td>
<td>.983</td>
<td>0.326</td>
</tr>
<tr>
<td>Constant</td>
<td>22.357</td>
<td>5.601</td>
<td>3.992</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Note. $R^2 = .171, F(2, 270) = 27.752, p = 0.000.$

In short, scores from the BDI-II and the RRSI at admission significantly accounted for about 17% of the variance of EDI-2 scores at discharge. However, in the two-predictor model, the BDI-II was the only significant predictor of EDI-2 scores at discharge and thus the better predictor in determining treatment outcome.

The second two-predictor regression model examined whether the variance in EDI-2 scores at 1-year post-discharge could be significantly accounted for by BDI-II scores and RRSI scores at admission. Results (Tables 36 and 37) suggested that there was a significant relationship between BDI-II and RRSI scores at admission and EDI-2 scores at 1-year post-discharge, $F(2, 65) = 3.419, p = 0.039.$ However, beta results indicated that neither independent variable was a significant predictor. That is, neither variable by itself significantly predicted EDI-2 scores at 1-year post-discharge. Nonetheless, scores from the BDI-II and the RRSI together at the time of
admission significantly accounted for about 10% of the variance in EDI-2 scores at 1-year post-discharge.

Table 36

*Mean Scores for the EDI-2 at 1-Year Post-Discharge and BDI-II and RRSI Scores at Admission*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI-II (Admit)</td>
<td>30.74</td>
<td>12.29</td>
<td>68</td>
</tr>
<tr>
<td>RRSI (Admit)</td>
<td>27.82</td>
<td>16.60</td>
<td>68</td>
</tr>
<tr>
<td>EDI-2 (at 1-yr post-discharge)</td>
<td>77.79</td>
<td>50.89</td>
<td>68</td>
</tr>
</tbody>
</table>

Table 37

*Regression Analysis Results for Predicting EDI-2 Scores at 1-Year Post-Discharge and BDI-II and RRSI Scores at Admission*

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SE</th>
<th>B</th>
<th>t</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI-II (at admit)</td>
<td>.541</td>
<td>.671</td>
<td>.131</td>
<td>.807</td>
<td>.423</td>
</tr>
<tr>
<td>RRSI (at admit)</td>
<td>.625</td>
<td>.497</td>
<td>.204</td>
<td>1.258</td>
<td>.213</td>
</tr>
<tr>
<td>Constant</td>
<td>43.764</td>
<td>16.157</td>
<td>2.709</td>
<td>.009</td>
<td></td>
</tr>
</tbody>
</table>

*Note. R² = .10, F(2, 65) = 3.419, p = 0.039.*

The third regression analysis examined the relationship between BDI-II and RRSI scores at discharge with EDI-2 scores at 1-year post-discharge. Results (Tables 38 and 39) indicated that BDI-II and the RRSI scores accounted for 20% of the variance, and that this was significantly different from zero $F(2, 68) = 8.405, p = 0.001)$. Similar to the first regression, standardized beta weight results suggested that scores from the RRSI did not add significant predictive power regarding EDI-2 outcome at 1-year post-discharge. In contrast, when scores from the RRSI were held constant, scores from the BDI-II at discharge did add significant predictive power. That is, in this two-predictor model, scores from the BDI-II at discharge was the only
significant predictor of EDI-2 scores at 1-year post-discharge.

Table 38

**Mean Scores for the EDI-2 at 1-Year Post-Discharge and BDI-II and RRSI Scores at Discharge**

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI-II (at discharge)</td>
<td>12.28</td>
<td>10.91</td>
<td>71</td>
</tr>
<tr>
<td>RRSI (at discharge)</td>
<td>16.97</td>
<td>11.97</td>
<td>71</td>
</tr>
<tr>
<td>EDI-2 (at 1-yr post-discharge)</td>
<td>78.73</td>
<td>50.92</td>
<td>71</td>
</tr>
</tbody>
</table>

Table 39

**Regression Analysis for Predicting EDI-2 Scores at 1-Year Post-Discharge Based on BDI-II and RRSI Scores at Discharge**

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SE</th>
<th>B</th>
<th>t</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI-II (at discharge)</td>
<td>2.040</td>
<td>0.655</td>
<td>.437</td>
<td>3.112</td>
<td>0.003</td>
</tr>
<tr>
<td>RRSI (at discharge)</td>
<td>5.3E-02</td>
<td>0.597</td>
<td>.013</td>
<td>0.089</td>
<td>0.929</td>
</tr>
<tr>
<td>Constant</td>
<td>52.778</td>
<td>9.704</td>
<td>5.439</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Note. $R^2 = 0.198$. F(2, 68) = 8.405, p = 0.001.

In summary, null hypothesis 4 was rejected. Instead it appears that depression and spiritual distress do in fact significantly account for some of the variance in eating disorder symptomatology across all three time comparisons. However, only depression appeared to add predictive power from admission to discharge and discharge to 1-year post-discharge when spiritual distress scores were controlled for. Indeed, only depression as measured by the BDI-II was a significant predictor of EDI-2 scores in two of the three time comparisons (admission to discharge and discharge to 1-year post-discharge). Spiritual distress scores did not add significant predictive power across any of the three time comparisons when depression scores were factored in. As a result, depression as measured by the BDI-II appears to be the
only significant predictor of EDI-2 scores in these two-predictor regression models.

Summary

In summary, all four null hypotheses were rejected. Instead, null hypothesis 1 results suggested that Remuda Ranch Center for Anorexia and Bulimia, Inc., which incorporated Christian-cognitive behavioral therapy as the foundation for its treatment modality, can provide effective treatment for the reduction in eating disorder symptomatology at discharge and 1-year post-discharge. Results from null hypotheses 2 and 3 also provided support for the notion that Remuda Ranch was an effective treatment center for treating depression and spiritual distress between admission and discharge. Finally, results from null hypothesis 4 suggested that depression and spiritual distress do predict treatment outcome, and that depression appears to be the only significant predictor of EDI-2 variance in the two-predictor model.
Introduction

While progress has been made in treating eating disorders, a substantial proportion of individuals with eating disorders experience poor outcomes in response to treatment. This coupled with the mortality rates previously discussed make finding effective treatment for individuals with eating disorders an urgent and paramount task.

The Remuda Ranch Center for Anorexia and Bulimia, Inc., has been treating eating disorders for over ten years. What makes the Remuda Ranch treatment approach unique is found written in the center’s 2000 Program Overview which states “there is a desire to develop the spiritual part of oneself, which, if explored, will facilitate recovery.” Consequently, the Remuda Ranch Spiritual Inventory was developed in 1995 by a group of eating disorder specialists from Remuda Ranch with backgrounds in psychology, theology, and research, and has subsequently become a regular part of the battery of tests administered to each patient.

Two general questions remain, however. Is Remuda Ranch, with its emphasis on biblically based programs that address spiritual concerns, an effective treatment program for treating females with eating disorders? Second, can any evidence be
found which begins to shed some light as to how the spiritual component of an individual relates to treatment outcome?

This latter question is particularly important for at least three reasons. First, there is a dire need to find the most effective means for treating eating disorders. Second, Remuda Ranch places such a great emphasis on addressing the spiritual components of individual patients. Third, to quote Harris and colleagues:

Virtually no well-controlled intervention studies have yet focused primarily on changing a spiritual or religious factor, that is, none have used such factors as the major focus or dependent variable of an intervention (Harris, Thoresen, et al., 1999, p. 415).

Summary

In order to begin to address the two questions posed above, this study sought to determine if the Remuda Ranch Treatment Center for Anorexia and Bulimia, Inc., which incorporates Christian cognitive-behavioral therapy as the foundation for its treatment modality, is an effective treatment center for adult and adolescent females with eating disorders. This study sought to further explore how depression and spiritual issues relate to treatment outcome.

A one-group Repeated Multivariate Analysis of Variance was used to test null hypothesis 1. A one-group pretest-posttest design was used to test null hypotheses 2 and 3. A one-group, two-predictor regression analysis was chosen to test null hypothesis 4. A one-group design was chosen in large part because it was not possible, nor would it have been ethical, to exclude some patients from receiving treatment.

A total of 451 female subjects who were at least 12 years old and who were admitted to the Remuda Ranch Treatment Centers between July 1, 1999, and June 30,
2000, were utilized to test null hypotheses 1 and 2. Data from a total of 350 subjects who were at least 12-years old and who were admitted to the Remuda Ranch Treatment Centers between July 1, 1999, and June 30, 2000, were utilized to test null hypotheses 3 and 4.

Results indicated that there is good evidence that Remuda Ranch was an effective Christian-based inpatient hospital for the treatment of females with eating disorders. In addition, Remuda Ranch was also an effective hospital for the treatment of depression and spiritual distress. Finally, there appeared to be a relationship between depression and spiritual distress with treatment outcome. However, only depression, as opposed to spiritual distress, was a significant predictor of eating disorder outcome scores in the above two-predictor models. This lends some support that depression may be the more powerful and better predictor than spiritual distress in treating eating disorder symptomatology.

**Hypotheses**

**Null Hypothesis 1**

Null hypothesis 1 predicted that patients' level of eating disorder symptomatology would not be significantly lower from admission to discharge and between admission and 1-year post-discharge. Because each of the 11 subscales of the Eating Disorder Inventory-2 (EDI-2) was intended to measure a conceptually independent trait, each factor was examined independently of each other at the time of admission, discharge, and 1-year post-discharge.

An overall statistical difference was found for the first factor, Drive for
Thinness, across the three test occasions. Pairwise comparisons also indicated that there was a statistical reduction in mean difference scores from admission to discharge, and admission to 1-year post-discharge. However, a statistical increase was found from discharge to 1-year post-discharge.

When scores were compared to clinical norms provided by Garner (1991) it was found that the mean score of 14.46 at the time of admission clearly fell in the middle of the eating disorder range. However, at the time of discharge, the mean score of 8.70 fell well below the eating disorder range, and just above the female college normative range. At 1-year post-discharge, score norms still remained below the eating disorder range, though they had increased somewhat.

That scores increased somewhat from discharge to 1-year post-discharge was expected. Common sense tells us that this is quite possible in that patients leave an intensive inpatient setting to return to the environment in which their eating disorder either began, or at the least, was maintained, all the while receiving less therapy. Moreover, at least one outcome study, which examined both short-term and intermediate results, found a decline during the first 2 years after therapy. Fichter and Quadflieg (1998), in a study which examined 103 consecutively diagnosed anorexic eating-disorder inpatients, found that there was a substantial improvement during therapy, moderate decline during the first 2 years post-treatment, and further improvement from 3 to 6 years post-treatment.

At any rate, even though scores significantly increased from discharge to 1-year post-discharge, the EDI-2 scores did not revert back to the level they were at at the time of admission. Moreover, when scores were compared to clinical norms it
was found that at 1-year post-discharge scores still remained below the eating disorder range. Hence, evidence was found which suggested that Remuda Ranch was an effective treatment center for helping to reduce a patient's drive for thinness. This in turn lent support for rejecting null hypothesis 1.

This is an important finding because, as Garner notes, "the clinical manifestation of an intense drive to be thinner or fear of fatness is essential for a diagnosis of both anorexia and bulimia" (Garner, 1991, p. 5). Indeed, one criterion for the diagnosis of Anorexia Nervosa, as found in the *DSM-IV*, is the "intense fear of gaining weight or becoming fat, even though underweight" (APA, 1994, p. 544). Likewise, criteria for Bulimia Nervosa include "Recurrent inappropriate compensatory behavior in order to prevent weight gain" and "Self-evaluation is unduly influenced by body shape and weight" (APA, 1994, pp. 549-550). Research certainly supports an unusual preoccupation with weight and body image with individuals with eating disorders (Heatherton et al., 1997; Johnson et al., 1996; Kaye et al., 1999).

The second subscale from the EDI-2 is the Bulimia subscale. Results from this subscale, which was designed to measure the propensity to think about and engage in bouts of uncontrollable overeating, were statistically significant across the test occasions. Pairwise comparisons also resulted in a statistically significant reduction from admission to discharge, and admission to 1-year post-discharge. In contrast, a significant increase was found from the time of discharge to 1-year post-discharge.

Comparing the scores across the three times with the clinical norms provided by Garner (1991) revealed that none of the scores fell in the range for eating disorders.
disorders. Instead, scores fell from above the range for female college students at the
time of admission to within the female college range at the time of discharge, and
then back above the female college range at 1-year post-discharge. Hence, though
statistically significant, only at the time of discharge were scores clearly clinically
significant.

One possible reason why limited improvement was found on this subscale, and
a limitation of this study, is that patients were not differentiated based on their eating
disorder diagnosis. As a result, patients diagnosed with Anorexia Nervosa as well as
Bulimia Nervosa were used to test this subscale with the very real possibility that the
subjects diagnosed with Anorexia Nervosa made little if any headway on this factor.
Had the testing of this subscale been limited to those patients who were diagnosed
with Bulimia Nervosa, the results might have been more pronounced. Nonetheless,
some improvement was made between the time of admission and 1-year post-
discharge providing some support for the rejection of null hypothesis 1.

Results from the third subscale, Body Dissatisfaction, indicated an overall
statistical difference across the three test occasions. Pairwise comparisons were also
significantly reduced from admission to discharge, and admission to 1-year post-
discharge. However, scores significantly increased from discharge to 1-year post-
discharge.

According to the norms provided by Garner (1991), at the time of admission
mean scores fell in the eating disorder range. At both the time of discharge and 1-
year post-discharge, scores had fallen to where the female college sample and the
eating disorder sample overlap. This would suggest some clinical relevance. again
lending support for the rejection of null hypothesis 1. Moreover, and similar to the reasons presented for subscale 1, the reduction in Body Dissatisfaction is important for treating one of the central features of eating disorders (Garner, 1991; Heatherton et al., 1997; Johnson et al., 1996; Kaye et al., 1999).

Consistent with the findings thus far, the fourth subscale, Ineffectiveness, resulted in a overall significant finding across the three test occasions. Likewise, pairwise comparisons also demonstrated a significant reduction in scores from admission to discharge, and admission to 1-year post-discharge. There was a significant increase in scores, however, between discharge and 1-year post-discharge although the scores did not return to the level at the time of admission.

When compared to clinical norms it was found that scores initially fell at the top of the eating disorder range, then dropped out of this range at the time of discharge, and then climbed back up to the bottom of the eating disorder range at 1-year post-discharge. This suggests that the results were certainly clinically relevant from admission to discharge, and at least marginally relevant from admission to 1-year post-discharge.

Garner has argued that this subscale, which assesses feelings of general worthlessness, insecurity, and lack of control over one's life, is an underlying disturbance in eating disorders, and one which has been found to be part of the clinical formulations of the development of eating disorders (Garner, 1991). Garner further noted that high scores on this subscale reflect a significant deficit in self-esteem. Research provides some support for this argument.

Sanftner and Crowther (1998), for example, in a study involving 78 subjects,
found that women who binge experienced greater fluctuations than controls in self-esteem and negative affect. They also found that the women who binged reported greater fluctuations in social and performance self-esteem than controls. Keel and colleagues (2000), in a study which examined the social adjustments of 177 women diagnosed with Bulimia Nervosa up to more than 10 years post-baseline, found that the longer a woman had been free of disordered eating symptoms, the more likely she was to report better functioning at work and overall social adjustment (Keel et al., 2000). In summary, subscale Ineffectiveness lends support towards rejecting null hypothesis 1.

Results from subscale 5, Perfectionism, were also statistically significant across the three test occasions. Moreover, pairwise comparisons demonstrated a significant decrease in scores from admission to discharge, and admission to 1-year post-discharge. In contrast, a significant increase was found from discharge to 1-year post-discharge though once again the scores did not return to the level they were at at the time of discharge.

Clinically, the results were significant as well. At the time of admission, mean scores were near the middle of the eating disorder normative sample range. At the time of discharge, these scores had dropped to near the middle of the female college sample range. At 1-year post-discharge scores moved back to where the college female normative sample and the eating disorder normative sample overlap.

According to Garner, the Perfectionism subscale was designed to assess the extent to which one believes that only the highest standards of performance are acceptable and that outstanding achievement is expected by others. Garner (1991)
has provided support from the literature which indicates that perfectionism is a critical condition for the development of both Anorexia Nervosa and Bulimia Nervosa, and that individuals with eating disorders tend to struggle to live up to perfectionistic achievement standards. Assuming this to be true, then this subscale again provides support that Remuda Ranch is an effective treatment center in addressing this aspect of eating disorders, and provides additional support for the rejection of null hypothesis 1.

Garner stated that subscale Interpersonal Distrust, “assesses an individual’s general feeling of alienation and reluctance to form close relationships” (Garner, 1991, p. 6). He has further argued that the need to keep others at a distance can be “an important psychological theme in the development and maintenance of some” individuals with eating disorders (p. 6). To be sure, psychosocial consequences such as the tendency for individuals with eating disorders to isolate, withdraw from family and friends, demonstrate interpersonal distrust, and experience interference in dating and marital relationships has been noted by several researchers (De Groot et al., 1995; Keel et al., 2000; Pike, 1998; Schork et al., 1994; Sexton et al., 1998).

Results from subscale ID demonstrated an overall statistically significant difference across the three test occasions. Pairwise comparisons also resulted in a significant statistical reduction in mean difference scores from admission to discharge, and admission to 1-year post-discharge. In addition, while there was a slight increase in scores from discharge to 1-year post-discharge, no significant difference was found. When compared to normative data, however, and in spite of the reduction in mean scores, scores across the three times never left the eating
disorder range, suggesting only marginal clinical improvement. Nonetheless, because a significant difference was found between admission and 1-year post-discharge, support was again found for the rejection of null hypothesis 1.

Garner reported that subscale Interoceptive Awareness, "measures confusion and apprehension in recognizing and accurately responding to emotional states" (Garner, 1991, p.6). Garner argued that confusion and mistrust related to affective and bodily functions are repeatedly described as important in the etiology and maintenance of some cases of eating disorder individuals.

Indeed the high prevalence of alexithymia, particularly the difficulty in distinguishing emotional states from bodily functions, has been noted in individuals with eating disorders (De Groot et al., 1995; Sexton et al., 1998). For example De Groot and colleagues administered the Toronto Alexithymia Scale to 31 patients who completed the Toronto Hospital Day Hospital Program for Eating Disorders. Results were compared to 20 non-eating-disordered women. De Groot and colleagues found that significantly more of the eating disordered women were alexithymic at pretreatment (61.3%) and post-treatment (32.3%) than the control group (5.0%), even when depression was controlled.

Results from subscale IA indicated an overall statistical difference across the three test occasions. Pairwise comparisons from admission to discharge, and from admission to 1-year post-discharge also demonstrated a statistically significant decrease in scores. However, a statistical increase in scores was found from discharge to 1-year post-discharge.

When compared to clinical norms it was found that scores dropped from the
upper half of the eating disorder range at the time of admission to out of the eating disorder range at both the time of discharge and 1-year post-discharge. This provided strong evidence that Remuda Ranch is an effective treatment center for reducing this aspect of eating disorder symptomatology. Furthermore, it provides good support for rejecting null hypothesis 1.

According to Garner, subscale Maturity Fears, refers to the “desire to retreat to the security of childhood” (1991, p. 6). He further reported that in both Anorexia Nervosa and Bulimia Nervosa maturity fears are related to the “fears of psychological and biological experiences associated with adult weight” (p. 6).

Results from subscale Maturity Fears were also statistically significant across the three test occasions. Pairwise comparisons demonstrated a significant reduction in scores from admission to discharge, and admission to 1-year post-discharge. Moreover, while scores did increase from discharge to 1-year post-discharge, the increase was not statistically significant.

When compared to clinical norms it was found that scores dropped from above the eating disorder range at admission, to within the female college sample range at discharge, and back up to just inside the eating disorder range at 1-year post-discharge. This provided support for rejecting null hypothesis 1 while suggesting some clinical relevance in the reduction of this subscale.

Subscale Asceticism, was designed to assess the tendency to seek virtue through such ideals as self-discipline, denial, restraint, and control of bodily urges. Garner (1991) has argued that the theme of asceticism was prevalent in early writings on anorexia nervosa, when thinness was seen as a virtue, but has mostly been
replaced by “drive for thinness” as the more prominent theme. Nonetheless, he stated that there still remains a subgroup of eating disorder patients whose behavior seems more directed to a belief in the virtue of oral restraint.

An overall significant statistical difference was noted for subscale A across the three test occasions. Pairwise comparisons also indicated a significant reduction in mean scores from admission to discharge, and admission to 1-year post-discharge. However, there was a significant increase in scores from discharge to 1-year post-discharge, although the scores did not return to the level they were at at the time of discharge. When scores were compared to normative data, scores across all three time periods fell in the eating disorder normative range.

While statistically significant from admission to 1-year post-discharge, these findings suggest only minimal clinical significance in the reduction of scores. This is because the scores never left the eating disorder normative sample range at any of the three test occasions. However, three points should be mentioned. First, Garner himself has admitted that this factor is presently less prevalent in eating disorder patients than, for example, drive for thinness. Second, Garner seemed to indicate that asceticism is found more often with patients who present with Anorexia Nervosa than Bulimia Nervosa. Because this study did not differentiate between diagnoses among patients, it would seem reasonable that any movement in scores would be less than if, for instance, only those patients who presented with Anorexia Nervosa were examined. Third, while it could certainly be argued that the change in scores were not to the degree which would strongly support a significant clinical reduction of this symptom, a statistical significant reduction was again found lending further support
for the rejection of null hypothesis 1.

Subscale Impulse Regulation reportedly was designed to measure the “tendency toward impulsivity, substance abuse, recklessness, hostility, destructiveness in interpersonal relationships, and self-destructiveness” (Garner, 1991, p. 6). Garner cited a number of studies that support the conceptualization of this subscale.

Indeed the disruption in interpersonal relationships has been noted above (Keel et al., 2000; Pike, 1998; Rastam et al., 1996). Moreover, Schork and colleagues (1994) examined the relationship between psychopathology and treatment outcome for anorexic patients 10 years after their hospital treatment. The researchers used the Minnesota Multiphasic Personality Inventory to assess psychopathology, and the DSM-III-R and the Categories of General Outcome to categorize patients 10 years after treatment. Results indicated a substantial interrelationship between degree of psychopathology at ten years and eating disorder severity. More importantly for the topic at hand, those patients who were still anorectic or who currently suffered from Bulimia Nervosa, typically showed serious levels of psychopathology. In particular, immaturity, impulsivity and poor frustration tolerance, suspiciousness and interpersonal distrust, and social alienation and maladjustment were noted. This was in contrast to former patients who no longer met the criteria for either Anorexia Nervosa or Bulimia Nervosa, lending some support for the importance in addressing these factors when treating eating disorders.

An overall statistical significance was found for this subscale across the three test occasions. Pairwise comparisons also revealed a significant reduction in mean
scores from admission to discharge, and admission to 1-year post-discharge. Likewise, although not statistically significant, a decrease was noted as well from discharge to 1-year post-discharge.

Comparing the mean scores to norms also revealed a significant clinical reduction in scores. At the time of admission, the mean scores fell within the eating disorder range. At the time of discharge and 1-year post-discharge, scores dropped to within the normal female college range. Furthermore, this subscale was the only subscale from the EDI-2 that demonstrated a reduction in scores from discharge to 1-year post-discharge. Considering the importance of this subscale as indicated by the literature for the treatment of eating disorders, strong support was found for the rejection of null hypothesis 1. Similarly, support was found for the efficacy of Remuda Ranch for treating this aspect of eating disorders.

The last and 11th subscale, Social Insecurity, reportedly measures the belief that social relationships are disappointing, insecure, tense, unrewarding, and generally poor in outcome (Garner, 1991). The tendency for eating disorder patients to experience interpersonal distrust, conflict, and difficulty in general has already been noted. Garner acknowledges this while further arguing that this area of dissatisfaction might have treatment implications.

Consistent with each of the above 10 subscales, an overall significant statistical difference was found for this subscale across the three test occasions. Also consistent with each of the aforementioned subscales, pairwise comparisons resulted in a significant difference from both admission to discharge, and admission to 1-year post-discharge. However, an increase in scores was noted from discharge to 1-year post-discharge.
post-discharge although the results were not statistically significant.

A comparison to normative data revealed that at the time of admission the mean scores fell in the eating disorder range. However, at both the time of discharge and at 1-year post-discharge, scores had fallen out of the eating disorder range. This again provided support for rejecting null hypothesis 1. It also suggested that Remuda Ranch was an effective treatment center for treating this aspect of eating disorders.

In summary, there was a statistically significant reduction in mean scores for all 11 factors from both admission to discharge, and admission to 1-year post-discharge. In contrast, only factor Impulse Regulation, demonstrated a decrease from discharge to 1-year post-discharge. However, of the 10 factors that demonstrated an increase in scores from discharge to 1-year post-discharge, only 6 of these factors were statistically significant (factors DT, B, I, P, IA, A). Moreover, none of these 10 factors at 1-year post-discharge returned to the level of eating disorder pathology as at the time of admission. This, coupled with the statistically significant reduction found for all 11 factors from the time of admission to 1-year post-discharge certainly provides very strong support that the reduction in mean scores on the EDI-2 was not due to chance. As a result, null hypothesis 1 was rejected. Instead, it can be said that patients' level of eating disorder symptomatology was significantly lower from admission to discharge, and from admission to 1-year post-discharge.

By comparing mean scores to clinical norms, good support exists which indicates that the reduction in mean scores was also clinically relevant. The means for four different subscales (Drive for Thinness, Interoceptive Awareness, Impulse Regulation, and Social Insecurity) dropped from the eating disorder normative sample
at the time of admission to below the eating disorder sample at both discharge and 1-year post-discharge. Two of these scales, Drive for Thinness and Impulse Regulation, measure components which seem particularly important to consider when treating eating disorders. There is evidence both in clinical practice and the research literature that patients with Anorexia Nervosa and Bulimia Nervosa struggle with a drive to be thin and with impulse control. In contrast, Bulimia subscale, which never had scores in the eating disorder range across any of the three time periods, likely would not demonstrate scores as high as some of the other subscales, nor would the reduction in mean scores tend to be as great simply because this subscale pertains more to those patients who present with symptoms related to Bulimia Nervosa than, for example, Anorexia Nervosa Restrictive Type.

In addition, a total of seven subscales (Drive for Thinness, Ineffectiveness, Perfectionism, Interoceptive Awareness, Maturity Fears, Impulse Regulation, Social Insecurity) dropped from within or above the eating disorder normative sample to below the eating disorder range at the time of discharge. That two of these subscales (Ineffectiveness, Maturity Fears) resulted in scores that moved back to the bottom of the eating disorder range, and one subscale (Perfectionism) moved back up to the range where the female college sample and the eating disorder sample overlap was not necessarily unexpected. As addressed above, previous outcome research has demonstrated a propensity for eating disorder symptomatology to substantially improve during therapy, moderately decline the first 2 years post-treatment, and then demonstrate further improvement after 2 years (Fichter & Quadflieg, 1999). This pattern makes sense considering that, in this study, patients leave an intensive
treatment center where support is available 24 hours per day, and treatment occurs on a daily basis, only to return to the environment in which either their eating disorder began, or at least was maintained, all the while likely only receiving a few hours of treatment a week. Nonetheless, no scores from any of the 11 factors at the time of 1-year post-discharge returned to the level they had been at at the time of admission.

Finally, two (Body Dissatisfaction, Perfectionism) of the six subscales (Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Maturity Fears, Asceticism) which did not drop completely out of the eating disorder normative range at 1-year post-discharge, only returned to where the college female normative range and the eating disorder normative range overlap. Consequently, only four subscales remained completely in the eating disorder range at 1-year post-discharge, and two of these subscales, Ineffectiveness and Maturity Fears, fell towards the bottom of the eating disorder range. Moreover, Garner (1991) has admitted that one of these subscales, Asceticism, applies only to a subgroup of eating disorder patients.

Hence, only Interpersonal Distress, while demonstrating a statistically significant reduction at both discharge and 1-year post-discharge, demonstrated minimal clinical significance. That is, while scores for this subscale were statistically reduced, these same scores never moved out of the eating disorder range. Nonetheless, good support was found that suggested that the Remuda Ranch Treatment Center for Anorexia and Bulimia, Inc., was an effective center for the treatment of eating disorder symptomatology.
Null Hypothesis 2

Null hypothesis 2 predicted that patients’ level of depression would not be significantly lower between admission and discharge. A statistical difference was found between scores at the time of admission and discharge. In addition, mean scores on the Beck Depression Inventory-II (BDI-II) dropped considerably from admission (29.45) to discharge (11.12). At the time of admission, scores were at the bottom of the severe range. However, by the time the subjects were discharged, mean scores had fallen to within the minimal range of depression.

This lent strong support for rejecting null hypothesis 2 for two reasons. First, there was a statistical reduction in scores between admission and discharge. Second, the reduction in scores was clinically relevant. Thus, strong support was found indicating that Remuda Ranch was an effective treatment center for reducing depression scores while the patients were in treatment.

The importance of this should not be overlooked. Studies have consistently noted high rates of dual diagnoses in women with eating disorders including various depressive disorders (De Groot et al., 1995; Pike, 1998; Podar et al., 1999; Rastam et al., 1996; Sexton et al., 1998; Wiederman & Pryor, 2000). In fact, studies have found a lifetime prevalence rate of between 36% and 68% for major depression among women with eating disorders (Schork et al., 1994).

At the same time, the reduction in depression scores was consistent with previous findings in regard to the efficacy of cognitive-behavioral programs that also incorporate a religious emphasis. For example, Probst and colleagues (1992), in a research article discussed in chapter 3, found that the cognitive-behavioral group with
religious content (RCT) was more effective in reducing depression than both the non-religious cognitive group (NRCT) or the wait list (control) group among 59 subjects. In addition, this study found that only the RCT group demonstrated a statistically significant difference in depression from the wait-list group.

Similarly, Hawkins and colleagues compared Christian cognitive-behavioral therapy (CCBT) to traditional cognitive-behavioral therapy (CBT) with a sample of 29 clinically depressed Christian adults in an inpatient setting (Hawkins et al., 1999). Both groups remained in separate programs except for art therapy, music therapy, and a weekly outing. The Christian program approached treatment from an interdenominational focus with the basis of the program being that the Bible is divinely inspired and Jesus is Lord and Savior. Consequently, the CCBT group blended Christian beliefs (i.e., biblical teachings about the role of anger) and prayer into therapy, whereas the CBT group did not.

Both groups demonstrated significant reduction levels in depression and an increase in spiritual well-being, with depression scores correlating significantly with overall change in spiritual well-being. Even when program effect, initial ratings of the importance of religion, and frequency of attendance at worship services were controlled for, the effect was still significant. In addition, the researchers found a greater improvement in spiritual well-being for patients in the CCBT group than for those in the CBT group. A trend was also found for a significant difference in the level of reduction in depression between groups ($p = .077$), with the CCBT group demonstrating more favorable results. The researchers noted the sample size and mentioned that, with a sample of 50 participants, a significant difference in the
reduction of depression would have been found at the .05 level. The authors concluded that their study provides encouragement for the use of therapy that matches and utilizes religious values.

While other studies (i.e., Johnson et al., 1994) found no difference between Christian therapy and non-Christian therapy for the treatment of depression, the efficacy for treating depression from a combined religious and cognitive-behavioral approach was nonetheless still supported. That is to say, even when no differences were found between groups, significant reductions in depression scores were still noted among subjects who received Christian cognitive-behavioral therapy. Hence, support exists which suggests that the Remuda Ranch Treatment Center for Anorexia and Bulimia, Inc., was an effective center for the treatment of depression during a patient’s stay.

Null Hypothesis 3

Null hypothesis 3 predicted that the patients’ level of spiritual distress would not be significantly lower from admission to discharge. Instead, both a significant statistical and clinical reduction in spiritual distress scores was found. At the time of admission the patients’ mean score of 25.86 fell at the bottom of the moderate distress range. However, at the time of discharge, the mean score of 15.24 fell to the no distress range, resulting in null hypothesis 3 being rejected.

This finding is consistent with previous research. For example, the article discussed above found that Christian cognitive-behavioral therapy not only helped to reduce depression levels, it also helped to increase spiritual well-being more effectively than the non-Christian cognitive behavioral group (Hawkins et al., 1999).
This finding is important for a number of reasons. First, there appears to be an interest in addressing religious and spiritual factors by clients and patients (Bergin & Jensen, 1990; Johnson et al., 1994; Mitchell et al., 1990; Worthington et al., 1996). Second, there appears to be a positive relationship between religious participation and general health (Ai et al., 1998; Gartner et al., 1991; Levin, 1994). Third, mental health has been positively associated with religious and spiritual factors (Gartner et al., 1991; Harris, Thoresen, et al., 1999; Mitchell et al., 1990). Fourth, and more specifically, some evidence exits, albeit it rather sparse, that religious and spiritual beliefs and eating disorder symptomatology may interact (Joughlin et al., 1992; Mitchell et al., 1990; Richards et al., 1997). Finally, a number of follow-up surveys which asked patients what they thought was helpful in their recovery found, to the surprise of many of the researchers, that the respondents often answered that religious and spiritual factors had been helpful, even when such answers were not sought (Mitchell et al., 1990; Richards et al., 1997). Hence, reducing a patient's level of spiritual distress may be an important treatment factor when working with women with eating disorders.

Null Hypothesis 4

Null hypothesis 4 predicted that depression and spiritual distress scores would not predict treatment outcome. In other words, this hypothesis predicted that depression and spiritual distress would not significantly account for the variance in eating disorder symptomatology. This null hypothesis was rejected. Indeed, in the two-predictor regression model, support was found across all three test occasions which suggested that depression and spiritual distress do in fact predict treatment
outcome. However, in the two-predictor regression model, only depression as measured by the BDI-II was a significant predictor of eating disorder symptomatology as measured by the EDI-2. This occurred during the first and third test occasion. The first test occasion examined whether depression and spiritual distress scores at the time of admission significantly predicted treatment outcome at the time of discharge. The third test occasion examined whether depression and spiritual distress scores at the time of discharge predicted treatment outcome at 1-year post-discharge. In both occasions depression was the only significant predictor while spiritual distress was not. Moreover, a closer look at the data revealed that spiritual distress added vary little to the variance in treatment outcome with depression as a second independent variable. Consequently, depression scores appeared to be a more powerful predictor for treatment outcome during these two test occasions.

For the second test occasion, neither independent variable at the time of admission significantly accounted for the variance in eating disorder scores at 1-year post-discharge apart from the other variable. Only when both depression and spiritual distress were utilized was statistical significance found. Furthermore, and in contrast to the other two test occasions, spiritual distress accounted for more of the variance in EDI-2 scores than did depression.

One possible reason that spiritual distress, unlike depression, did not significantly predict treatment outcome in the two-predictor model with depression scores as a second independent variable may be the relatively high correlation that spiritual distress scores from the RRSI had with depression scores from the BDI-II. A glance at Table 34 above indicates that the RRSI and the BDI-II have a correlation.
of .589 at the time of admission and .594 at the time of discharge. Hence there is a relatively large overlap in what these two instruments are measuring. Consequently, it is possible, though speculative at this point, that spiritual distress might significantly account for the variance in eating disorder symptomatology in a one-predictor regression model. Nonetheless, in the two-predictor model, depression scores as measured by the BDI-II appeared to be the better predictor of treatment outcome.

Implications for Treatment and Research

Treatment

With the mortality rate for Anorexia Nervosa ranging anywhere from 3 to 8%, and the mortality rate for Bulimia Nervosa as high as 5%, finding the most effective and efficient method for treating eating disorders is extremely important (Arnow, 1999; Crow et al., 1999; Fichter & Quadflieg, 1999; Hsu, 1990; Hsu et al., 1992; Johnson et al., 1996; Keel et al., 2000; Sullivan, 1995). Previous research has suggested that cognitive behavioral therapy is the most effective method for treating eating disorders, particularly when coupled with pharmacological interventions (Agras et al., 1989; Garner et al., 1993; Johnson et al., 1996; Peterson & Mitchell, 1999; Thackwray et al., 1993). Yet the remission rates for individuals with eating disorders still pose a serious threat to the lives of these individuals.

Recently there has been a renewed interest in the way religious and spiritual factors interact with physical and mental health issues. Indeed there is evidence that by addressing these factors during treatment, outcome data are more favorable (Ai et al., 1998; Gartner et al., 1991; Harris, Thoresen et al., 1999; Levin, 1994;
Loewenthal et al., 2000; Mitchell et al., 1990). In addition, some evidence exists which seems to suggest that Christian cognitive-behavioral therapy is just as effective, and perhaps more so, than non-Christian cognitive-behavioral therapy for treating depression, spiritual wellness, social adjustment, and general symptomatology (Harris, Thoresen, et al., 1999; Hawkins et al., 1999; Johnson et al., 1994; Probst, 1980; Probst et al., 1992). Nonetheless, almost no empirical evidence exists which examines the relationship between eating disorders and religious or spiritual factors. This is in spite of the evidence that patients believe these factors can be an important part of their recovery and hence wish for them to be addressed (Mitchell et al., 1990; Richards et al., 1997).

Remuda Ranch Center for Anorexia and Bulimia, Inc., is an inpatient treatment center for women with eating disorders that incorporates Christian cognitive-behavioral therapy into its treatment approach. Results from null hypothesis 1 clearly suggested that Remuda Ranch was an effective hospital for the treatment of eating disorders, at least in the short-term. In short, all 11 subscales from the EDI-2 were significantly reduced between admission to discharge. This further implied that Christian cognitive-behavioral therapy can be an effective treatment modality when working with individuals with eating disorders.

However, only one factor demonstrated a decrease between discharge and 1-year post-discharge. While this finding is not unexpected, it nonetheless brings up some important treatment considerations when trying to determine how to help patients' eating disorder symptomatology decrease on a more continual basis. For example, a greater emphasis on helping the patient secure a solid aftercare plan before
discharging from the Remuda Ranch Treatment Centers might help to keep post-discharge scores lower. Patients might also benefit if a greater emphasis were placed on experiential treatment modalities (i.e. eating at local restaurants with staff verses at the hospital) that more closely resemble situations they are likely to encounter once discharged. Finally, scores at 1-year post-discharge might be lowered if patients were instructed on how to develop a support network similar to what they find while in treatment. For example, finding other peers who currently or recently are recovering from an eating disorder and doing so successfully might be helpful.

Results from null hypotheses 2 and 3 suggested that a Christian based cognitive-behavioral treatment program such as Remuda Ranch can be an effective hospital for the treatment of depression and spiritual distress over the duration of treatment. Results from null hypothesis 4 further suggested that depression and spiritual distress do in fact significantly account for some of the outcome variance in eating disorder symptomatology. In other words, null hypothesis 4 found that depression and spiritual distress significantly predicted treatment outcome. However, of the two independent variables, it was found that depression was the more powerful and better predictor (than spiritual distress) in treating eating disorder symptomatology. In fact, in the two-predictor regression model, depression was the only significant predictor of treatment outcome. Spiritual distress was not a significant predictor of eating disorder symptomatology in the two-predictor model with depression as a second independent variable. Hence, depression appears to be the better predictor of treatment outcome.
This suggests that Remuda Ranch might want to place a greater emphasis on treating depression during a patient’s stay than spiritual distress. This is not to say, however, that changes should be made pertaining to the spiritual component of Remuda Ranch. Indeed, hypothesis 1 already provided support for the effectiveness of Remuda Ranch, which incorporates a strong spiritual component and biblical emphasis in its treatment modality, in treating eating disorders. Nonetheless, results from hypothesis 4 in particular would seem to indicate that depression is the more powerful predictor of treatment outcome than spiritual distress and thus the more important variable to treat.

Research

Future research in the area of eating disorders needs to continue to be conducted to verify or disprove the findings of this study. In this study, hypothesis 1, 2, and 3 provided support for the efficacy of a Christian cognitive-behavioral treatment program in treating eating disorders, depression, and spiritual distress. However studies need to be conducted which compare the efficacy of Christian cognitive-behavioral therapy to non-Christian cognitive-behavioral therapy among individuals with eating disorders. To date, no study exists which compares the efficacy of these two modalities in treating eating disorders although this study lends support for the effectiveness of Christian cognitive-behavioral therapy in treating females with eating disorders.

Future studies also need to expound on the relationship between depression, spiritual distress, and treatment outcome for patients with eating disorders. Presently, no direct link has been made between treating depression or spiritual distress and
lower eating disorder symptomatology. That is to say, can a cause and effect relationship be established between treating depression or spiritual distress, and lower eating disorder symptomatology when all other factors are controlled for?

Hypothesis 4 from this study found that depression was the only significant predictor of treatment outcome in a two-predictor model. However, the failure in spiritual distress to significantly account for the variance in eating disorder symptomatology with depression as a second independent variable may be due to the rather large correlation found between depression and spiritual distress. Indeed, previous findings have found a relationship between depression and spiritual well-being. For example, Hawkins and colleagues, in their study of 29 clinically depressed Christian adults admitted to an inpatient hospital, found that there was a significant correlation between a reduction in depression and an improvement in spiritual well-being (Hawkins et al., 1999). Fehring and colleagues looked at the psychological and spiritual well-being of college students in response to life change and concluded that spiritual well-being, existential well-being, and spiritual outlook showed strong inverse relationships with negative mood states (Fehring et al., 1987). Ellison and Smith noted that spiritual well-being has been found to be a mediator between depression in response to life changes (1991). Finally, when reviewing 16 studies, Westgate found that in 9 of the studies a negative correlation existed between depression and spiritual wellness (1996). Hence, there is the possibility that spiritual distress might significantly account for the variance in eating disorder symptomatology apart from depression scores. That is, though speculative at this
point, spiritual distress might significantly predict treatment outcome in a 1-predictor regression model.

Previous research has established an inverse relationship between depression and spiritual well-being. This study has established a relationship between depression and spiritual distress and treatment outcome. What is not as clear from this study, and what needs to be further addressed in the future, is how depression, spiritual distress, and treatment outcome are related and thus interact with each other.

Hence, while cause and effect have not been established, it still stands to reason that treating depression and spiritual distress may be an important treatment issue to address with individuals with eating disorders. Moreover, this study provided strong evidence that Christian cognitive-behavioral therapy can be an important treatment modality for treating eating disorder symptomatology, depression, and spiritual distress. This in turn lends support for the need to assess the spiritual state of patients who admit with eating disorder symptomatology.

The development of the Remuda Ranch Spiritual Inventory appears to meet this need. Statistical results indicate that this instrument has good to excellent validity and reliability. This in turn lends some support that the Remuda Ranch Spiritual Inventory may be a useful instrument for purposes of assessing the patient’s level of spiritual distress at the beginning of treatment in order to determine if spiritual distress is an important treatment issue that should be addressed while the patient is in therapy.

Future studies also need to include males. While there is approximately a 10 to 1 ratio of females to males with eating disorders, the severe consequences of an
eating disorder on an individual warrants looking at how males might be affected, and what is the best treatment modality for this gender. Finally, future studies need to examine how spiritual issues are related to treatment outcome for all patients with eating disorders regardless of religious or spiritual beliefs.
APPENDIX A

BECK DEPRESSION INVENTORY-II

SCORING RANGE
Beck Depression Inventory-II

Scoring Range

<table>
<thead>
<tr>
<th>Total Scores</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-13</td>
<td>Minimal</td>
</tr>
<tr>
<td>14-19</td>
<td>Mild</td>
</tr>
<tr>
<td>20-28</td>
<td>Moderate</td>
</tr>
<tr>
<td>29-63</td>
<td>Severe</td>
</tr>
</tbody>
</table>
### Eating Disorder Inventory-2
### Normative Scoring Range

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Female College Range</th>
<th>Eating Disorder Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive for Thinness (DT)</td>
<td>4-7</td>
<td>13-16</td>
</tr>
<tr>
<td>Bulimia (B)</td>
<td>1-2</td>
<td>9-12</td>
</tr>
<tr>
<td>Body Dissatisfaction (BD)*</td>
<td>9-15</td>
<td>15-18</td>
</tr>
<tr>
<td>Ineffectiveness (I)</td>
<td>1-4</td>
<td>9-13</td>
</tr>
<tr>
<td>Perfectionism (P)*</td>
<td>4-8</td>
<td>7-11</td>
</tr>
<tr>
<td>Interpersonal Distrust (ID)</td>
<td>1-3</td>
<td>4-7</td>
</tr>
<tr>
<td>Introceptive Awareness (IA)</td>
<td>1-5</td>
<td>9-13</td>
</tr>
<tr>
<td>Maturity Fears (MF)*</td>
<td>2-3</td>
<td>3-6</td>
</tr>
<tr>
<td>Asceticism (A)</td>
<td>2-5</td>
<td>6-10</td>
</tr>
<tr>
<td>Impulse Regulation (IR)</td>
<td>1-3</td>
<td>4-8</td>
</tr>
<tr>
<td>Social Insecurity (SI)</td>
<td>2-4</td>
<td>7-10</td>
</tr>
</tbody>
</table>

*Female College Normative Range and the Eating Disorder Normative Range overlap*
REMUDA RANCH SPIRITUAL INVENTORY

FORM A

IMPORTANT: This inventory is for persons who currently have or have had a personal relationship with Jesus Christ at some time in their lives. If you have never had a personal relationship with Jesus Christ, please fill out FORM B instead.

Below are some groups of statements. For each group, circle the number next to the statement that best describes your beliefs and feelings. Circle ONLY ONE statement per group. If more than one statement applies, circle the one which is most true for you. Please read all statements before choosing an answer.

1. 0. I believe in a personal God and have a close personal relationship with Him.
   1a. I believe in a personal God, and I used to have a close personal relationship with Him.
   1b. I believe in a personal God, but have never had a close personal relationship with Him.
   2. I have begun to doubt that there is such a thing as a personal God.
   3. I no longer believe in a personal God.

2. 0. I know God is loving, and I often feel His love for me in my heart.
   1. I know God is loving, and I know He loves me, but I seldom feel like He loves me.
   2. I know God is loving, but I have a difficult time believing that He loves me.
   3. If there is a God, He isn't very loving.

3. 0. I have been taught that Jesus loves me just as I am, and with all my heart I believe that He does love me just as I am.
   1. I have been taught that Jesus loves me as long as I act in a way that is pleasing to Him, but I have come to believe that He loves me just as I am.
   2. I was taught with words that Jesus loves me just as I am, but the underlying message I was given and have absorbed is that I have to live up to certain standards to be truly loved by him.
   3. Even if Jesus is there -- there is no way He could love me.

4. By and large, the Christians I knew in my childhood and teenage years were:
   0. Loving people who demonstrated God's grace and love.
   1. Just like everyone else.
   2. Legalistic and judgmental.
   3. Abusive and self-righteous.

5. 0. My memories of church when I was young are wonderful memories of warmth and love.
   1. I remember going to church as a child, but I didn't particularly like it.
   2. I did not go to church when I was growing up.
   3. Growing up, I was forced to go to a legalistic church where I felt a great deal of shame.

6. In times of pain and need:
   0. I have been helped by and felt the love of several people who openly expressed a faith in Jesus Christ.
   1. I have been helped by and felt the love of at least one person who openly expressed a faith in Jesus Christ.
   2. I have never been helped by anyone claiming to have faith in Jesus Christ.
   3. Christians seem like the least likely people to help when you are hurting.
7. 0. I can feel the presence and love of Jesus Christ in my life.
   1. I experienced the love of Jesus Christ once upon a time, but He now seems very distant to me.
   2. Thus far in my life, I have never experienced the love of Jesus Christ in a personal way.
   3. Jesus is just not a part of my life, and I doubt if He ever will be.

8. 0. At least one of my parents was a loving Christian who taught me, both by words and by example, about the love and grace of Jesus Christ.
   1. At least one of my parents was a Christian and treated me well, but seldom talked about Jesus.
   2. Neither of my parents were Christians.
   3. At least one of my parents was a Christian, and yet, I felt like I could never measure up to this parent's standards or expectations.

9. 0. I pray pretty much everyday. Prayer is a very important part of my life.
   1. I pray pretty much everyday, and sometimes it helps.
   2. I pray pretty much everyday, but I almost never get anything out of it.
   3. I believe that prayer is just a waste of time.

10. 0. I have at least one caring/loving person in my life whom I regularly relate to on a spiritual level (for example -- I have someone I pray with, or study the Bible with, or talk to about what's going on with me spiritually).
    1. I have someone to whom I sometimes talk about spiritual things.
    2. I do not have people in my life whom I regularly relate to on a spiritual level, but I'm sure it would help if I did have someone.
    3. I have no interest in talking with anyone about spiritual issues.

11. 0. I regularly attend church (or meetings with other Christians) for Bible study, prayer, and/or worshipping God, and I usually get a great deal out of these meetings.
    1. I sometimes attend church (or meetings with other Christians) for Bible study, prayer, and/or worshipping God.
    2. I seldom attend church or meetings with other Christians.
    3. I have no interest in attending church or any religious meetings.

12. Churches are...
    0. a place where I find comfort and fellowship.
    1. okay.
    2. filled with hypocrites.

13. 0. I read the Bible almost everyday because I love reading about God, and because reading the Bible helps me a great deal in my day to day life.
    1. Although I don't read the Bible daily, when I do I usually feel blessed.
    2. I never, or almost never, read the Bible.
    3. I feel like I should read the Bible and I feel ashamed and guilty when I don't.

14. 0. I love fellowshipping with other Christians.
    1. I would like to fellowship with other Christians but recently I can't seem to find a place where I fit in.
    2. I have always had a very difficult time relating to people who call themselves Christians.
    3. I have absolutely no interest in being with Christians.

15. 0. Even though things get tough sometimes, God has been faithful and true --He has never let me down.
    1. There are times when I feel like God has let me down and I get angry with Him, but I know He hasn't really let me down.
    2. I can't say that God has let me down, because I have never really trusted Him for anything.
    3. Right now I believe that God, if He's even there, has really let me down.

GO ON TO THE NEXT PAGE...
16. I would describe myself as:
   0. A born again Christian.
   1a. A Christian
   1b. Curious about Jesus Christ.
   2. Having once been a Christian, but now given up on being a Christian.
   3. Having absolutely no interest in Jesus Christ.

17. If Jesus Christ suddenly appeared before me I would feel:
   0. ecstatic.
   1. shocked.
   2. ashamed.

18. I have:
   0. never been abused (physically, sexually, or emotionally) by someone claiming to be a Christian.
   1. been mildly abused (physically/sexually/emotionally) by someone claiming to be a Christian.
   2. been severely or repeatedly abused (physically, sexually, or emotionally) by someone claiming to be a Christian.

19. Christians who have emotional problems are:
   0. Often just as spiritually faithful as any other Christian.
   1. Weaker than other Christians, but loved just as much by God.
   2. Usually reaping what they have sown.

20. When I think about my sins and those of other people,
   0. usually feel God’s forgiveness and I can usually offer forgiveness to other people as well.
   1. I know about God’s forgiveness, but I don’t always feel forgiven and have trouble forgiving other people.
   2. I frequently feel God’s judgement and condemnation for myself or others.

21. When people talk about the love of Jesus Christ I feel...
   0. joyful.
   1. nothing.
   2. shame.

22. Lately...
   0. I have found myself having a strong urge to grow closer to God and to spend more time with people who love Him.
   1. I have found little change in my spiritual interests.
   2. I have found myself wanting to move away (or stay away) from anything to do with God.

23. I feel.....
   0. spiritually strong.
   1. uncertain about my spiritual life.
   2. ashamed of who I am.

24. Which statement best describes your Christian life:
   0. Wonderful.
   1a. Good.
   1b. Just okay.
   2. Non-existent.
   3. Full of shame.

GO ON TO THE NEXT PAGE...
25. Listening to music which praises God...
   0. lifts my spirits.
   1. is boring.
   2. makes me want to run away.

26. 0. The church I attend demonstrates the grace and love of Jesus Christ.
   1. The church I attend is friendly, but people don’t really get to know each other all that much.
   2. I seldom, if ever, attend church.
   3. I go to a church where there is a lot of pressure to act in a certain way in order to be Accepted and/or loved.

27. Spiritually...
   0. I really want to grow more and more like Jesus.
   1. everything is about the same as always.
   2. I feel ashamed, guilty, or unworthy.

28. When I have faced temptations,
   0. I have found that God has usually provided a way out, whether or not I have taken it.
   1. I have sometimes felt all alone and have seen no way out.
   2. I have almost always felt all alone and overwhelmed, and I do not believe that God has provided a way out.

Below are some statements. Please circle the number to the right of the statement that indicates whether it is generally very true of you, somewhat true of you, or not true of you.

<table>
<thead>
<tr>
<th>Very True of Me</th>
<th>Somewhat True of Me</th>
<th>Not True of Me</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

29. On an emotional level, I feel like—no matter how hard I try—I just cannot please God.

30. I believe I would have very few problems if I could just get right with God.

31. I have been told by people who are important to me that my current problems are due to my sins and/or my lack of faith.

32. I feel like I am a disappointment to God.

33. I believe I would be able to overcome all my problems if I just had more faith.

34. I believe God takes pleasure in giving me trials to deal with.

35. I have promised God over & over that I would stop doing some behavior which I know He is not pleased with. Yet I keep going back and doing the same thing again & again. Because of this, I just cannot believe that I am acceptable in God’s eyes.

36. I feel like God is fed up with me.

37. I believe that if I just worked harder at being a better Christian, I wouldn’t get so depressed.
38. It’s me and God—I don’t really need anyone else. 
39. I have failed God so many times, it’s difficult for me to pray or want to spend time with Him. 
40. I know God helps everyone, but I feel so far gone that I feel like I am without hope. 
41. I believe that Christians should not let others see when they are emotionally pained, because it is a bad witness to the power of Jesus Christ. 
42. I have been so hurt in life that it is difficult for me to believe there is a loving God who cares about me. 
43. When I am around people who appear to be good Christians I feel ashamed of myself or jealous. 
44. Shame is what I feel most of the time. 
45. Developing my spirit is less important than developing my body and mind. 
46. I do not devote, nor do I plan to devote, significant time or effort to my spiritual growth. 

47. Please circle the number on the line below that indicates how close to God or far away from God you have felt this past week including today.

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APPENDIX D

REMUDA RANCH SPIRITUAL INVENTORY: 35-QUESTION-VERSION

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Reliability Coefficients: N = 285, Alpha = .9391
APPENDIX E

REMUDA RANCH SPIRITUAL INVENTORY: 35-QUESTION-VERSION

UNROTATED FACTOR LOADINGS
Remuda Ranch Spiritual Inventory: 35-Question-Version  
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Extraction Method: Principal Component Analysis

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INFORMED CONSENT FOR PARENT
REMUDA RANCH LIFE CHANGES STUDY

Patient's name (print clearly):

I hereby consent to or decline my (above-named) daughter's participation in a study that collects information on the outcome of my daughter's treatment at Remuda Ranch. I understand that the individual responsible for this project is a Remuda Ranch employee, Edward J. Cumeila, Ph.D., a Licensed Psychologist (AZ#1859).

I understand that participating in this study involves the following: 1) the additional use for purposes of the study of any assessments or psychological testing my daughter completes as part of her treatment program; 2) my daughter's completion of additional non-treatment-related questionnaires, which are not expected to take more than 15 minutes of her free time while at Remuda Ranch; 3) my daughter's completion of a short questionnaire or questionnaires to be received in the mail 12 months following her discharge from Remuda Ranch, which are not expected to take more than 45 minutes of her time; 4) and my own completion of a short questionnaire or questionnaires about my life experiences and my daughter's symptoms 12 months following her discharge from Remuda Ranch, which are not expected to take more than 20 minutes of my time.

I understand that all information collected for this study will be coded numerically; that neither my name nor my daughter's name will appear on any forms except for this consent form; and that all forms will be seen only by the researcher and necessary project staff. All forms are therefore completely confidential and will be stored and handled with respect for the laws and ethics covering participant confidentiality.

I understand that any information I or my daughter provide may be presented or published in combination along with similar data provided by other participants in this study. Therefore, no information that could possibly identify me or my daughter as individuals would ever be made available in such formats. I understand that a summary of the results will be published in the Remuda Ranch alumni newsletter one year following completion of the questionnaires.

I realize that neither I nor my daughter are not expected to derive therapeutic treatment from participation in this study. I understand that participation in this study costs nothing and that monetary payment may or may not be provided for our participation in this study. I understand that possible benefits of our participation involve an opportunity to reflect on the recovery process, to review my daughter's experiences at Remuda from the point of view of being back home, and to offer our opinions about how Remuda might change its program to better help people with eating disorders. I understand that the anticipated risks of this study are expected to be minimal but may involve a small amount of discomfort produced by my or my daughter's remembrance or review of difficult life experiences. If I do experience discomfort and would like to speak with someone about this or about my eating disorder in general, I understand that I can best direct my concerns to my counselor or therapist, or to my daughter's aftercare team or therapist, but that if I do not have appropriate supportive/therapeutic relationships I may also freely contact Remuda Ranch's Aftercare Specialist at 1-800-445-1900.

I understand that my participation as well as my daughter's participation in this study is fully voluntary and that I and/or my daughter may discontinue our participation at any time without consequences by informing Dr. Cumeila or Remuda's Department of Research, Outcomes, & Quality either in writing or by phone of the intention to discontinue. Using the following address or phone number: Remuda Ranch, 1 E. Apache St., Wickenburg, AZ 85390; Phone: 1-800-445-1900.

We thank you again for your willingness to be included in this study and to give us your feedback on your experiences at Remuda Ranch. We hope you will find your participation a meaningful part of your recover.

Accept  _Decline  my daughter's and my participation in this study.

Signature of Parent  Date  Your phone number

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REFERENCE LIST


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Levin, J. S. (1994). Religion and health: Is there an association, is it valid, and is it causal? *Social Science and Medicine, 38*(11), 1475-1482.


Curriculum Vita

Robert A. Darden
Remuda Ranch Center For Anorexia and Bulimia, Inc.
One East Apache St.
Wickenburg, AZ  85390
(520) 684-3004

Education

Andrews University, 2002
Ph.D. Counseling Psychology

Northern Arizona University, 1994
M.A. Psychology

Fuller Theological Seminary, 1988

Lee University, 1987
B.S. Business

Professional Experience

2000-2002  Primary therapist at Remuda Ranch Center for Anorexia and Bulimia, Inc., Wickenburg AZ.

1998-1999  Intern Counselor at Lake Forrest College, Lake Forrest IL.

1995-1998  Clinical therapist at Turning Point, Inc., South Bend, IN.

1995-1997  Doctoral counseling student and masters student supervisor at Andrews University Counseling and Psychological Services Center, Berrien Springs, MI.

1993-1994  Mental health worker at Aspen Hill Hospital, Flagstaff, AZ.

1993-1994  Graduate research assistant for psychological testing.