

STRESS, ANXIETY, DEPRESSION, AND LONELINESS OF
GRADUATE COUNSELING STUDENTS: THE
EFFECTIVENESS OF GROUP COUNSELING
AND EXERCISE

by

JONNA LYNN BYARS, B.A., M.Ed.

A DISSERTATION

IN

COUNSELOR EDUCATION AND SUPERVISION

Submitted to the Graduate Faculty
of Texas Tech University in
Partial Fulfillment of
the Requirements for
the Degree of

DOCTOR OF PHILOSOPHY

Approved

Loretta J. Bradley
Chairperson of the Committee

Gerald Parr

Mary Tallent-Runnels

Accepted

John Borrelli
Dean of the Graduate School

December, 2005

Copyright 2005, Jonna Byars

ACKNOWLEDGEMENTS

Several individuals have facilitated my learning and growth throughout my years of graduate and dissertation work. I owe many thanks to my committee for their encouragement, guidance, and support. A special thanks to Dr. Bradley for being such an excellent mentor and advocate throughout the years.

Thank you to the graduate students who participated in this study. This study would not have been possible without their donation of time and energy. Thank you to the friends I made while completing this journey, Drs. Andrew Young and Kaylene Brown. They both provided me with an enormous amount of emotional and professional support. Their friendships mean the world to me.

Thank you to my parents for their many, many years of patience and encouragement. I thank them for instilling in me the desire to succeed, an appreciation of academics, and the tenacity to finish things to completion. Without my parents support and belief in me I would not have been able to complete this process.

Thank you to my husband, Tim, who is the best thing that ever happened to me. His support, patience, and solidness helped me to stay grounded and focused on my goal. He always believed in me, even when I doubted myself. Thank you to my daughter Laura Michelle for reminding me to take myself less seriously. She never fails to remind me what is important in this life.

Thank you to God for blessing me with the skills and opportunities to complete this process. Without Him working through me, this would have only been a dream.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	ii
ABSTRACT	vii
LIST OF TABLES	ix
CHAPTER	
I. INTRODUCTION	1
Statement of Problem	2
Significance of Study	6
Purpose of Study	12
Research Questions	12
Definitions of Terms	13
Limitations of Study	14
Summary	23
II. REVIEW OF THE LITERATURE	24
Introduction	24
Overview of Stress	24
Effects of Stress	27
Models of Stress	28
Graduate Students and Stress	23
Stress in the Human Services Professions	31
Overview of Social Support	37
Social Support and Stress	39
Social Support and Graduate Student Stress	41
Overview of Group Counseling	45
Therapeutic Factors of Group Counseling	51
Group Counseling, Depression, and Anxiety	59
Support Groups and Graduate Students	71
Overview of Exercise	81
Models of Exercise	84
Exercise and Depression	88

	Exercise and Anxiety	94
	Exercise and Stress	102
	Exercise and Graduate Students	106
	Summary	112
III.	METHODOLOGY	114
	Introduction	114
	Variables in study	114
	Participants	114
	Instrumentation	116
	Demographic Questionnaire	116
	Beck Depression Inventory	117
	Beck Anxiety Inventory	119
	UCLA Loneliness Scale	122
	Perceived Stress Scale	123
	Open-Ended Questions	124
	Procedures	125
	Hypothesis and Research design	128
	Statistical Analysis	129
IV.	RESULTS	131
	Research Design	131
	Demographic Information	143
	Reliability of Scores	138
	Descriptive Statistics for Dependent Variables	139
	Symptoms of Depression	140
	Symptoms of Anxiety	141
	Symptoms of Loneliness	142
	Symptoms of Stress	143
	Covariates	144
	Results of Hypotheses Testing	145
	Results of Follow-up ANCOVAs	146
	Results of Post Hoc Comparisons	148

Control Group vs. Exercise Group	149
Control Group vs. Group Counseling Group	159
Group Counseling Group vs. Exercise Group	150
Summary of Statistical Analysis	151
Open Ended Questions	152
Group Counseling Group	152
Exercise Group	156
V. DISCUSSION	160
Summary of Investigation	160
Discussion of Findings	164
Exercise and Depression	164
Exercise and Anxiety	166
Exercise and Stress	167
Exercise and Loneliness	169
Counseling and Depression	170
Group Counseling and Anxiety	173
Group Counseling and Stress	174
Group Counseling and Loneliness	178
Summary of Discussion	180
Implications of the Study	182
Implications for Future Research	182
Implications for Practice	183
Implications for Training	184
Limitations	186
Sample Limitations	186
Instrumentation Limitations	187
Methodology Limitations	188
Recommendations for Future Research	190
REFERENCES	192
APPENDICES	228
A. Informed Consent	228

B. Demographic Questionnaire	230
C. Beck Depression Inventory	231
D. Beck Anxiety Inventory	234
E. UCLA Loneliness Scale	235
F. Perceived Stress Scale	236
G. Open-Ended Questions	238

ABSTRACT

Less than 50% of those who enter graduate school complete their advanced degree. The stressors graduate students often face include interpersonal stressors, life and role transition stressors, financial concerns, employment problems, and time constraints. Despite the large amount of investigations examining the stress levels of graduate students, few propose a solution. This study was conducted to fill this gap in the literature by implementing group counseling and exercise into the lives of master's level graduate students in the field of counseling.

This study examined the effectiveness of group counseling and exercise in alleviating the symptoms of stress, anxiety, depression, and loneliness in graduate counseling students. Participants in this study self-selected into one of three treatment groups: exercise, group counseling, or control. All participants were enrolled in a master's level counseling class in a CACREP accredited program. A total of 57 graduate students participated in this study; 17 were in the group counseling treatment group, 19 were in the exercise treatment group, and 21 were in the control treatment group. Participants in the group counseling group met for 1.5 hours per week for 10 weeks and participated in group counseling led by a doctoral level counselor. Participants in the exercise group exercised for 45 minutes twice per week for 10 weeks. Participants in the control group received no treatment for 10 weeks.

This study utilized a quasi-experimental nonrandomized pretest/posttest design. MANCOVA was used to test for significance among the groups. The following instruments were employed at both pretest and posttest: (1) the Beck Depression

Inventory, (2) the Beck Anxiety Inventory, (3) the Perceived Stress Scale, and (4) the UCLA Loneliness Scale. Results of this study indicate both group counseling and exercise significantly reduce the symptoms of stress, anxiety, and depression in graduate counseling students as compared to the control group. No significant differences were found between the effectiveness of group counseling and exercise in alleviating symptoms of anxiety, stress, and depression in graduate counseling students. Results also suggest that group counseling is effective for alleviating symptoms of loneliness in graduate counseling students as compared to no treatment and exercise treatment. A comparison of the results of this study to previous research is provided, along with implications of this research for training, practice, and future research.

LIST OF TABLES

4.1 Demographic Data: Gender, Ethnicity, and Marital Status	133
4.2 Demographic Data: Commute, Employment, Psychotropic Medication, and Hours Enrolled	134
4.3 Demographic Data by Group	137
4.4 Age Ranges of Participants	138
4.5 Descriptive Statistics for Beck Depression Inventory	141
4.6 Descriptive Statistics for Beck Anxiety Inventory	142
4.7 Descriptive Statistics for UCLA Loneliness Scale	143
4.8 Descriptive Statistics for Perceived Stress Scale	144
4.9 Effectiveness of Pretests as Covariates	148
4.10 Tests of Between Subjects Effects	150
4.11 Post Hoc Comparison of Exercise Group and Control Group	149
4.12 Post Hoc Comparison of Group Counseling and Control Group	150
4.13 Post Hoc Comparison of Group Counseling and Exercise Group	151

CHAPTER I

INTRODUCTION

From the time Michelle was in high school, she knew she wanted to be in the counseling profession. She knew she wanted to help others. Michelle completed her bachelor's degree with no problem, even graduating with honors. She also had no difficulty getting accepted into a quality graduate counseling program. However, about midway through her graduate degree, she began experiencing serious doubts about her ability to finish the program, reservations about the field she was studying, and feelings that life was passing her by while she was getting her graduate degree. Like many other students, Michelle was working her way through graduate school and had a family with whom she wished to spend time. Michelle was facing some of the common stressors of graduate school.

Michelle's experiences are not unlike those of many students who decide to pursue an advanced degree. Unfortunately, many quality students are lost to the stressors Michelle is facing. In fact, the dropout rate among graduate students is very high. Less than 50% of those who enter graduate school persist long enough to earn an advanced degree (Bair & Haworth, 1990; Benkin, 1984; Dinham & Scott, 1999; Ferrer de Valero, 2001; Golde, 2004; Hodgson & Simoni, 1995; Mallinckrodt, Leong, & Fretz, 1985; Smallwood, 2004)

Graduate school can be challenging. Not only is the work required to get the degree difficult and time consuming, the age at which most people pursue a graduate education is usually a time of multiple and rapid life changes. For instance, many people

are newly married or contemplating marriage, while other students have children or are in the process of starting a family. This is also the time students often find themselves “on their own” financially. That is, they no longer receive financial support from their parents and find themselves entering the workforce, often for the first time. Sometimes the effects of stress in graduate school manifest themselves more ominously. Consider the infamous story of Sterliski, a graduate student at Stanford who killed his graduate advisor with a hammer. At trial, a psychiatrist testified that “Sterliski suffered from delusion of persecution that stemmed from his frustration with writing his dissertation” (Selye, 1983 p.1). Of course, such extreme cases are rare, but the need to understand the potentially devastating effects of stress among graduate students is clear.

Statement of Problem

Stress has been labeled “one of the most common problems...that attacks all of us” (McNerney, 1974, p.22) and “America’s leading adult health problem” (Rosch, 1991, p. 41), and “the number one cause of disease and illness”(Selye, 1974, p.3). Authorities in both the United States and Great Britain have stated that as many as 70% of all patients treated by physicians are suffering from conditions that have their roots in unrelieved stress (Blythe, 1973).

Greenberg and Valletutti (1980) state “whether it is positive or negative, stress causes a reaction in the body. It affects the cardiovascular, digestive, and musculoskeletal systems. Stress is the primary cause of headaches, backaches, indigestion, nausea, heart attacks, hypertension, ulcers, colitis, constipation, diarrhea, diabetes, allergies and

arthritis. Stress has also been linked with psychosomatic illnesses, enuresis, anorexia nervosa, and alcoholism” (p. 2).

Stress affects all people to some degree every day. Driving in traffic, crossing a busy intersection, watching the news, and pure joy are enough to activate the body’s sympathetic nervous system, which is the primary instrument by which stress is produced. For most people, the stressors they encounter are positive, and they respond to them constructively. For others, the stressors are negative. How people respond to stressors determines how they are affected emotionally, physically, and mentally. Each person responds to stress differently. Stressors that are negative to one person may be stimulating to another. Stressors that offer a positive challenge may become overwhelming and may ultimately have the same effects as negative stressors (LaMott, 1974), which is often the case with graduate school students. What was at one time motivating and stimulating to a student can become overwhelming.

Selye (1974) defined stress as the “nonspecific response of the body to any demand placed upon it” (p. 24). He stated that with this definition it does not matter whether the stress-producing stimulus or activity is positive or negative, because things like cold, heat, drugs, hormones, sorrow, and joy all produce the same biochemical reaction in the body: “a demand for readjustment” (p. 28). Selye noted that stress can become either distress or eustress. Distress is the debilitating type of stress most of us think of when we hear the word stress. It produces a negative reaction in our bodies that leads to the body slowly breaking down. Eustress, however, propels people to action. It provides motivation. A particular stressor may cause eustress in one person, while causing distress in another.

Academic life is undeniably stressful (Melendez & Guzman, 1983). Entering graduate school marks the beginning of frequent stressful life changes for most students. Goplerud (2001) stated some of these changes are periodic and correspond to academic role transitions, such as the first few months getting oriented in a graduate school program, preparation for comprehensive or qualifying exams, entering into an internship site, and beginning work in the real world for the first time. Some stressors are more particular, such as health problems, death of a loved one, or being involved in an accident or crime. Others may result from the graduate school experience itself, such as financial concerns, employment problems, time constraints, support system problems, and competition among peers. In Goplerud's (1980) study, the frequency of reported life events was so great that more than half of the first-year and second-year graduate students were rated in the life crisis category. With regard to the negative life experiences that students reported, 59% were related to school. Among these same students, 82% reported high levels of anxiety, 50% reported depression symptoms, 32% reported sleep problems, and 33% complained of physical problems. Goplerud also found that during the last six months of graduate education, students reported an average of 3.9 stressful life events. Stecker (2004) found that graduate students reported alarming symptoms of depression, stress, and substance use. Further, Halleck (1976) found that after freshmen, graduate students were the most frequent utilizers of psychological services.

Much of the stress involved in graduate school may come as a surprise to some students. Benjamin and Walz (1990) stated that whether consciously or unconsciously, there is often a general belief that university life is a safe haven from the harsh demands of the real world. Depending upon the extent to which students have internalized this

belief, they may very well be unprepared for the stressful reality of graduate school life and may be unable to cope personally or professionally. To the unprepared student it will come as a shock that the graduate school process involves a series of events that produce stress. The initial impact of the student upon entering graduate school is a feeling of “helplessness, striving toward closeness often accompanied by submission anxiety and fear of being dominated” (Lowenberg, 1969, p. 615).

Graduate education also involves many interpersonal stressors such as the pressure to appear knowledgeable in front of peers and professors, competition among peers, and competition for research publications and scholarly presentations. These interpersonal struggles often lead to loneliness, anxiety, role confusion, and alienation (Katz & Hartnett, 1976; Mallinckrodt, Leong, & Fretz, 1985; Stecker, 2004). As a result of the stressors that graduate students face, they may become less effective students, and their personal and professional lives may suffer.

These stressors may be especially prominent in graduate students who serve clients. In fact, research indicates that people involved in the human service field are subject to more stress than workers in product-oriented fields (Greenberg & Valletutti, 1980; Turnispeed, 1998). One reason for this is the fact that counselors spend their working hours and thus a large portion of their life, helping others (Turnispeed, 1998). Since most of their time is spent meeting the needs of others, counselors often do not have the time to meet their own personal needs.

Pines and Arson (1988) stated that those involved in the human service field share three characteristics that are classic precursors to stress and burnout: “1) they perform emotionally taxing work 2) they share certain personality characteristics such as caring,

giving, and helping that influenced them to choose helping as a career and 3) they share a client-centered orientation” (p. 84).

Further, Greenberg and Valletutti (1980) stated that those involved in the counseling field suffer unique stressors that make them prone to stress related illnesses. These stressors include role ambiguity, role conflict, role overload, responsibility to others, interaction with others, inequalities in pay and job status, irregular work pattern and schedule, and exposure to human grief.

Couple the stress inherent in graduate school with the stress involved in being a counselor, and it becomes obvious that counseling students are at a high risk for stress, stress related illnesses, and high drop out rates. This study sought to understand the stress faced by counseling students by addressing the stress. Another goal of this study is to help graduate students to reduce stress levels.

Significance of Study

The graduate school experience often is a stressful one. Although moderate stress seems to facilitate performance, excessive stress can become debilitating (Selye, 1983). Therefore, to preserve their psychological well-being and encourage their professional achievements, it is critical for students to be able to effectively deal with the stress of graduate school (Koko, 1980).

Researchers have investigated the relationship between stress and graduate students (Feldman, 1974; Ferrer de Valero, 2001; Ford, 1963; Golde, 2004; Goplerud, 1980; Guy, 1987; Hodgson & Simoni, 1995; Mallinckrodt, Leong, & Fretz, 1985; Pazin, 2000; Smallwood, 2004; Stecker, 2004; Weaver, 2000). However, only one of these involved counseling students and none implemented treatment for the stress, anxiety, and

loneliness that graduate students in a counseling program often experience. This study sought to fill that void by implementing a support group and exercise program into the lives of graduate students in the counseling field.

The rationale behind the utilization of a support group comes from the vast amount of literature concerning the beneficial effects of social support on stress and psychological illness (Antonovsky, 1974; Caplan, 1974; Cassel, 1976; Cobb, 1976; Curtrona, 1986; Dimond, 1979; Erickson, 1977; Gottlieb, 1981; Halleck, 1976; Hodgson & Simoni, 1995; Leavy, 1983; Smith, Fernengel, Holcrift, Gerald, & Marien, 1994; Stecker, 2004; Tolsdorf, 1976). Several researchers have noted the relationship between feelings of social connectedness among graduate students and stress levels. For example, in discussing the emotional problems of students, Halleck (1976) concluded that dissolution of relationships is the primary cause of emotional disorders among graduate students. Hodgson and Simoni (1995) supported this in their finding that a lack of social support is related to distress and attrition among graduate students. A similar study by Biglan (1973) found that in academic programs in which there is more cohesion among the students there is a lower attrition rate. Baird (1969) found that when students have strong social connectedness with each other they are more successful in graduate school, and demonstrate a greater commitment to their field of study. It has also been found that strong social support is associated with low to moderate effects on the relationship between stress and distress (Turner, Frankel, & Levin, 1983). Nelson, Dell'Oliver, Koch, and Buckler (2001) found that graduate students who have social support from their peers tend to have higher grade point averages than those who do not have peer social support. This same study found that increased interpersonal contact and social support correlated

with decreased psychological distress among graduate students. Finally, Stecker (2004) found that symptoms of depression and stress were associated with low levels of social support and concluded there is a need to provide preventive and clinical services to graduate students.

In addition to the effect that social support has on dedication and academic success, it has been found to be crucial in sustaining us through life crises, which graduate students encounter throughout their academic careers (Caplan, 1974). Researchers have also concluded that social support often offsets stress-generating physical and psychological disorders (Cobb, 1976; Erickson, 1977; Leavy, 1983). Social support has been found to be the moderating variable in explaining why some people fail to get sick under high stress, while others do get sick (Antonovsky, 1974; Cassel, 1976; Leavy, 1983)

Several definitions of this phenomenon called *social support* have been given (Caplan, 1974, 1981; Cobb, 1976; Gottlieb, 1981; Kahn & Antonucci, 1980). An often-cited definition is that social support is information leading a person to believe he or she is cared for, esteemed, and a member of a network of communication and mutual obligation (Cobb, 1976). Caplan (1974, 1981) defines social support by emphasizing cognitive aspects, stating that support is the guidance and feedback provided by others that allow a person to successfully master a stressful life episode. Kahn and Antonucci (1980) explain social support with three As: affect, affirmation, and aid. Affect is support that involves the expression of caring and emotional intimacy, affirmation is the provision of information about the rightness or wrongness of a person's actions, and aid is the availability and use of direct help through money, time, and effort.

Gottlieb (1981) collected data on how ordinary people see support and found that the general perception of support is a combination of the above definitions and that emotionally sustaining behaviors are the largest category of support. Examples of these behaviors are: sharing concern, listening, and providing intimacy. The second largest category of support behavior is problem solving behaviors, paralleling the concepts of instrumental support, aid, and cognitive guidance.

Schopler and Galinsky (1995) provided a description of support groups that coincides with those in Gottlieb's (1981) study: "an important source of emotional support, guidance and information for people who are dealing with common sources of stress" (p. 4). Kurtz (1997) gave a similar description of support groups, stating "support groups meet for the purpose of giving emotional support and information to persons with a common problem" (p. 4).

Yalom (1995) identified 11 therapeutic factors in psychotherapy groups. Kurtz (1997) described how these therapeutic factors operated in several types of group counseling and stated that the most commonly occurring are group cohesiveness, catharsis, instillation of hope, universality, imparting information, altruism, and imitative behavior. A study conducted by Heil (1992) found that group cohesiveness, instillation of hope and universality were the most helpful characteristics of group counseling for people with depression. Llewelyn and Haslett (1986) found similar results in a support group for widows; that is, universality and cohesiveness were the most beneficial aspects of the group.

Although much research has been conducted on the effectiveness of psychotherapy and self-help groups, little research has been conducted on support groups

(Schopler & Galinsky, 1995; Heil, 1992; Kurtz, 1997). This study seeks to fill this void by examining the effectiveness of a support group on the stress, anxiety, and loneliness of graduate students. The other treatment modality investigated in this study is the effectiveness of an exercise program on graduate students' stress, anxiety, and loneliness. A vast amount of research exists about the positive effects of exercise on stress, depression, and anxiety levels (Berger & Molt, 2000; Blumenthal, Williams, Needels & Wallace, 1982; Fremont & Craighead, 1987; Landers & Petruzzello, 1994; Moses, Steptoe, Matthews, & Edwards, 1989; O'Connor, Carda, & Graf, 1991; Salmon, 2001). Studies confirm that people report fewer or reduced symptoms of stress when they have been physically active (Buckworth & Dishman, 2002; Dishman, R.K., 1997; Dishman, R.K. & Jackson, 2000). A single exercise of 35 minutes has been found to reduce tension in muscles of the face, arms, and legs, as measured by electromyography (EMG) (deVries & Adams, 1972; Smith & Crabbe, 2000). Crabbe and Dishmann (2000) found that a 30 minute session of exercise can increase electrical brain waves in the alpha frequency band by half a standard deviation when measured during and after exercise. Alpha waves reflect a mental state of relaxed wakefulness.

General mood state has also been found to be positively affected by exercise. Gauvin, Rejeski, and Reboussin (2000) reported that exercise influences diurnal variation in feeling states indicating that positive engagement, revitalization, and tranquility were higher following exercise. Yeung (1996) reviewed 81 studies published from 1976 to 1995 and found 85% of the studies reported improved mood after exercise. Other researchers concluded that the evidence supports an association between physical exercise and improved mood in both clinical and nonclinical populations (Berger & Motl,

2000). Blumenthal, Babyak, Moore, Craighead, Herman, and Khatri (1999) found that exercise is at least as effective as antidepressant medication in treating the symptoms of depression.

The research literature also supports the idea that exercise reduces anxiety in nonclinical populations. Several studies have been conducted that suggest anxiety is significantly reduced by participation in exercises (Berger & Molt, 2000; Blumenthal, Williams, Needels & Wallace, 1982; Fremont & Craighead, 1987; Landers & Petruzzello, 1994; Moses, Steptoe, Matthews, & Edwards, 1989; O'Connor, Carda, & Graf, 1991; Salmon, 2001). The 1996 U.S. Surgeon General's report of physical activity and health concluded that regular physical activity reduces feelings of anxiety (United States Department of Health and Human Services, 1996). A reduction in both state and trait anxiety has been reported in quantitative reviews of studies conducted on adults without anxiety disorders (Landers & Petruzzello, 1994; Petruzzello, Landers, Hatfield, Kubitz, & Salazar, 1991). Stephens (1988) found that those who report little or no physical activity have significantly more symptoms of anxiety as compared to those who report being physically active.

To date, no study has considered the effectiveness of an exercise program for reducing stress and anxiety in graduate counseling students. Considering the amount of research indicating the effectiveness of exercise programs on stress and anxiety, the importance of such a study seems critical.

Purpose of the Study

The purpose of this study was to determine the effectiveness of a support group and exercise program as interventions for reducing graduate counseling students' symptoms of stress, anxiety, depression, and loneliness. The study utilized the dependent variables of anxiety, depression, stress, and loneliness to assess the effectiveness of group counseling and exercise.

Research Questions

This study addressed the following research questions:

1A. Does group counseling have an impact on symptoms of anxiety in graduate counseling students?

1B. Does group counseling have an impact on the symptoms of loneliness felt by graduate counseling students?

1C. Does group counseling have an impact on the perceived stress levels of graduate counseling students?

1D. Does group counseling have an impact on the symptoms of depression of graduate counseling students?

2A. Does exercise have an impact on symptoms of anxiety in graduate counseling students?

2B. Does exercise have an impact on the symptoms of loneliness felt by graduate counseling students?

2C. Does exercise have an impact on the perceived stress levels of graduate counseling students?

2D. Does exercise have an impact on the symptoms of depression of graduate counseling students?

Definitions of Terms

The following definitions are provided to clarify the key terms and constructs used in this study:

Anxiety and Depression: The terms anxiety and depression refer to psychological disorders operationally defined by the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (American Psychiatric Association, 2000). Levels of depression and anxiety will be dependent variables in this study. The Beck Depression Inventory (Beck, 1970) will be utilized to measure levels of depression. The Beck Anxiety Inventory (Beck and Steer, 1990) will be utilized to measure levels of anxiety.

Counseling group: The model of group counseling used in this study was the prototypical representation set forth by Yalom (1995) as “the intensive, heterogeneously composed, outpatient psychotherapy group with ambitious goals of both symptomatic relief and characterological change” (Yalom, 1995, p. xiii). This type of group counseling relies on particular mechanisms of change called therapeutic factors. Group counseling was one of the treatment modalities for this study. Participants in group counseling treatment met once a week for 1.5 hours for 10 weeks.

Exercise: Exercise is defined as aerobic exercise and involves 25 minutes of continuous activity using large muscle groups and sustaining a heart rate of 65-90% of maximal heart rate (HRmax) (Buckworth and Dishman, 2002). Exercise was one of the

treatment modalities for this study. Participants who self-selected to the exercise treatment group were asked to exercise, according to the above definition, twice a week for 45 minutes for 10 weeks.

Loneliness: Loneliness is defined as the unpleasant experience that occurs when a person's network of social relationships is deficient in some important way; including a lack of group participation, a lack of belonging, not relating to others, and feeling a lack of connection (Perlman & Peplau, 1981). Levels of loneliness were measured by the UCLA loneliness Scale (Russell, 1996).

Participant: A participant is a master's level graduate student in counseling who volunteered to partake in the current study. Participants in the group counseling treatment were students enrolled in the Group Counseling class in the Fall of 2003. Participants in the control and exercise groups were volunteers enrolled in any master's level counseling class, other than Group Counseling, in either the Fall, 2003 or Spring, 2004.

Stress: Stress is defined as "the nonspecific response of the body to any demand" (Selye, 1974, p. 14). In this study the demand will be graduate school.

Limitations of the study

The limitations of this study arise from three areas: sampling, instrumentation, and methodology. The first limitation concerns the ability to generalize the findings from the sample population. Since the participants comprised of master's level students in counseling at one school in the southwestern United States, the generalizability to students in other programs and geographical locations may be limited. Additionally, all participants were volunteers indicating results may not be indicative of other students

who did not volunteer to participate in the study. Finally, the small sample size may further limit the generalizability of the findings.

The second limitation of the study concerns the self-report nature of the instruments. Each instrument may have some degree of social desirability that is inherent in self-report measures. However, the process of assigning each participant a number rather than using his or her name for tracking purposes, making all responses anonymous, will help to control for this limitation. Another limitation of self-report inventories is that the accuracy of the data is limited to and dependent upon the accuracy of the response provided by the participants.

The third limitation of the study involves the methodology of the study. The nature of group counseling makes it difficult to say precisely what was helpful about the experience. Group dynamics, interactions, and leadership vary and cannot be controlled. This means each therapy group is different, and it is difficult to pinpoint exactly what is and is not beneficial about each group.

Summary

The stressors faced by graduate students can become overwhelming and often result in drop out by quality students. This reality makes formulating and testing the effectiveness of interventions desirable. Both group counseling and exercise have been found to be effective in alleviating stress and psychological problems in other populations. Therefore, it seemed appropriate to implement these interventions with graduate students. This study explored the effectiveness of group counseling and exercise on graduate counseling students' symptoms of stress, anxiety, depression, and loneliness,

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Considering the need for an intervention focusing on the stress levels of graduate students, this review of literature will focus on providing a framework for the usefulness of group counseling and exercise for the stress, anxiety, depression, and loneliness symptoms experienced by graduate students. This review of literature will include the following categories: Overview of Stress, Effects of Stress, Definitions and Models of Stress, Graduate Students and Stress, Stress in the Human Services Professions, Overview of Social support, Social support and Stress, Social support and Graduate Student Stress, Overview of Group Counseling, Therapeutic Factors of Group Counseling, Group Counseling and Depression and Anxiety, Support Groups for Graduate Students, Overview of Exercise, Models of Exercise, Exercise and Depression, Exercise and Anxiety, Exercise and Stress, Exercise and Graduate Students, and a summary.

Stress

Overview of Stress

Hans Selye first introduced the term “stress” into the health sciences in 1956. Selye originally noted the stress response when he was a second year medical student at the University of Prague. He noticed that individuals suffering a wide range of physical ailments all seemed to have a common constellation of symptoms, including loss of

appetite, decreased muscular strength, elevated blood pressure, and loss of ambition (Selye, 1974). Because these symptoms seemed to appear commonly, regardless of the nature of the somatic disorder, Selye first labeled this condition “the syndrome of just being sick” (Selye, 1956, p. 16).

In his early writings, Selye often used the term stress to describe the “state manifested by a specific syndrome which consists of all nonspecifically induced changes within a biological system” (Selye, 1956, p. 54). In a more recent definition, Selye states that stress is “the nonspecific response of the body to any demand” (1974, p. 14).

Selye (1956) noted that some stress is not only good, but essential to daily functioning. He concluded that it is impossible to avoid stress in daily living and that the complete absence of stress is achieved only in death. In his research, using the term stress to denote a response left Selye without a term to describe the stimulus that engenders a stress response. Selye (1956) chose the word “stressor” to denote any stimulus that gives rise to a stress response.

Selye was not the only researcher to define stress. In fact, throughout the literature, several definitions of stress are presented. McNerney (1974) defined stress as the body’s physical, mental, and chemical reactions to circumstances that frighten, excite, confuse, endanger, or irritate. Stress has also been defined as an external, noxious force that exerts undesirable and unpleasant effects on the individual (Graham-Bonnie, 1972). Everly (1985) defined stress as a physiological response that links any given stressor to its target organ causing arousal. Another definition of stress is provided by Caplan (1981) who argued that stress is “a condition in which there is a discrepancy between the demands made on an organism and the organism’s capability to respond, the

consequences of which will be detrimental to the organism's future in respect to conditions essential to well-being" (p. 414).

Selye wrote about positive and negative stress. He claimed that it was immaterial whether the stressor we face is pleasant or unpleasant; all that matters is the intensity of the demand for readjustment or adaptation. However, in his later writings, Selye began to ponder why people would often react to the same stressor differently. He explained this by claiming that the intensity of the experience was dependent on the individual's perception and interpretation. Selye also differentiated between positive and negative stress: labeling unpleasant or damaging stress as "distress"; and pleasant stress as "eustress" (Selye, 1974).

Selye (1956) maintained that the response a person has to stress follows a certain pattern. He called this pattern "general adaptation syndrome". The syndrome consists of three stages: alarm, resistance, and exhaustion. In the alarm stage, the body reacts by being on the defensive and trying to protect itself. Physiologically, the cells of the adrenal cortex discharge their microscopically visible granules of secretion containing hormones into the blood stream, causing the gland to be depleted. In the resistance stage, the body does the opposite: the cortex accumulates an abundant reserve of secretory granules. After an extended exposure to the stressor, one enters the exhaustion phase, which Selye stated resembles the alarm stage physiologically. He further stated that this type of wear and tear on the body is what causes premature aging and disease. Selye called this syndrome *general* because only agents that have a general effect on the body produce it and *adaptive* because it stimulates defenses and helps the manifestations that are coordinated and even partly dependent on each other.

Although Selye's work had a major impact on stress research, it had limitations. Selye's theory has been criticized for lacking a cognitive or psychological component and for viewing stress as affecting people in a mindless, reflex-like way (Avison & Gotlib, 1994; Everly & Lating, 2002).

Effects of Stress

In addition to what defines stress, the effects of stress have been studied by many researchers. A vast amount of literature argues that when stress becomes chronic or intense, disease, illness, and/or dysfunction will result (Avison & Gottlieb, 1994; Blythe, 1973; Everly & Lating, 2002; Lazarus, 1966; LaMott, 1974; Lipowski, 1984; McNerney, 1974; Rosch, 1991; Selye, 1956, 1974; Woolfolk & Richardson, 1978; Zalaquett & Wood, 1998). When stress results in organic, biochemical, or structural changes, the resulting condition is referred to as psychophysiological disease (American Psychiatric Association, 2000) or psychosomatic disease (Lipowski, 1984).

Psychosomatic disease was first described by Felix Deutsch in 1927. However, it was Helen Dunbar (1947) who published the first major treatise on psychosomatic phenomena. In 1968, in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*, Second Edition, the term psychophysiological disorder was used to define a "group of disorders characterized by physical symptoms that are caused by emotional factors" (p. 46). The terms psychosomatic and psychophysiological are used interchangeably to refer to organically based physical conditions resulting from excessive stress.

The *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, (American Psychiatric Association, 2000) used the designation “Psychological Factors Affecting Medical Condition” to encompass stress-related physical disorders. In the context of this manual, stress can be directed toward discrete anatomical organs and lead to physical disorders (Stoudemire, 1995).

Models of Stress

Throughout the literature, many definitions of stress are presented. Although researchers have been investigating stress over the past three decades to find a universally acceptable definition, they have not agreed upon an operational definition.

Several models of the stress process have also been proposed. Lachman (1972) proposed a behavioral and autonomic learning theory to explain the process of stress. Lachman argued that the major source of frequent, intense, and psychological reactions to stress is a learned response and that over time even the smallest amount of stress will produce responses inappropriate to the stressor. That is, an individual learns to overreact to stress, and this overreaction is reinforced each time it occurs.

Sternbach (1966) proposed a model that is based on the idea of a predisposed response set called the “response stereotype”. The response stereotype involves a weak link that is genetically determined. When a stressor is perceived, homeostatic levels fall, and the stress becomes prolonged and intense and causes organ damage.

Kraus and Raab’s (1961) model claimed that stress-related problems are not a result of the physiology of the stress related response, but rather a lack of healthful expression. This model is called the “hypokinetic model” (hypo=under; kinetic= motion)

and states that a deficiency in movement and activity lead to an inability to handle stress, making it more likely to cause a disease.

Schwartz (1979) proposed a systems model of stress that views homeostatic deregulation as its core. He noted that the regulatory system becomes disordered when communication between specific parts of the system is disrupted. His model is made up of four stages: 1) the environment places demands on the person 2) the brain performs regulatory functions 3) depending on the nature of the environmental demand on stress, certain bodily systems will be activated and others stimulated 4) if this process is sustained, the negative feedback loops of the homeostatic mechanism will come into play, forcing the brain to modify its directives.

Caplan (1981) argued that an individual's response to stress could be understood in terms of four phases. Phase one is behavior that changes the stressful environment or enables the individual to escape from it. Phase two is learning behavior to acquire new capabilities for action to change the external circumstances and their aftermath. Phase three is intrapsychic behavior to defend against dysphoric emotional arousal. Phase four is intrapsychic behavior to come to terms with the event and its consequences.

Benjamin and Walz (1990) claimed that stress is best understood as the product of the interaction between three elements: the environment (the organizational or social climate, interpersonal relationships, operating procedures), the nature of the stressor (nagging daily pressures or life-threatening events), and the individual's vulnerability to stress (differences in coping style, support groups, health history and values). Buck (1972) found that the work environment is often the most central in the experience of stress among adults.

Lazarus (1966) proposed a model of perceived stress in which a person's perceptions play a critical role in what he calls objectively stressful events. According to this model, stress is a function of the interactions between the person and his or her environment and the appraisal of potentially threatening or challenging events. He stated that stress reactions can be classified into four main types: disturbed affect, motor-behavioral reactions, changes in cognitive functioning, and physiological changes. Stress, according to Lazarus, is closely related to the emotion and adaptation of the person experiencing the stressor, and stress reactions are dependent on learning, development, and culture as opposed to instinctual drives. This perspective assumes that stress occurs when both a) the situation is appraised as challenging or demanding and b) insufficient resources are available to cope with the situation.

Woolfolk and Richardson (1978) elaborated on Lazarus's theory and described stress as being the result of an individual's thinking and behaving. Their cognitions and actions from stress lead to tension, worry, and often illness and physical disease. Woolfolk and Richardson theorized that stress is a cognitive experience, connected to the perception the individual has of the relationship between self and the environment.

Another model of stress is the cognitive model, which includes several different approaches. Ellis (1977) claimed that irrational beliefs are the cause of stress. Beck (1976) asserted that it is the interpretation of events that causes stress, and Meichenbaum (1983) stated that the internal dialogue and automatic thoughts of the individual lead to stress.

Graduate Students and Stress

Several researchers found that students pursuing a graduate degree experience stress (Baird, 1969; Cahir and Morris, 1991; Goplerud, 1980; Halleck, 1976; Heins, Fahey, and Leiden, 1984; Hozman, Searight, and Hughes, 1996; Katz and Harnett, 1977; Keim, Fuller, and Day, 1996; Kjerulff & Wiggins, 1976; Lowenberg, 1969; Mallinckrodt, Leong, and Kraij, 1989; Saunders and Balinsky, 1993; Stecker, 2004). In a groundbreaking study of approximately 21,000 college seniors who were attending 94 colleges, Katz and Harnett (1977) had students fill out questionnaires that asked about their backgrounds, descriptions of themselves, views of work, vocational and educational histories, plans for the future and how these plans were made. A year later, a follow-up questionnaire was mailed out to ascertain the students' current activities, if they were attending a graduate or professional school, their reactions to their schools, and the impact the first year had had on them. The follow-up information was obtained from nearly 8,000 students. From these 8,000 follow-up questionnaires, the researchers found that most graduate students suffer not only from stress, but also from severe anxiety, role confusion, loneliness, and alienation. The authors further concluded that that stress discourages effort and productivity. Additionally, it was noted that the stresses of graduate students are counterproductive to the leisure and calm that lead to fresh ideas.

Lowenberg (1969) wrote about his experiences as both graduate student and then professor of history at the University of California, Los Angeles, and described getting a graduate education as an emotional experience rather than an intellectual one. He stated that graduate school is "an emotional regression and a trauma for many that leads

students through a quintet of crises” (p. 613). He described the initial contact with graduate school as a feeling of helplessness, a striving towards closeness that is often accompanied by submission anxiety and the fear of being dominated.

Mallinckrodt, Leong, and Kraij (1989) conducted a study of 440 graduate students residing in campus graduate housing at a large eastern university with a graduate enrollment of approximately 5,000 students. The participants in this study completed survey packets that consisted of three questionnaires. The first was the Stressful Life Events Survey Scale which lists 48 events including several that are specific to students (e.g. negative personal encounter with professor or advisor). Respondents checked those items they experienced in the past 12-month period and indicated whether the event had been positive or negative. The second questionnaire, the Bell Global Psychopathology Scale, consists of 33 self-report items yielding eight subscale scores of psychological symptoms of stress. The third questionnaire used was the Proxy Measure of Health Status, a self-report checklist that assesses both common short-lived complaints such as colds and injuries as well as more chronic problems such as allergies and high blood pressure. The results of this study indicated that female graduate students reported significantly more negative life events and higher levels of depression and anxiety than did the male graduate students. Additionally, the number of negative life events was significantly related to psychological symptoms. The most commonly reported negative life events by both men and women were job-related concerns, interpersonal stressors, and economic concerns. Furthermore, the results revealed that personal illness and injury had the strongest effect size for anxiety and depression in women, but no negative life event had a strong effect on males. The results of the study led the authors to conclude

that getting a graduate education is a high-risk time for the development of physical and psychological problems because of the stress experienced. It is also a time of multiple and rapid changes for young adults. The authors found that students report stress from interpersonal relationships, family life, employment situations, decisions about professional future, role conflicts, school stressors such as meeting deadlines for papers, and conflicts in balancing time for academic and social pursuits. Additionally, females tend to cope less favorably with life stress than do males, indicating possible role conflicts and the need to address symptoms of stress in women more often than men. Finally, the authors stated that the findings from their study suggest a great need for all graduate students to receive counseling.

Kjerulff & Wiggins (1976) examined the types of stressful situations graduate students encounter and delineated different styles of emotional coping with these situations. This study was conducted on a stratified random sample of 30 graduate students (20 males and 10 females) in the Department of Psychology at the University of Illinois. The subjects were stratified on the basis of sex and psychological area of specialization. The participants were given a questionnaire asking them to describe in detail stressful situations they had experienced since entering graduate school. They were asked to concentrate on situations which led them to consider dropping out of graduate school, this provided the researchers with 18 situations. The authors also gave a questionnaire to all graduate students in the psychology department (50 females and 120 males) asking them to name a faculty or staff member in the department with whom they would talk about their problems if they were considering dropping out. From their responses, four faculty members and one staff member were identified. These five people

were then interviewed to find out what stressful life events they thought graduate students might encounter which would make the student consider dropping out. From these interviews, eight more situations were gathered. This provided the researchers with a total of 26 situations that might lead a graduate student to consider dropping out. The situations obtained by the researchers fell into three dimensions: academic failure, interpersonal problems, and fate-failure. Fate failure was represented by situations that were not necessarily someone's fault (e.g. death in the family, unplanned pregnancy, discovering one does not like the field). The results of the study revealed that graduate students face multiple stressors emanating from several sources, including fears of academic failure, fears of not receiving professional respect, and the pressure of meeting deadlines. The authors also found that those students who are less competent professionally suffer from more stress and anxiety than those who are professionally adept and competent in their field. The authors defined a professionally competent student as "one who does not blame himself or others when faced with stressful situations" (p. 252).

Heins, Fahey, and Leiden (1984) examined the stress levels of 122 medical students, 105 law students, 57 psychology graduate students, and 66 chemistry graduate students. A 78-item questionnaire was developed by the investigators to gather information about the graduate students. Items on the questionnaire included: (a) background characteristics; (b) time utilization; (c) health behaviors; (d) mental health behaviors; (e) stress associated with academic activities; (f) personal support system; (g) significant problems occurring over the last year; (h) best- and least-liked aspects of the academic program; and (i) the way the university could help relieve pressures. The results

showed that the students spent the following average number of hours per week engaged in work and academic responsibilities: medical students 63.54 hours; law students 49.43 hours; psychology students 46.18 hours, and chemistry students 52.77 hours. With regard to health behaviors, 8% of medical students, 10% of law students, 20% of psychology students, and 12% of chemistry students smoke; 35% of medical students, 43% of law students, 27% of psychology students, and 39% of chemistry students sometimes drink too much; 79% of medical students, 58% of law students, 79% of psychology students, and 61% of chemistry students eat a balanced diet, and 64% of medical students, 65% of law students, 60% of psychology students, and 58% of chemistry students exercise 4 to 7 times per week. Analysis of variance indicated a significant difference in the total perceived stress scores among the four groups. Law, psychology, and medical students reported significantly higher stress scores than did chemistry students. The authors delineated six types of stress those seeking higher education encounter: 1) stress related to being in a demanding academic program (academic stress); 2) stress related to restrictions on one's time (time stress); 3) stress related to personal reactions to the academic environment (fear of failure stress); 4) stress related to problems of society and the world (world stress); 5) stress related to events that occur in the classroom (classroom stress); and 6) stress related to money and inflation (economic stress). Their results showed that all three groups experienced significant amounts of stress, with the highest loadings occurring in economic stress, time stress, and academic stress. The authors concluded that, although there were program-specific differences, "graduate education is an arduous, stress producing endeavor regardless of the program" (p. 173).

In his survey study of 22 graduate students in psychology at the State University of New York at Buffalo, Goplerud (1980) found that the intense anxiety and stress in graduate students often arises from three areas: (a) events unrelated to graduate life, such as being robbed or the death of a family member; (b) events specifically related to school, such as exams or deadlines for papers; and (c) confidence/competence stresses, such as doubts about one's commitment to a field of study, or anxiety about fitting into the graduate program. Goplerud also found that the frequency of reported stressful life events was so great that more than half of the first-year and second-year graduate students' stressors were rated in the "life crisis" category. Among these same students, 82% reported high levels of anxiety, 50% reported depression symptoms, 32% reported sleep problems, and 33% complained of physical problems. It was further reported that 57% of all stressful events reported by the subjects, and 59% of all events classified as intensely stressful were associated with the graduate school experience. Physical and emotional complaints were positively related to the number of intensely stressful events reported by students. In fact, the most frequently cited problems were emotional: periods of intense anxiety were reported by 81.8%, two or more periods of intense anxiety were reported by 63.9%; depression lasting three or more consecutive days was reported by 50%, and severe sleep problems unrelated to studying were reported by 31.8%. On four items concerning physical well-being, about 39% responded affirmatively to missing classes due to illness, being confined to bed for one day or more, periods of intense somatic illness, and flare-ups of pre-existing illnesses. It was also found that during the last six months of graduate education, students reported an average of 3.9 stressful life events.

Baird (1969) conducted an extensive survey of role relations of 680 graduate students in six departments at a West Coast university and four departments at another university. Their responses to a 242-item questionnaire sampling their relations with faculty, others outside the graduate setting, general aspects of the role, and relations with other students were submitted to extensive factor analysis. Results indicated that when demands of faculty appeared unclear or conflicting, students' scores on scales of role stress and psychological withdrawal were significantly higher. This is similar to the study by Goplerud (1980) who found that students who reported poor working relations with their major faculty advisor reported a greater number of intense stressors and a greater number of emotional and health problems than did students with close relations with faculty. Another of Baird's findings was that as competition among peers increased so did the tension factor. In fact, the students always felt stress when they felt they were in a competitive situation.

Cahir and Morris (1991) conducted a study of 133 graduate students from a single university to develop the Psychology Student Stress Questionnaire. Using multivariate statistics, the researchers were able to separate seven factors affecting the stress levels of graduate students. These included: (a) problems with time constraints; (b) difficulty with feedback from a specific faculty member (c) financial constraints; (d) trouble getting help from faculty; (e) limited emotional support from friends; (f) difficulty with feedback with regard to status in the department; and (g) stress from lack of input in program decisions. Because the sample came from only one academic department, this study was replicated by Keim, Fuller, and Day (1996) on 108 students at another university. The authors found

similar results, but in addition, they found a separate factor emerge that was related to the demand of the courses.

Saunders and Balinsky (1993) also developed an instrument to assess the cognitive stress of graduate students. Their questionnaire was based on the responses of 305 graduate students in education, public health, and psychology at three universities in the southeastern United States. The students responded to the question “What are some of the things about being in graduate school that are stressful to you?” The students’ answers to this question, many of which are similar to the findings of Cahir and Morris (1991) and Keim, Fuller, and Day (1996) were placed in the following categories: perfection, all-or nothing thinking, suffering is necessary, need for approval, filtering and over generalizing, shoulds, control, self as different, financial concerns, life-style effects, multiple roles, second thoughts, adjustments to change, concerns about future, and personal issues.

Stecker (2004) investigated the mental health and stress needs of 461 graduate students in the fields of physical therapy, pharmacy, dentistry, and medicine at a top ranking medical center in the USA. The author developed an assessment tool for the study which identified satisfaction with current psychological services, stress, coping, sleeping, eating, exercise, high risk sexual behaviors, social support, depression, and substance use. Stecker found that graduate students reported an alarming rate of depression, stress, and substance abuse. According to the results, 25-35% of students in advanced training were experiencing diagnosable depression. Increased symptoms of depression and substance abuse were related to low social support and perceived stress. The author stressed the fact that graduate students desperately need psychological and

counseling services to address and prevent their incredibly high stress and feelings of depression.

In congruence with the above research, Halleck (1976) found in a five year study of mental health centers at two universities that following freshmen, graduate students had the highest rate of student health and counseling services usage. Additionally, Hozman, Searight, and Hughes (1996) completed a survey of graduate students' involvement in psychotherapy. Although they found a large number of students enter therapy for the purpose of personal and professional growth, their experience caused them to conclude that there is a high probability of a coexisting clinical distress.

Stress in the Human Services Professions

Most of the human service professional fields have been identified as high stress occupations. Of the human service fields, the stress and burnout of teachers is most often discussed. In fact, teacher burnout has become widely publicized, and its symptoms are well known. Stressed and burned out teachers complain of psychosomatic symptoms such as exhaustion, insomnia, ulcers and headache (Cherniss, 1980; Fruedenberger & Richelson, 1980; Greenberg & Valetutti, 1980).

Researchers have also noted that stress exists for therapists. In his compilation of Freud's writings, Strachey (1964) wrote that Freud was the first to note that the very nature of psychotherapeutic work subjects the therapist to continual emotional demands. Freud recognized that psychotherapy is one of those difficult professions that place extreme demands on the therapist through the therapeutic relationship. Since that time, several researchers have supported Freud's perceptions, asserting that face-to-face

contact with clients is a basic source of stress that is intrinsic to the therapeutic relationship (Bermak, 1977; Farber & Heifetz, 1981; Freudenberger & Robbins, 1979)

Freudenberger and Robbins (1979) wrote about the process of becoming stressed and burned out as a therapist. The authors based their writings on their twenty plus years experience as therapists and the experiences of their colleagues. They asserted that stress and burnout were having devastating effects on therapists in training as well as independent practitioners. From their research, they identified specific stressors, and stated that the biggest danger to those in the helping profession today is of burnout, which is the direct result of stress. They claimed “it is a predictable condition which has been laying low too many psychoanalysts” (p. 275).

Freudenberger and Robbins (1979) recognized that those in the helping profession are exposed to and are affected by a variety of stressors that result in

Depression, loneliness, the inability to relate to patients, family, friends, feelings of emptiness, omnipotence, cynicism, paranoia, compulsivity, callousness; a loss of authenticity, of vitality; a tendency to carry over the psychoanalytic process into one’s personal life, to make analysis the whole of one’s existence, to overanalyze everyone and everything, with the result that one loses the art of talking with and relating to mate, friend, even patient; an insulation from what is happening in the profession and society; a deletion, a sense of being “locked into” a way of life that requires longer hours, bigger and better homes, and richer furnishings.
(p. 275-276)

All of the above symptoms can generate feelings of personal vulnerability in the therapist. Since the therapist very rarely identifies these feelings, the result is often burnout.

In a book commenting on the stress in the human service professions, Farber (1983) suggested that stress results from personality characteristics, life changes, work-related factors, and societal changes. Regarding personality, the individuals most susceptible to stress are described as passionate, idealistic, dedicated to their work and often have a need to help others. Credence to these findings have been provided by Farber & Heifetz (1981); Farber (1991), and Greenberg & Valletutti, (1980). Several researchers reported that individuals who are empathetic, humane, dedicated, idealistic, and people-oriented are prone to becoming stressed and burned out (Cherniss, 1980; Farber, 1983; Freudenberger & Richelson, 1980; Pines & Aronson, 1988).

Caplan and Jones (1975) examined the effects of personality on stress with a survey of 73 male users of a university computer system that was approaching an imminent 23-day shutdown. Each respondent was his own control. Stress, personality, and psychological strain were assessed by questionnaire, and heart rates were monitored. The results of the study allowed the researchers to distinguish between two personality types: Type A and Type B personalities. Type A personalities tend to be dedicated, driven, goal oriented, competitive, and highly motivated to succeed. Type B personalities tend to be more relaxed, less motivated to achieve, patient, content to do one thing at a time, and take themselves less seriously. Caplan and Jones noted that those with Type A personalities were most affected by stress and anxiety. Although their employers often value these people, they are more likely to suffer physically and emotionally from their need for over achievement and success. With regard to helping professions, those with Type A personalities are much more likely to suffer stresses related to school and work.

Life changes also may increase an individual's risk of becoming stressed. These changes can be positive, such as marriage, buying a new home, or having a child, or they may be negative such as death, divorce, or interpersonal problems. The act of adapting to new behavior patterns, rather than the actual situation, leads to stress. (Caplan & Jones, 1975; Farber, 1983; Selye, 1956, 1974)

In their book documenting the experiences of people working in the human service field, Greenberg and Valletutti (1980) claimed that there are certain characteristics associated with the human services profession that increase the vulnerability of practitioners to the negative effects of stress. Human service professionals become deeply involved in the lives and well-being of others and wield some degree of control in directing the activity of others. They often are exposed to human grief, deprivation, struggle, and failure, as well as the inability of others to cope with daily mental, physical, or emotional functions. Human service practitioners often spend long, usually irregular, hours on the job and are expected to perform a variety of activities, many of which are not directly related to the job title. People who serve others are expected to be familiar with and able to make referrals to a variety of resource agencies.

Several researchers concluded that the process of training to be a counselor can be both positive and stressful (Deck & Morrow, 1989; Farber, 1983; Halleck and Woods, 1992; Holt (1999; Pasnau & Bayley, 1971). In his book commenting on the stress in the human service professions, Farber (1983) examined this process and claimed that training can promote several types of positive growth: professional commitment, greater self-insight, more mature social relationships, increased self-assurance and humility, reduced

alienation and authoritarianism, and greater self-ideal congruence. However, the stressful atmosphere of the training period may produce problematic changes as well. Halleck and Woods (1992) concluded that “few trainees have gone through the residency experience without having experiences somewhere along the line, moderate to severe anxiety or depression,” and that “perhaps none go through their training without at one time or another worrying about the loss of their sanity” (p. 341). In their survey investigation of 98 first year psychiatry residents, Pasnau & Bayley (1971) found an increase in depression and stress levels in the participants when comparing their first week working and their twentieth week.

Farber (1983) noted several factors that contribute to the difficulties of training in the helping profession: the development of psychological mindedness, difficulty regarding the actual treatment process, and problems with the supervisory relationship. Regarding the development of psychological mindedness, therapists in training must come to understand the inner psychological dynamics of their patients. During this process, trainees tend to become more aware of their own motivations, unconscious processes, and inner difficulties. Although this is a positive aspect of training, it can lead beginning therapists to begin to over identify with their clients and begin to compare themselves to their clients and question their own tolerance for stress, their own defense mechanisms, and even their sanity (Halleck & Woods, 1962; Pasnau & Baley, 1971).

Beginning therapists also face difficulties concerning the actual treatment process. Although gaining a thorough understanding of pathology and mental health is a slow, gradual process, the new counselor must immediately deal with the demands of treating

clients. Holt (1999) attributed the decline in enthusiasm in beginning therapists to their realization that the practice of therapy is more difficult than they had expected.

The third source of tension for beginning counselors is often the supervisory relationship. Although supervision is one of the most useful tools of training, it also has the potential to create much conflict (Farber, 1983). The supervisor-supervisee relationship is uneven from the beginning and requires two people from unequal positions to form an intense, personal relationship (Deck & Morrow, 1989). Sources of anxiety for the supervisee often include performance and approval anxiety, beginner's quandaries, and dominance anxiety. Farber argued that if the relationship is unsuccessful, a student's high level of anxiety may be intensified, yet if it is successful, over-identification with the supervisor may occur.

Royak-Schaler & Feldman (1984) examined via survey the health and stress relieving behaviors practiced by 86 therapists and the extent to which they focused on these behaviors with their clients during the course of psychotherapy. In this sample, it was found that most of the therapists practice health prompting and stress relieving behaviors: 77% of the therapists do not smoke, 69% sleep 7-8 hours per night, 79% eat breakfast, 44% exercise regularly, 29% practice relaxation regularly. The study also indicated that the more a therapist is involved in his or her own health promoting behaviors, the more likely they are to encourage their clients to do the same. Specifically, 51% the participates evaluated the health behaviors of their clients and made recommendations with regard to their physical health, and 72% of the therapists frequently inquired about chronic illness during the intake session. The more therapists

take care of themselves and attempt to alleviate stress, the more likely their clients are to follow their model of care.

In summary, this section gave an overview of stress, its effect on mental health, and its presence in graduate students. The research concerning stress and graduate students clearly shows that graduate students are indeed stressed. This stress often causes students to discontinue their education, have lower GPAs, and suffer psychological distress. The following section will examine social support and the role it can play in alleviating stress. The research on graduate students and the importance of social support to their academic success and psychological health will also be discussed.

Social Support

Overview of Social Support

Several definitions of social support have been proposed in the literature. Tolsdorf (1976) defined social support as “any action or behavior that functions to assist the focal person in meeting his personal goals or in dealing with the demands of any particular situation” (p. 410). According to Lin, Ensel, Simeone, and Kuo (1979), social support is “support accessible to an individual through social ties to other individuals, groups and the larger community” (p. 109). Another definition is “interpersonal transactions that include one or more of the following: the expression of positive affect of one person to another; the endorsement of another’s behavior, perceptions or expressed views; and/or the giving of symbolic or material to one another” (Dimond, 1979 p. 102). Sarason, Levine, Bashman, and Sarason (1983) defined social support as the existence or availability of people on whom we rely, people who let us know they care about, value, and love us. Caplan (1976) defined a support system as “continuing social aggregates

(namely, continuing interactions with another individual, network, group, or organization) that provide individuals with opportunities for feedback about themselves and validation about their expectations of others, which may offset deficiencies in these communications within the larger community context” (p. 19).

Social support is currently regarded as a multidimensional construct. Caplan (1974) specified two dimensions of social support: objective/subjective and tangible/psychological that form four variations of social support. Objective support (tangible and psychological) is a measure given by an outside observer. Objective tangible support is “behavior directed toward providing the person with tangible resources that are hypothesized to benefit his or her mental or physical well-being” (p.85). Objective psychological support is “behavior directed toward providing the person with cognitions (values, attitudes, beliefs, and perceptions) and toward inducing affective states that are hypothesized to produce well-being (p. 85). Subjective tangible support and subjective psychological support are analogous to their “objective” counterparts, but are determined by the target person’s perception that supportive conditions exist.

Several types of social support have been identified. Cobb (1979) specified three types of social support: emotional support, esteem support, and network support. Each of these types focuses on interpersonal aspects of a person’s life. Emotional support provides proof that one is cared for and loved, esteem support provides confirmation that one is valued and esteemed, and network support is verification that one belongs to a network of mutual obligation. According to Cutrona (1986), social support can be classified in terms of helping and non-helping behaviors. Schaefer, Coyne, and Lazarus (1981) identified emotional support, informational support, and tangible support as

distinct types of social support. House (1981) described four types of social support: emotional, appraisal, informational, and instrumental. Smith, Fernengel, Holcroft, Gerald, and Marien (1994) identified three additional types of social support: quantitative, qualitative, and functional. Weiss (1974) described social support in terms of its functions. The components of this model include attachment, social integration, reassurance of worth, reliable alliance, guidance, and opportunity for nurturance.

In addition to describing social support in terms of type and function, social support can be evaluated based on the source providing the support. Sources of support frequently cited in the literature include family members, friends, spouses/significant others, supervisors, and coworkers (Caplan, 1974; Cobb, 1979; Cutrona, 1986; Dimond, 1979; Gottlieb, 1981; Schaefer, Coyne, and Lazarus, 1981; Smith, Fernengel, Holcroft, Gerald, and Marien, 1994; Tolsdorf, 1976).

Social Support and Stress

The relationship between social support and stress has often been addressed in the literature (Caplan, 1981; Cobb, 1979; Cohen and Wills, 1985; Cutrona, 1986; Dimond, 1979; Leiter and Durup, 1996). In a review of 30 years of research on stress and social support, Caplan (1981) stated that empirical research confirms that exposure to high stress by individuals receiving adequate social support does not increase the risk of mental and physical illness. He also concluded that if a person gets social support during any phase of a stressful situation, mastery of that stress is likely.

In their review of the literature on social support and stress, Cohen and Wills (1985) stated that most studies found a positive relationship between social support and

mental well-being. It was also found that social support was a strong buffer against stress. Cohen and Wills also claimed that there is disagreement in the literature as to whether social support is more accurately described as a buffering or direct effect process. Those who propose that social support is a main or direct effect process suggest that all individuals can benefit from social support, regardless of the magnitude of the individual's stress level. According to this model, social support is negatively related to stress and serves to enhance well-being by supplying individuals with a source of "positive affect, a sense of predictability and stability in one's life situation, and a recognition of self-worth" (Cohen & Wills, 1985, p. 311). Those who propose social support from the buffering hypothesis suggest that social support is not beneficial to individuals who were not experiencing stress, but is beneficial only to persons who already perceive that they are under stress (Cohen & Wills, 1985).

Leiter and Durup (1996) conducted a longitudinal study over a three-month period on 151 health care professionals. This study examined psychological states as a function of demands and resources in the workplace and at home. Data were collected over three weeks and then the same data were collected three months later. The following instruments were administered: Maslach Burnout Inventory, Profile of Mood States, Work Overload Inventory, Work Interference with Family Scale, Supervisor Support Inventory, Family Personal Conflict Inventory, Family and Friend Support Inventory, and Dyadic Adjustment Scale. A structural equation model was utilized to analyze the data and focused on change by including only relationships that enhanced the prediction of each measure beyond its inherent consistency across the study interval. The analysis also considered relationships across the work and home domains in the context within each

domain, so that spillover relationships were always in addition to domain-specific relationships. The results identified social support as a fundamental coping technique that increases an individual's ability to successfully manage a multitude of stressful events. Their research also indicated that those who had social support were less stressed than those who did not have existing support systems.

Social Support and Graduate Student Stress

Several researchers have investigated the influence of social support on graduate student stress (Goplerlud, 1980; Heins, Fahey, and Leiden, 1984, Mallinckrodt, Leong, and Kraij, 1989). In their research with 122 medical students, 105 law students, 57 psychology graduate students, and 66 chemistry graduate students, Heins, Fahey, and Leiden (1984) found that “a strong mediating factor in the degrees in which stress is managed appears to be the social support system of peers” (p. 170). When Mallinckrodt, Leong, and Kraij (1989) looked at sex differences of 440 graduate students' life-change stress and stress symptoms via survey, they found that regardless of gender, those who seek out and obtain social support, whether it is from peers, a spouse, faculty members or family, are at less risk for stress-related mental health problems. The authors noted that findings from their study suggest a strong need for individual and group counseling services for graduate students to assist in alleviating the stressors of graduate school.

In his survey study of 22 graduate students' first year experience, Goplerlud (1980) emphasized the magnitude of stress experienced by some graduate students, as well as the influence that social support can have on such stress. In this study, social support and stress levels experienced by students during the first six months of graduate

school were assessed. Goperlud found that graduate students report an average of nearly four stressful life events during their first six months of graduate school, and almost half of the reported life events were classified as highly stressful. The relationship between social support and reported stress experienced by graduate students was also addressed in this study. The quantity of social contacts with peers and faculty members was found to moderate student reports of stressful life events, health problems, and emotional problems. Subjects who reported adequate social support reported less stress and fewer physical and emotional complaints than individuals who lacked adequate social support.

Several researchers found that students tend to look to other students for social support (Baird, 1969; Mechanic, 1962; Nelson, Dell'Oliver, Koch, Buckler, 2001). In the study that Baird (1969) conducted on 680 graduate students, he found that when graduate students seek the social support of their classmates, they are more likely to succeed in graduate school. This same study found that those students who sought social support from their peers were more committed to their field of study. Similarly, Nelson, Dell'Oliver, Koch, and Buckler (2001) conducted a survey on 53 doctoral students in psychology via survey and found that students who sought social support from their peers tended to have higher GPAs, lower stress levels, and less overall psychological distress than those who did not have social support.

Mallinckrodt and Leong (1992) conducted a study investigating the relationship between social support in reports of stress, depression, and anxiety with 166 graduate students. The results demonstrated that student experiences of stress, reactions to stress, and perceptions of social support varied according to gender. According to these results, female graduate students perceive that they are supported within their family but not

academic environment and that familial support is only beneficial at times of high stress. Males, on the other hand, appear to perceive that they are supported at home and school, and they benefit from support regardless of their perceived stress levels. Mallinckrodt and Leong suggested that attempts to balance multiple life roles, including the role of graduate student, may lead to role strain and more reports of stress-related symptoms for females than for males. The authors emphasize that future research should focus on identifying the sources and types of social support which would address the needs of graduate students most effectively.

Researchers have identified social support as a coping technique for graduate students (Hodgson and Simoni, 1995; Leiter and Durup, 1996; Turnispeed, 1998). Hodgson and Simoni (1995) investigated via survey the relationship between social support and graduate student stress. The study assessed the influence of social support in the psychological distress reported by 566 graduate students. Results suggested that student perception of academic success and social support were negatively related to psychological distress (i.e. anxiety, depression, and suicide ideation) while financial problems were positively related to physiological distress. Leiter and Durup (1996) identified social support as a coping technique that increased a student's ability to successfully manage a multitude of stressful demands. Their longitudinal research that was conducted on 151 graduate students who were employed as health care professionals indicated that those who had support systems for both emotional and instrumental support were less stressed than those who did not have support systems. Turnispeed (1998) further supported this finding by discerning that "peer cohesion reduces the negative effect of state anxiety and exhaustion" (p. 637).

A lack of social support among graduate students has also been associated with higher drop-out rates (Anderson and Mieztis, 1999; Kjerulff and Wiggins, 1976). In a study investigating stress and life satisfaction in female graduate students, Anderson and Mieztis (1999) conducted in-depth interviews with 10 mature female graduate students. The analysis of the interviews indicated that, without emotional support from their peers, females are more likely to withdraw from school than those females who receive support from their peers. Additionally, the participants indicated that it was the social support they received from their friends and peers that helped make returning to school a positive experience. In their examination of a stratified random sample of 30 graduate students, Kjerulff and Wiggins (1976) examined via questionnaire stressful situations graduate students encounter and different styles of coping to deal with stress. The results indicated that not only do about 50% of those who enter graduate school drop out but, also that those who continue graduate school tend to have close, supportive relationships with their peers. Thus, the authors concluded one way to address student attrition is to help encourage graduate students to develop close, caring, and encouraging bonds with one another.

In the survey study conducted by Goperlud (1980) the effects of social support on the health and psychological status of first-year graduate students were studied. The results indicated that the frequency of social interactions among fellow students and faculty members was inversely related to the number of reported physical and psychological problems, and that stressful life events were less likely to disrupt the student's life when they received social support from fellow students and faculty members. Goperlud labeled the first ten weeks of graduate study a "high risk" period. He

observed that those students who either entered the graduate program with an intact support system or developed relationships with other students during this high-risk period adapted to the stressors of graduate training much more rapidly and successfully than students without these advantages.

In summary, the research literature indicates that students who have social support perform better in graduate school. These students are also less likely to drop out, have higher GPAs, and fewer psychological problems. The next section will review the literature concerning group counseling; including its effectiveness, the therapeutic factors of group counseling, its effect on anxiety and depression, and the support groups that have been formed to help graduate students.

Group Counseling

Overview of Group Counseling

In the counseling literature, several types of group counseling are discussed. These include psychotherapy groups, self-help groups, and support groups. Kurtz (1997) provided a description of a support group as

a group that meets for the purpose of giving emotional support and information to persons with a common problem. They are often facilitated by professionals and linked to a social agency or larger, formal organization. Behavioral and societal changes are seen as subordinate to the goals of emotional support and education. Meetings are relatively unstructured, and the group's program is unlikely to espouse an ideology. Support groups usually do not charge fees (p. 5)

In the literature, support groups are often described by comparing them to self-help and psychotherapy groups. Kurtz (1997) stated that a major difference between self-help, psychotherapy, and support groups is that self-help and psychotherapy groups encourage personal change. A professional therapist usually leads a psychotherapy group, whereas self-help groups rarely have professional facilitators. Schopler and Galinsky (1995) used a continuum image when describing the difference between self-help, support, and psychotherapy groups, placing self-help groups on one end and psychotherapy groups on the other, with support groups in between.

Schopler and Galinsky argued that support groups are distinguished by several characteristics. They may have organizational sponsorship or are the creation of an innovative practitioner. Some support groups are associated with national organizations, while local practitioners create others. Support groups are member-centered, and professionals, volunteers, or other members provide leadership. Often, leaders have personal experience with the group's focal concern. Although leaders of support groups share authority and are on somewhat equal terms with members, their legitimacy tends to be based on training and expertise as group leaders.

Lieberman (1990) provided a framework for comparing internal processes in self-help, support, and psychotherapy groups. This framework includes five dimensions: the group's technological complexity and simplicity, the group as a "social microcosm", psychological distance between helper and helpee, the specificity or generality of helping methods, and degree of differentiation among members. Lieberman stated a psychotherapy group relies on complex technologies, meaning that therapeutic methods are based on human behavior. Self-help groups, however, rely on nonprofessional

facilitators who have suffered from the current topic of the group. Support groups sometimes have professional leaders and at other times utilize nonprofessionals, but the leadership is based less on group counseling theories and more on providing emotional support.

Lieberman described the group as a social microcosm by stating that “underneath activities in therapy groups lie the assumption that cure or change is based on the exploration and reworking of relationships in the group” (p. 265). The psychotherapy group typically provides a microcosm of society where members examine dysfunctional ways of relating to the world. At the other end of the continuum, self-help groups de-emphasize transactions among members and do not use transactions as a therapeutic force. Support groups will, at times, use the group as a social microcosm, depending on its focus and leader, but other times will not view the transactions among members as central to the group process. According to Lieberman, the distance between helper and helpee is called “psychological distance” and is emphasized by specialized training and the use of professional settings. In psychotherapy groups, the facilitator does not bring up his personal problems during the session, whereas in self-help groups, if there is a leader, his or her concerns are usually discussed. Regarding the specificity and generality of helping methods, Lieberman (1990) posited that, in psychotherapy groups, professional helping methods are more specific than those offered in self-help and support groups. The techniques in self-help groups are usually more general and “codified” to alleviate a specific problem on which the group is focusing (p. 267).

Lieberman stated the degree of differentiation among members is also different among psychotherapy, self-help, and support groups. He asserted that the members of

psychotherapy groups are relatively undifferentiated and will often deal with an assortment of problems. In contrast, in self-help groups the common core problem is the reason for the group and is emphasized consistently. Support groups initially will meet initially to assist in resolving a common problem, but other issues may also be discussed.

Kurtz (1997) gave three additional ways that psychotherapy, self-help, and support groups differ: open versus closed boundaries, the charging of fees, and dependence on extra-organizational support. Psychotherapy groups typically have a closed boundary, that is, they do not admit new members at any time. Self-help groups, however, admit anyone who qualifies for membership at any time. Support groups may follow either a closed or open system that is clearly set at the beginning of the group.

Regarding fees, the professional therapists who lead psychotherapy groups typically charge a fee. Self-help groups, however, rarely charge a fee, but may ask for small donations. Support groups may or may not charge a fee depending on the reasons for the group's meetings. Self-help groups rarely depend on outside organizational support, whereas psychotherapy groups often meet in facilities of social agencies and mental health. Support groups are sometimes held in social agency facilities and sometimes in the most convenient place.

Research on support groups has progressed over the past 20 years from anecdotal descriptions to outcome studies and ethnographic analyses (Kurtz, 1990). The first large collection of research about self-help and support groups contained reports of quasi-experimental outcome studies, observations of group processes and ideologies, and descriptions of community self-help organizations (Kurtz, 1997; Lieberman & Borman, 1979). In the 1980's, most self-help research focused on how professionals described and

classified helping processes in self-help groups, related to support groups, and evaluated the effect of support groups on members (Kurtz, 1997; Kurtz, 1990). Research in the 1990's focused on the helping process of support groups and began to recognize that self-help groups are not treatment and that outcome evaluations may be a misuse of clinical trials (Kennedy & Humphreys, 1995; Kurtz, 1997)

Although much of the research on support groups is atheoretical, Stewart (1990) wrote an overview of theories used in the literature. She found that theories of equity, social comparison, reference group, and social movement predominated. Stewart also noted that theories of affiliation, attribution, loneliness/social isolation, and self-esteem have been included in the research, but inconsistently. Stewart suggested that mutual help researchers consider two other theories: psychoneuroimmunology and social learning. Psychoneuroimmunology concerns the relationship of emotions and resistance to disease. Through social support, the ability of the immune system to fight disease is enhanced, while lack of social network weakens the immune system. Stewart observed that although social buffering and learning theories have been mentioned in the literature on self-help and support groups, they have not been tested by empirical research.

Schopler and Galinsky (1995) provided a model for support groups called an open systems model. The dimensions addressed by this model include environmental conditions, participant characteristics, group conditions, and outcomes. Environmental conditions are the environmental resources and constraints that affect the initial formation of the groups and their development over time. Important resources include a pool of potential members, a sponsoring organization or individual to provide a meeting place, funding, and other support activities. Factors that constrain group activity and outcomes

include screening procedure, transportation, institutional barriers, and other demands on participants' time.

Interest in participant characteristics involves the fact that group activities and group development over time are directly influenced by the characteristics of the group participants, including the members and the leaders. The way the group evolves and what it will accomplish are affected by the size of the group, the specific composition, and interventions applied.

The conditions that make a successful support group include organizing the group to pursue common goals and developing a structure that is flexible enough to adapt to changing conditions over time. The goals and expectations of the members and leader merit attention. The norms and culture that develop in relation to issues such as attendance, self-disclosure, confidentiality, and participation affect member investment in the group, adherence to group rules, and member satisfaction. Support group interventions can result in a range of outcomes including positive effects, negative effects, group cohesion problems, and ethical and legal concerns. Any evaluation of a support group should consider all potential outcomes, both positive and negative.

Several characteristics of support groups that lead them to be helpful for members have been identified. Kurtz and Powell (1987) argued that social learning theory employs three components that are helpful in support groups: instruction, reinforcement, and modeling. Theories of group attraction and social comparison claim that greater social resources, increased knowledge about focal concern, sense of relief and reassurance, and enhanced coping skills are attributes that lead members to be attracted to and affiliated with support groups (Arkin & Burger, 1980; Festinger, 1954; Thibaut & Kelley, 1959).

Schopler and Galinsky (1995) stated that “support groups can be an important source of emotional support, guidance, and information for people who are dealing with common sources of stress” (p.4).

Therapeutic Factors of Group Counseling

Yalom (1995) focused his writings on a prototypical type of psychotherapy group that he defines as “the intensive, heterogeneously composed outpatient psychotherapy group with its ambitious goals of both symptomatic relief and characterological change” (p.xii). Yalom claimed that, although therapy groups may look totally different on the outside, they actually rely on the same methods of change. It is the therapeutic factors that are the core constructs which define the process in group counseling. Although once called “curative factors”, these methods of change are now referred to as “therapeutic factors” because therapy is never a cure, but rather growth enhancing. These therapeutic factors are seen across all types of group therapy (Kivlighan, Multon, & Brossart, 1996; Kurtz, 1997; Heil, 1992; Yalom, 1995).

Although several authors have written about the therapeutic factors, Yalom’s (1995) classification of these therapeutic factors has been the most widely adopted version of this popular concept. Additionally, a number of authors (Heil, 1992; Kivlighan, Multon, & Brossart, 1996; Kurtz, 1997; Lese & MacNair-Semands, 2000; Lieberman, 1990) acknowledged the development of the concept of the therapeutic factors undertaken by Yalom and consider his list of therapeutic factors as the most representative and comprehensive work in this area. The therapeutic factors are interdependent and not mutually exclusive. They often overlap. Some factors refer to

mechanisms of change (e.g. catharsis) while others are conditions of change (e.g. group cohesiveness, instillation of hope) which often leads them to be at work at the same time. (Lese & MacNair-Semands, 2000; Yalom, 1995).

There are at least three influences on the operation of therapeutic factors. Yalom (1995) indicated that even within the same group, different clients may respond to different factors, depending on their needs, social skills and personality. Second, various types of group counseling may emphasize different clusters of factors, depending on the nature of the population and the therapeutic goals. Third, some factors may predominate at one stage of the group, while others emerge as the group develops.

The therapeutic factors are instillation of hope, universality, imparting information, altruism, corrective recapitulation of the primary family group, development of socializing techniques, imitative behavior, interpersonal learning, group cohesiveness, catharsis, and existential factors. Instillation of hope can come in two forms. The first is the hope a participant often feels before entering treatment. This is the expectation that things can and will improve and that group counseling will help. Once in the group therapy context, instillation of hope usually indicates the hope participants feel when they see another group member succeed or when they hear of another group member who has overcome the obstacles that the participants currently face. Instillation of hope is one of the basic premises of the recovery movement (e.g. Alcoholics Anonymous), and many other self-help groups use this therapeutic factor to give members inspiration.

Universality is “the disconfirmation of a patient’s feelings of uniqueness” (Yalom, 1995 p. 6). Universality introduces the client to the idea that they are not the only one with a particular problem and is often a very powerful source of relief. It helps

people to feel less alone in their struggles and more in touch with the rest of the world. Universality is a condition of change and often merges with other therapeutic factors. For example, as clients see their similarity to other people, they began to share their concerns and benefit from the resulting catharsis and acceptance of the group. Universality is often seen as either working very closely with or as a stepping stone to group cohesion (Johnson, 2004).

Imparting information is another therapeutic factor. Imparting information is often called guidance, and Yalom (1995) states that there are two ways it is used group psychotherapy: didactic instruction and direct advice. Didactic instruction is the process of the group leader educating the participants about a specific topic. This topic usually involves the central focus of the group, if there is one (e.g. Depression, substance abuse, eating disorders). Although most learning that group participants receive is implicit, there are some cases where explicit didactic instruction is useful. Common examples include educating substance abusers about the danger of withdrawal or overdose. Direct advice is another form of imparting information. As opposed to didactic instruction that comes from the therapist, direct advice usually comes from one participant to another. Direct advice is essentially when one participant tells another what he or she should do. Direct advice occurs most often in the early stages of group, and “it is rare that a specific suggestion for some problem will directly benefit any patient” (Yalom, 1995, p.11). However, the process of advice-giving does have purpose in that it tends to convey that one group member cares about another. Imparting information, or guidance, is generally one of the least helpful of the therapeutic factors, based on participants’ retrospective

reports of their experience in group counseling (Barnette,1989; Burtenshaw, 1997; Lese, Mac-Nair-Semands, 2000; Yalom, 1995).

The therapeutic factor of corrective recapitulation of the primary family group is based on the concept that the therapy group often bears a resemblance to a family; there is often an authority figure, peer siblings, deep relationships, glaring feelings, and profound closeness, as well as unfavorable, competitive sentiments (Yalom, 1995). This dynamic of group therapy assumes that, after initial anxieties and facades are put aside, participants will began to experience the group as they did their initial family of origin. In so doing, they will begin to play the role they did (e.g. scapegoat, hero, mascot). The difference is that these roles will be addressed, confronted, and hopefully resolved based on being in a supportive, cohesive group. Corrective recapitulation is usually one of the least valued of the therapeutic factors according to group participants' reports (Burtenshaw, 1997; Forsyth, 2004; Kapur & Mitchell, 1988; Long & Cope, 1980; Wheeler, O'Malley, Waldo, & Murphey, 1992).

The enhancement of fundamental social skills, called the development of socializing techniques, is another therapeutic factor found in most therapy groups. The ways in which socializing techniques are played out varies greatly among groups. For example, some groups are designed specifically for the task of helping people with social skills. These are most likely what would be called "psychoeducational groups". An example of this is a group designed to help people find a job. However, in most groups, socializing techniques are learned more implicitly through feedback, which is given either directly or indirectly

Altruism is the positive feeling that group members experience when they are able to help another person. Although altruism is not always a conscious act on the part of group participants, it is indeed present and is concerned with one of the healing aspects of group therapy. Self-help groups rely heavily on altruism. For example, in AA, it is common to see people who have been sober for many years continue to come to meetings to offer their support and guidance to those in need (Burtenshaw, 1997; Forsyth, 2004; Leung & Arthur, 2004).

Imitative behaviors involve group members sitting, talking, walking, and communicating like other members and like the group leader. Imitative behaviors are more common in the early stages of group and often help the group to establish norms. Although group members are not necessarily always aware that they are doing this, it has been found to be an effective therapeutic influence (Bandura, Ross, & Ross, 1963).

Interpersonal learning is often considered one of the most helpful of the therapeutic factors (Burtenshaw, 1997; Forsyth, 2004; Freedman & Hurley, 1980; Johnson, 2004). Interpersonal learning can be broken into two types: input and output. Interpersonal input involves the participants learning how they come across to each other. Interpersonal learning output involves group members learning how to communicate and get along with others. According to Yalom (1995), interpersonal learning is based on the importance of interpersonal relationships, the corrective emotional experience, and the group as a social microcosm. Interpersonal relationships are what help us to define who we are. It is through the feedback we get from others that we determine whether we are acceptable or not. The corrective emotional experience as it applies to group is based on the idea that if we expose a client to uncomfortable situations under favorable conditions

we will encourage them to learn how to deal with these uncomfortable feelings in the outside world. When speaking about the group as a social microcosm, Yalom (1995) writes, “this concept is of paramount importance in group therapy and constitutes a keystone upon which rests the entire approach to group therapy” (p.28) . The group as a social microcosm means that, as a group develops, members’ defenses and facades will eventually be removed, and a participant’s genuine personality will begin to show. And as the group members experience each other’s true selves, friction is inevitable. This is where interpersonal learning comes in. True interpersonal learning can occur only if participants’ authentic personalities are visible.

Group cohesiveness is also considered one of the most beneficial aspects of group therapy (Forsyth, 2004; Golembiewski, 1962; Leung & Arthur, 2004; Lott & Lott, 1965). Group cohesiveness in group therapy is the analogue of the relationship in individual therapy (Heil, 1992). It encompasses the client’s relationship with the leader, the other members, and the group as a separate entity. Group cohesiveness is the interconnectedness of the group that allows many of the other therapeutic factors to appear. Group cohesiveness is considered a necessary, but insufficient, condition of change. Groups with high levels of cohesiveness have participants who have better attendance, influence each other more, are more accepting of one another, self-disclose more, and experience greater security in the group (Johnson, 2004; Pan, & Lin, 2004; Rasmussen & Zander, 1954; Roy, Wanlass Moreno, & Thomson, 2005).

Catharsis is another therapeutic factor that is considered a necessary, but insufficient, feature for positive outcome for group members. In group counseling, catharsis has been viewed as simply a venting of feelings, but it is more often associated

with learning how to express feelings appropriately and simply being able to discuss something that is on one's mind. Johnson (2004) found that catharsis is viewed as an important therapeutic factor by participants with both positive and negative group outcomes. However, those with a positive outcome also tended to experience some type of interpersonal learning. Cohesiveness is also very much linked with group cohesiveness. If group cohesiveness is present, catharsis is much more effective (Johnson, 2004; Leung, & Arthur, 2004; Yalom, 1995).

Existential concerns are the last of the therapeutic factors. Existential concerns are rooted in human existence and are issues we all must deal with during our life such as death, aloneness, freedom, meaninglessness, and responsibility. Existential factors represent a category of consideration rather than one singular topic (Heil, 1992). Statements that echo dealing with existential issues are "recognizing that life is at times unfair", "recognizing that ultimately there is no escape from some of life's pains of life and death", and "recognizing that no matter how close I get to people, I must still live my life alone" (Yalom, 1995, p. 88). Existential factors are often rated as important to group members (Burtenshaw, 1997; Leung, & Arthur, 2004). However, existential issues are often not discussed until later stages of the group, and some groups never confer about existential issues due to the nature of the group (e.g. psychoeducational groups). Group cohesion is critical for existential factors to be addressed (Johnson, 2004).

Finally, Yalom (1995) asserted that the therapeutic factors carry over outside the therapy group and into the client's personal life. Group participation will often encourage a member to take action on a longstanding problem or opportunity that he otherwise

would not. Yalom maintains that all types of group counseling can and do include these same therapeutic factors.

Several researchers examined how the therapeutic factors influence support groups (Heil, 1992; Kurtz, 1997; Llewelyn and Haslett, 1986). Kurtz (1997) described how these therapeutic factors also operate in support groups, stating that the most commonly occurring factors in support groups are group cohesiveness, catharsis, instillation of hope, universality, imparting information, altruism, and imitative behavior. Heil (1992) conducted a study on 80 members of various support groups utilizing Yalom's (1995) Therapeutic Q-sort is a questionnaire that assesses the presence of the therapeutic factors in a group. Heil found that group cohesiveness, instillation of hope, and universality were the most helpful aspects for the participants in his study. Llewelyn and Haslett (1986) found similar results in a support group for 16 widows: universality and cohesiveness were the most beneficial aspects of the group.

There are two methods for measuring the therapeutic factors: direct and indirect. The indirect approach is often called the "critical incident" approach (Mackenzie, 1987). This approach asks participants to describe the most significant event that occurred in group. The responses are then rated qualitatively. Due to its unstructured format, the indirect approach biases the respondent less than the direct approach (Crouch, Bloch, & Wanlass, 1994; Kivlighan, Multon, & Brossart, 1996). The direct approach to measuring the therapeutic factors is typified by Yalom's (1995) Therapeutic Q-sort method, which measures factors by client response to specific questions about the group experience. Sixty statements assess 12 therapeutic factors. Group participants rank each statement

based on which factors were most helpful in the group. This model presupposes that each factor is present to some degree in each group.

In summary, group counseling is often considered one of the most cost-effective treatments (Gilbody, Whitty, & Grimshaw, 2003; Penny, 1997; Weinstein & Rossini, 1999). Due to economic constraints resulting from the introduction of managed care, group counseling is quickly becoming the treatment of choice for many practitioners. Not only is it cost-efficient, it is also time-efficient. With group therapy, one clinical hour can be used to help 8-10 clients, whereas in individual therapy, one hour is used to help one client. Whichever type of group counseling it falls under, there are both positives and negatives, and over the years, research appears to be consistent in saying that it is the therapeutic factors that make group counseling work.

Group Counseling, Depression, and Anxiety

The literature supporting the effectiveness of group counseling in alleviating symptoms of depression and anxiety is vast. Due to the comorbidity of anxiety and depression, the group counseling literature tends to investigate them simultaneously. Therefore, this section will explore the two phenomena together.

Although some groups have been formed specifically to address symptoms of anxiety and depression, groups formed with other goals have also resulted in decreased symptoms of both anxiety and depression (Biggam and Power, 2002; Clarke, 1999; Hayward, 2000; Lee and Hett, 1990; Pfeffer, Jiang, Kakuma, Hwang, and Metsch, 2002; Wang and Li, 2003). For instance, groups have been formed for the purpose of helping people who suffer from the consequences of addictions either directly or indirectly

through the use of a family member or loved one (Dittrich and Trapold, 1983; Freudenberger, 1990; Kuhns, 1993). These groups often lead to a lessening of depression and anxiety in its group members. Kuhns (1993) investigated the effectiveness of dynamic group psychotherapy and self-help groups for college-aged adult children of alcoholics (ACOA). In the quasi-experimental pretest posttest design, the 150 participants (75 who were ACOA and 75 who were not raised by alcoholics) were randomly assigned to one of four groups: (a) 25 ACOA who received an 11 week treatment of self-help support group therapy; (b) 25 ACOA who received an 11 week treatment of dynamic group psychotherapy; (c) 25 ACOA who were a control group and received no treatment; and (d) 75 college-aged children of non-alcoholic parents who were a control group. All participants were administered the pretest which consisted of the Tennessee Self-Concept Scale which measured self-concept, the Coping Resource Inventory Scale which measured coping behaviors, and the Center for Epidemiologic Studies Depression Scale which measured levels of depression. After the 11 weeks of treatment, or no treatment for the control groups, posttests of the same instruments were administered. The results indicated that the ACOA had lower self-concepts, fewer coping behaviors, and higher levels than children from non-alcoholic families. Both the dynamic group psychotherapy and the self-help support group were excellent treatment modalities for ACOA and were found to significantly increase self-concept, improve coping behaviors, and decrease levels of depression. Additionally, significant differences were found between the ACOA who received treatment and those who did not receive treatment in improved coping behaviors and decreased levels of depression. The authors concluded that both support

groups and dynamic group therapy are effective at helping ACOA lessen depression, and improve coping behaviors and self-concept.

Another study that involved addictions was conducted by Dittrich and Trapold (1983). In this investigation, the effectiveness of brief group treatment aimed at ameliorating some of the psychological reactions commonly seen in the wives of alcoholics was explored. Prior to and after the 8 week treatment, the 10 participants' levels of anxiety, self-concept, depression, and enabling behaviors were assessed via questionnaire and compared to a waiting list control group. The participants in the brief group therapy treatment showed significant improvement in anxiety, self-concept, and enabling behaviors; there was no initial difference in depression. After the formal treatment, the experimental group was given access to a support group which met for the next eight weeks and was again assessed with the same questionnaires. The wait list control group replicated the treatment sequence as it had been given to the original treatment group. An analysis of the experimental and control groups combined over the various treatment phases indicated significant improvements on measures of depression, anxiety, self-concept, and enabling at the end of the formal treatment. The authors concluded that not only were the group therapy and support groups helpful in alleviating depression and anxiety, but also that wives of alcoholics can be treated effectively for their psychological reactions independently of their husbands' treatment.

A third study to examine the effectiveness of group counseling and depression in those affected by addiction was conducted by Freudenberger (1990). This study investigated the effectiveness of group psychotherapy on 50 adolescent boys (mean age, 19.2 years) who were poly-substance users with long histories of drug abuse. The

participants were administered following four scales: the Substance Abuse Problem Checklist, Multiscore Depression Inventory, State Trait Inventory, and Tennessee Self-Concept before and after undergoing 15 weeks of treatment. The results showed that the group psychotherapy significantly reduced levels of depression and state and trait anxiety. Additionally, the participants' self-concepts were improved and motivations for treatment were enhanced. The authors concluded that group psychotherapy can provide those who suffer from addictions help at alleviating both anxiety and depression.

Similar to the study by Freudenberger , several investigations have been conducted to examine the effect group counseling has on adolescents' symptoms of anxiety and depression. For instance, Biggam and Power (2002) compared the effectiveness of a 10 week, group-based problem solving intervention with a no-treatment wait list control group. The 46 participants were young (16-21 years old) incarcerated offenders and randomly assigned to either the group intervention or control. Participants' levels of anxiety, depression, hopelessness, and their social problem-solving were assessed via questionnaire before and after the treatment. Results indicated that the participants in the group counseling intervention experienced significant reductions in their levels of anxiety, depression, and hopelessness; and improvement in their self-assessment. The authors concluded that group counseling is a helpful adjunct to treatment for incarcerated adolescents.

Hayward (2000) conducted a similar study that compared the efficacy of cognitive behavioral group therapy to a control wait list treatment group in adolescents. The participants in this study were 35 female adolescent with social phobia who were randomly assigned to either the treatment or control group. The treatment consisted of 16

cognitive behaviorally based group treatment sessions that were 1.5 hours in duration. The participants were assessed prior to and following the 16 week treatment period by the Social Phobia and Anxiety Inventory and the Anxiety Disorders Interview Schedules. The results indicated that the group treatment produced a significant reduction in symptoms of anxiety. Additionally, it was noted that a significant number of participants in the group no longer met the DSM-IV criteria for social phobia. The author further noted that for participants with a history of major depression, treatment for social phobia reduces the risk for relapse of major depression

Similar to the previous study by Haward, Clarke (1999) investigated the effectiveness of cognitive-behavioral therapy (CBT) group counseling on adolescents. However, in this study, both acute and maintenance effects on depression were examined. The 126 participants, who were between 14 and 18 years old and met the DSM-III diagnosis of major depression or dysthymia, were randomly assigned to one of three eight-week acute treatment conditions: (1) adolescent group CBT (16 two-hour sessions, adolescent-only); (2) adolescent CBT with a separate parent group (16 two-hour sessions, adolescent-parent); or (3) wait list control. Subsequently, participants completing the acute CBT were randomly assigned to one of three conditions for the 24-month follow-up period: (1) assessments every 4 months with booster sessions; (2) assessments only every four months; or (3) assessments only every 12 months. The following assessments were administered before treatment, following the acute phase and during the assessments in the 24-month follow-up period: Schedule for Affective Disorders and Schizophrenia for School-Age Children, longitudinal Interval Follow-up Evaluation, and the Beck Depression Inventory. The participants' parents completed the Child Behavior Checklist

at the assessment points. Of the 126 initial participants, 96 completed the entire treatment. Results showed that the acute CBT groups produced higher depression recovery rates than the waitlist. Outcomes for the adolescent-only and adolescent-parent conditions were not significantly different. Rates of recurrence during the two-year follow-up were lower than found with treated adult depression. The booster sessions did not reduce the rate of recurrence during the follow-up period, but did accelerate recovery in participants who were still depressed after the acute phase. The authors concluded that the findings support the effectiveness of group therapy in alleviating adolescent depression.

Various age groups have been helped by group counseling. These include college age, children, and seniors. With regards to college age, Wang and Li (2003) examined the effect of eight, 1.5 hour sessions of group counseling on levels of self-confidence in 15 college students. The effects of the group were assessed before and after the treatment by the Symptom Checklist (SCL-90) and the 16 Personality Factor (16 PF) Questionnaire. The results showed the scores of interpersonal relationships, anxiety, and compulsiveness of the SCL-90 significantly reduced while the factors scores of emotion stability, adaptation, independence, and personality of the 16 PF improved. The authors concluded that group counseling can help college students to improve interpersonal relationships, raise self-confidence, lower anxiety, and encourage communication. With regards to children, Pfeffer, Jiang, Kakuma, Hwang, and Metsch (2002) evaluated the efficacy of group counseling for children who suffered suicide of a parent or sibling. The 75 participants, aged 6-15 years old, were randomly assigned either to receive (39 children) or not to receive (36 children) the treatment. The group treatment consisted of 10 weekly

sessions, lasting 1.5 hours and each group, and had two to five children of similar development levels in each group. The following instruments were used at the initial and outcome assessments: Schedule for Affective Disorders and Schizophrenia for School-Age Children, Beck Depression Inventory, Childhood Posttraumatic Stress Reaction Index, Children's Depression Inventory, Revised Children's Manifest Anxiety Scale, and the Social Adjustment Inventory for Children and Adolescents. The results showed that the children who received the group treatment had a significant decrease in anxiety and depressive symptoms, as compared to the control group. The authors concluded that bereavement group counseling focusing on reactions to death and suicide and strengthening coping skills can lessen distress, anxiety, and depression in children after parental or sibling suicide.

As with children and adolescents the elderly have also profited from group counseling. Ladish (1993) investigated the efficacy of cognitive behavioral therapy and support group treatment on 22 moderately to severely depressed elderly participants. All participants were randomly assigned to one of the two treatment groups for 12 weeks. Pre-and post-treatment data was gathered via survey to assess levels of depression, coping, and support. The researcher reported that significant time effects for both treatments while interaction effects comparing treatments across time were not significant. Symptoms of depression, coping, and support all showed high levels of improvement in both groups. The author concluded both cognitive behavioral group therapy and support groups are helpful at alleviating elderly patient's symptoms of depression.

Individuals experiencing a major life transition have also been helped by group counseling. Lee and Hett (1990) investigated the effectiveness of group counseling for people who were recently divorced. The participants were 12 adults who had divorced within the past six months and 12 waiting-list controls. The group met for eight weekly sessions for 1.5 hours each session. Participants were assessed via questionnaire before and after the 12-week treatment period. The results indicated that the group intervention promoted a significant decrease in depression and anxiety, an increased ability to live in the present, greater independence, more spontaneity, and an increase in experimental participants' ability to form meaningful relationships. The authors noted that group counseling should be considered a very helpful and cost-effective treatment for people going through a divorce.

A characteristic of group counseling is that the group is formed around a concern that is common to all members. An example of this is a chronic illness. Because those who suffer from chronic illness often suffer from psychological distress, the process of group counseling often helps participants' depression and anxiety. For instance, several groups have been formed for individuals who have cancer. Agüero-Trotter (2005) examined the effects of a coping skills training group and a support group on cancer patients' levels of distress, coping and adjustment to cancer, depression, and anxiety. The 22 participants were randomly assigned to one of the two treatment groups: support group or coping skills training. The groups met for 8 weekly two-hour sessions. Emotional distress, coping, psychological adjustment, depression, and anxiety were assessed before and after the intervention via survey. The results indicated that the participants in the skills training group had significantly lower levels of distress. However, both groups

produced lower levels coping, psychosocial adjustment, anxiety, and depression. The authors concluded that both support group and skills training have the potential to help people suffering from cancer.

In a similar study, Evans (1995) investigated the effects of cognitive-behavioral and socially supportive group therapy on depressed cancer patients. Seventy-two depressed cancer patients were randomly assigned to one of three treatment conditions: cognitive-behavioral group therapy (29 participants), support group therapy (23 participants), or no-treatment control condition (20 participants). The groups met for one-hour weekly sessions for eight weeks, and each group contained six to nine participants. All participants were assessed before and after treatment and at a six-month follow-up via the following questionnaires: the Center for Epidemiological Studies Depression Scale, the Social Provisions Scale, Symptom Checklist, and the Multidimensional Health Locus of Control Scale. The results indicated that the depressed patients who received brief group therapy intervention exhibited greater reduction in emotional distress than members of a comparison group who did not participate in a group intervention. Although both the cognitive-behavioral and social support group interventions produced significant reductions in depression, anxiety, and somatization, the social support group intervention also resulted in a significant reduction in overall post-intervention psychiatric symptoms, as well as significantly less somatic preoccupation, anxiety, and depression at follow-up. The author concluded both forms of group therapy lessen symptoms of distress for depressed cancer patients, with the support groups demonstrating longer lasting change.

Another group of individuals suffering from a chronic illness that has been helped by group counseling is individual suffering from psoriasis. Dowling (2002) examined qualitative responses from women with psoriasis who participated in short-term, time-limited group psychotherapy that utilized Yalom's (1995) psychotherapy approach. The 11 participants participated in a 10-week group that met for 1 hour per week. The researcher investigated the psychological consequences of psoriasis (anxiety, depression, self-esteem, and quality of life) in relation to some psychological predictors of adjustment to psoriasis. The author provided a comprehensive qualitative analysis of participant responses and group changes by assessing changes in both individual group members and the group as whole by focusing on the presence, absence, and changes in Yalom's therapeutic factors. The data revealed that group participation was beneficial to all members. Participants became more cognizant of how they relate to others, learned new coping skills, and developed a better understanding of the importance of social support. Most group members indicated one or more of the following benefits: decreased feelings of anxiety and depression; an increase in quality of life and feelings of self-esteem; and a greater ability to cope. The author concluded that this study provides support of group counseling for people with psoriasis and acknowledges the significance of the group process itself.

Individuals diagnosed with diabetes experiencing low vision have also been helped by group counseling. Trozzolino (2003) evaluated the effectiveness of a 12-week psychoeducational group in improving mood and glycemic control in adults with diabetes and visual impairments. In this study, the 48 participants were randomly assigned to one of two groups: the experimental group (group treatment) and the control group (no

treatment). All participants were administered the following three psychometric tests before and after the 12 week treatment period: the Beck Depression Inventory, the Michigan Diabetes Knowledge Test, and the Problem Areas in Diabetes Survey (PAID). The results showed that the participants in the psychoeducational group counseling made statistically significant gains in glycemic control as compared to the control group, and there was a significant positive relationship between glycemic control and depression. This means those who participated in the group not only were not only better able to control their illness, but also had fewer symptoms of depression.

Group counseling has also been helpful for family members' of persons with chronic illness. Pomeroy (1995) investigated the effectiveness of group counseling for 33 family members of people with AIDS. The participants underwent an eight-week psychoeducational and task-centered group that met for 1.5 hours per week. The participants were assessed before and after treatment via questionnaire on their levels of stress, depression, perceived stigma, and anxiety. The results showed that group counseling significantly reduced family members of people with AIDS levels of stress, depression, and anxiety.

Researchers posited that group counseling can be helpful in alleviating depression and anxiety in psychotic patients. Warman, Grant, Sullivan, Caroff, and Beck (2005) conducted a study involving group therapy with six patients with positive symptoms of psychosis. The group met for 12 weeks, and their levels of depression, anxiety, stress, and hopelessness were assessed before and after treatment and again at an 11-month follow-up. The results showed a significant decrease in participants' levels of depression, anxiety, and hopelessness. Additionally, the majority of the gains were maintained over

an 11-month follow-up period. The authors concluded that group therapy may offer benefits for patients with psychosis in terms of less delusional thinking, and lower levels of depression and anxiety when used as an adjunctive treatment.

Similarly, Boll (1998) investigated short-term group psychotherapy for seven individuals diagnosed with schizophrenia. The group met for 12 weekly, 90-minute sessions. The participants were assessed qualitatively with clinical observations, client verbalizations, and the Patients' Ranking Statements Questionnaire before and after treatment. The qualitative analysis revealed the clients showed significant improvement in coping with delusions and hallucination, social skills, interpersonal relationships, and social anxiety. Similar to Warman et al. (2005), the author concluded that group psychotherapy is a helpful adjunct to treatment for people who suffer from psychosis.

Group counseling has also been found to be helpful in a nonresearch community setting. Peterson and Halstead (1998) investigated the effectiveness of group cognitive behavioral therapy for 138 adult patients referred by mental health clinics two-hour depression management groups extending for six weeks. Patients were assessed before and after by the Beck Depression Inventory (BDI). Groups consisted of six to nine randomly assigned participants. The results showed that level of depression was significant decreased by 64% of the participants, the average reduction was 38%, and 43% had a greater than 50% reduction in their BDI scores. The results indicated that group therapy can be effectively applied in a clinical setting with a heterogeneous patient population. The authors concluded that group therapy is a cost-effective treatment approach and the potential for its benefits significantly outweighs the costs. Additionally, the authors wrote "In this era of managed care initiatives, group cognitive behavioral

therapy for depression should be considered as first-line treatment intervention for many patients with depression as part of a stepped-care treatment approach to provide the best treatment at the best value” (p.16).

Support Groups for Graduate Students

Considering only 50% of those who enter a graduate program complete an advanced degree (Bair & Haworth, 1999; Dinham & Scott, 1999; Ferrer de Valero, 2001; Golde, 2004; Smallwood, 2004) it is no surprise that support groups have been formed to help graduate students complete their degree. Support groups for graduate students have been designed to assist graduate students with completing their dissertations (Figueroa, 2003; Inman and Silverstein, 2003; Johnson and Conyers, 2001; Wasburn, 2002), to help new graduate students become acquainted with the graduate school process (de Rosenroll, Norman, & Sinden, 1987; Miller and Irby, 1999; Streeter, 1984), and to assist graduate students in the counseling field to learn the experiential and didactic aspects of group counseling (Barnette, 1989; Perrone, Smith, and Carlson, 2003), and for single parent graduate students (McLeod & Vonk, 1992).

One of the barriers graduate students find in their pursuit of completing their graduate degree is the dissertation process. According to Davis and Parker (1997), as many as one-third of doctoral candidates who have completed course requirements fail to complete their dissertation. The All-but-dissertation (ABD) may occur because writing a dissertation is very different from the teacher-oriented classroom segment because it necessitates that the student be self-directed (Figueroa, 2003). According to Brookfield (1986), students often lack the facilitative functioning to challenge themselves with

alternative ways of interpreting their experience and presenting themselves with ideas and behaviors that cause self examination. Brookfield concluded this often occurs because comes from instructors do not provide students the directions they need to begin and understand the research process. Thus, students find themselves isolated and unaware of how to begin or successfully complete the dissertation process. This dynamic has created a group of learners that the literature and higher education community have labeled “All But Dissertation” or ABD (Hanson, 1992). In response to this phenomenon, support groups have been formed for graduate students to help them cope successfully with the dissertation process (Figueroa, 2003; Inman and Silverstein, 2003; Johnson and Conyers, 2001; Wasburn, 2002).

Figueroa (2003) detailed a support group for graduate students called the Make It So (MIS) group. The MIS support group was a grassroots support group of Oklahoma State University graduate students in the Adult Education program. The MIS support group had two branches, one in Tulsa and one in Oklahoma City. The average meeting attendance in Tulsa was 25 to 30 people. In Oklahoma City, the group had 10 regular attendees. Members of both branches of the MIS support group met on a weekly basis in participants’ homes. The primary goal of the MIS groups was to help members cope with and overcome the tasks involved in the research and dissertation process of earning a doctoral degree. The discussions and activities performed in the meetings assisted with both the cognitive processes required to complete the research and the affective factors that influence the participants and their families. The initial meetings were designed to help demystify the dissertation process. Topics discussed in the group included how to select a dissertation topic, proposal writing, research question formulation, methodology

and research design, diverse ways to present research findings, data compilation, data entry and analysis, conclusion and recommendation writing, dissertation final draft preparation, rules and procedures of the process, and Graduate College requirements. According to Figueroa, who was a member of the group, the accomplishments of each member of MIS were celebrated, and each of the milestones were critically analyzed by the group through group sharing of the experiences and a discussion of the meanings of the experiences. Meeting agendas were generally created by members, and participants' family members frequently attended meetings. The sharing of food and celebration were typical activities. Figueroa (2003) reported that within the time frame of Fall 2000 to Spring 2002, 16 MIS members successfully completed the Doctor of Education. All of the original members of both the Tulsa and Oklahoma City groups have either graduated or are in the final stages of their research. MIS is an open group so new members could regularly.

Similarly, Inman and Silverstein (2003) described a support group to help graduate students complete their dissertation. This group met in a university counseling center. The group had designated leaders consisting of two staff psychologists who had earned doctorates in Clinical and Counseling Psychology. The group with its four members met for one and a half hours weekly during the Spring, 2000. Discussion topics included struggles with their advisors, practical issues about dissertation work (e.g. how long to read a particular book, time management, day versus night writing). Process issues involving group dynamics were also discussed and handled in the group. These include members becoming frustrated with leaders about what was and was not helpful, the division of leadership between the members and leaders, examining the group process

in the here-and-now versus talking about issues outside the group, whether to reserve time to talk about significant others, and whether to take turns talking about their specific dissertation topics. The members of the group stated that they received both tangible and intangible benefits from the group. The tangible benefits included identifying the major barrier to successful dissertation work (procrastination), and finding ways to work through the procrastination. Other tangible benefits included managing their personal lives, scheduling, and developing small realistic goals. The intangible benefits included peer support and awareness of their strengths and growth areas.

Designed to help graduate students cope with the demands of writing a doctoral dissertation, Johnson and Conyers (2001) described the application of solution-focused counseling in support groups. The groups containing a maximum of eight members, were led by a professional counselor, and they met weekly for 75 minutes. Students participating in the groups were from a variety of departments, and most were self-referred. The majority of the group members remained in the group until they finished their dissertation or until they no longer felt a need to belong. Johnson and Conyers stated the group focused on the process of writing versus the content; and that most graduate students had many academic successes in the past, these successes ought to be catalysts for helping students complete the dissertation process. Several techniques used in this support group were taken from solution-focused counseling; the techniques included: making a list of goals for the week, looking for strengths, clarifying long-term goals, building on what is possible, and creating a positive point of view. Participants were asked about: The Exception Question: (When has working on the dissertation not been a problem for you?), the Consultant Question: (What would you recommend that someone

else in the same situation do?), the Small Step Question: (What is one step you can take to move forward?), the Coping Question: (How have you prevented the situation from getting worse?), and the Miracle Question: (If you did not have this problem how would life be different for you?). Participants in the solution-focused support group reported a level of 50% or more in both the amount accomplished and the degree of satisfaction. Johnson and Conyers stated that if satisfaction dropped below 50% for any participant, the group devoted extra attention to their specific concerns. Additionally, anecdotal evidence indicated the group meetings were effective for most members, and the group had a very low drop-out rate.

Wasburn (2002) described a research support group that was formed at Purdue University. This group was for graduate students in any department whose progress on their dissertation had stalled. The group was structured around a networking mentoring/learning community model which indicated that successful long-term pursuit of academic goals is greatly facilitated by making and maintaining connections with others also pursuing those goals. The research support group met twice per month over a brown bag lunch. There were three original members, but over a two year period, the group grew to include 13 members. The author, who had already earned a doctorate and was a professor at Purdue, served as the facilitator of the group. As the facilitator, she assumed the responsibility of sending out meeting reminders, obtaining material resources as needed, and tried to secure speakers on topics as needed. The meetings had no formal agendas and consisted of discussing where each member was in his or her progress toward the Ph.D. Members shared material and strategies they found helpful. If a member was having a problem with her dissertation, other members would discuss

ideas for solutions. Eighteen months after the group began, two of the original three members graduated. Some of the benefits group members gained from the group included: dealing with motivational problems, overcoming procrastination, emotional support, comfort of knowing they were not alone in the dissertation process, encouragement, and professional guidance.

Evans (1996) also described the structure and activities of a successful dissertation support group. This group was organized by doctoral students in the Educational Leadership Department at Michigan University. The six original members of this group were solicited to participate when they completed a dissertation seminar class. The group first met in 1995 in a library conference room and the group's purpose was decided on: offering support to members toward the completion of their dissertations, oral defense, and graduation. Evans stated the effective functioning of the group centered in the following three activities: (a) sending weekly e-mail progress reports among all members, (b) sharing documents created for one's own research, (c) practicing one's dissertation defense before group members, and (d) celebrating group members' incremental victories along the path to graduation. Most communication among group members was conducted through an online listserv. The in person meetings were conducted to practice a proposal or defense hearing and to celebrate successes. Within the first year of group's formation 50% of its members graduated. The members said the benefits of the group included both intellectual and emotional support. This emotional support extended beyond the dissertation process and also included the significant life events that members faced.

Whereas Washburn, Evans, Johnson and Conyers examined the effectiveness of a

support group for graduate students at the end stages of their studies, studies have also been conducted in newly admitted graduate students (de Rosenroll, Norman, & Sinden, 1987; Miller and Irby, 1999; Streeter, 1984). Miller and Irby (1999) examined the role a support group had on graduate students upon entering a program. Thirteen doctoral students who were beginning their studies in Educational Leadership at a regional university in Texas were placed into two groups. These two groups were assembled initially as support groups but eventually became doctoral cohorts. The groups discussed their initial anxieties, recommendations for relieving anxieties, and the role the cohort structure would play in minimizing their anxieties. At the end of their first semester together the group had seen each other during class and in outside meetings. The authors stated that the group support and peer encouragement received from the group and subsequent cohort relationship were contributing factors of the graduate students' successes, which included no students dropping out, high academic standing and successful coping with stressors. Miller and Irby make the case that a doctoral cohort is akin to a support group in helping with student retention and lower stress levels.

Streeter (1984) examined the effect that a support group had on newly enrolled graduate students in psychology. This study consisted of a total of 32 participants: 16 in the treatment group and 16 participants in the control group. The participants in the treatment group were further broken down into two support groups consisting of eight people. The groups met for one and a half hours once each week for 12 weeks and were led by advanced students in the psychology department. The results of the study showed that as compared to the control group, the support group members had significantly increased levels of ego-strength, self concept, and external locus of control as measured

by the Barron Scale of Ego-Strength, the Saks Activity Completion Test, and the Rotter Internal-External Locus of Control Scale, respectively. The members of the support group also showed decreased levels of anxiety as measured by the Speilberger State-Trait Anxiety Inventory.

De Rosenroll, Norman, & Sinden (1987) described a support group for entering graduate level students. This group was created for students in a Counseling Psychology Program in Canada. The group was created because graduates of the program indicated that a formal personal and professional peer support group would have been a valuable addition to their program. The group was entitled “Seminar on Personal/Professional Growth, Development, and Integration” and was provided to give new graduate students the opportunity to gather and discuss both personal and professional issues and to pursue interests and activities that group members indicated were personally or professionally relevant. The group met for two hours once a week for 11 weeks and consisted of 14 members. Two second year graduate students facilitated the meetings, and a doctoral student served as their supervisor. The first session of the group was devoted to giving specific information to the new students, such as information on the library and departmental information. The remaining sessions included the following format: business items, information sharing, concerns or questions, and a main topic that had been decided on at the previous meeting. The benefits the students reported getting from the group included: becoming more involved in the university, gaining peer support and encouragement, and making friends.

Another type of support group for graduate students is that designed to provide both experiential and didactic learning for students (Barnette, 1989; Perrone, Smith, and

Carlson, 2003). Perrone, Smith, and Carlson (2003) described a study conducted to examine goal setting and attainment within an experiential, process-oriented training group. A total of 56 graduate students who were interested in becoming group facilitators participated in the study. The participants were divided into four groups of nine members and two groups of ten members. These groups met for one and a half hours per week for 10 weeks. The groups were process-oriented and focused on the here-and-now and were conducted to enhance both the didactic and experiential learning. Prior to the first session, students set goals that they believed were important and attainable through participation in the group. The most frequently cited goals fell under the categories of “building self-awareness” and “building group counseling skills” (p.457). The authors found that the most common types of goals set did not have the highest rating of attainment. The highest goal attainment scores were for goals that fit into the categories of “develop meaningful relationships” and “build interpersonal skills” (p. 457).

Barnette (1989) conducted a study that examined the effects of a 12-week growth group designed to increase the didactic and experiential skills of the participants. As opposed to looking at goal attainment, Barnette examined the self-actualizing effect the group had in its master-level counselor candidate participants. This study consisted of 17 graduate students who were randomly assigned by gender to one of two groups: four women and five men were assigned to the treatment group and three women and five men to the control group. The group leader was a middle-aged male professor of counselor education and psychology. The treatment group met for two hours twice per week for 12 weeks. The results of the study showed that the treatment did significantly improve participants’ scores on a measure of self-actualization.

Mullen, Whatley, and Kealy (1999) examined the role a faculty-student co-mentoring support group played in the lives of graduate students. The authors took part in a support group that involved 11 faculty and student members who met formally for one hour per week for a year. The benefits the members received from the mentoring relationship included professional growth, support regarding institutional changes, mentoring and identification of mentoring themes, and experimentation with role-playing as co-mentoring.

Mallinckrodt & Leong (1985) described a program of stress intervention that was instituted at the University of Maryland to teach graduate students more effective skills for dealing with stresses in both their academic and personal lives. The program was based on interviews that were conducted with graduate students to help identify their current stressors. These interviews and a review of literature led the authors to design a program that was led by pairs of students who had high energy levels and good empathetic skills. The program taught (a) identification of sources, signs, and symptoms of stress, (b) systematic relaxation techniques, (c) identification of campus resources, (d) a sense of self-efficacy, (e) counteraction of passivity, (f) cognitive restructuring techniques for controlling anxiety, (g) identification of social support networks, (h) time management, (i) self-management skills, (j) skills to develop satisfying relationships with faculty members, (k) ways of promoting professional development. After two years of experience with the program the authors experimented with various presentation formats. These formats include: lecture, one-on-one education, support group, and counseling. Follow-up questionnaires completed by the students indicate some students profit more from an intensive one session program and others profit most from a weekly, ongoing,

small-group format with more emphasis on mutual support. Thus, both weekend workshops and ongoing formats of six to ten sessions have been offered concurrently

The final type of support group for graduate students found in the literature review is that for single parents. McLeod & Vonk (1992) described a support group that was designed to meet the special needs of single parent graduate students. The group met one evening every other week for an hour during dinner time and was led by a clinical psychologist. While the parents met for their support group, their children met separately for dinner together with volunteer graduate student therapists. The meetings for the parents included eating dinner together and were relatively unstructured and focused on issues such as child development questions, dealing with new relationships, and academic pressures. The children's group dealt with issues such as expression feelings about divorce, separation, and improving self-esteem. Children's activities included games, artwork, and discussion. A core group of four families participated in the group through its three-year existence. Some of the benefits the group members reported receiving included emotional support, stress relief, feeling understood, practical assistance such as finding childcare and recreational activities for the children, and gave the children a place to belong and express their feelings.

In summary, this section gave an overview of group counseling, detailed the therapeutic factors of group, presented research on the effectiveness of group counseling with anxiety and depression, and covered the research on groups that have been developed for graduate students. Overall, it is clear that group counseling is an effective treatment for anxiety and depression, and it is not uncommon for graduate students to be involved in support groups. This research provides an example of research designed to

meet the social support needs, stress, and symptoms of anxiety and depression of graduate students via group counseling. The next section will discuss the research on the other treatment modality (exercise) utilized in this research.

Exercise

Overview of Exercise

The relationship between exercise and psychological and physical well being was recognized as early as the fourth century B.C. (Buckworth and Dishman, 2002). Herodicus, an early Greek physician who practiced gymnastic medicine, based his theories of health and treatment on vigorous exercise (Phillips, 1994). Hippocrates, considered the father of medicine, acknowledged the values of exercise for both physical and mental illness (Buckworth and Dishman, 2002; Leith, 1994). Early Jewish religious writers noted benefits of exercise. Writings in the old testament of the Holy Bible encouraged purposeful physical activity: “She girdeth her loins with strength, and strengthened her arms. She perceiveth that her gain is good. Strength and honour are her clothing, and she shall rejoice in time to come” (Proverbs 31:17-18, 25). “A slothful man is compared to filthy rags, and everyone will hiss him out to his disgrace” (Apocrypha 22:1). “The desire of the slothful killeth him; for his hands refuse to labor” (Proverbs 21:25). Robert Burton (1632), the British theologian and scholar, spoke of the risks of a sedentary lifestyle on *The Anatomy of Melancholy*: “opposite to exercise is idleness or want of exercise, the bane of body and minde, one of the seven deadly sins, and a sole cause of melancholy” (p. 132).

These early ideas about the virtues of exercise were continued into the 20th century. Franz and Hamilton (1905) noted the beneficial effects of exercise on depression in an empirical study in 1905. In 1926, a psychobiological perspective on mechanisms to explain the effects of exercise was proposed, claiming that exercise benefits individuals who are depressed by stimulating nerves and increasing glandular secretion (Vaux, 1926). During the 1930's, exercise was included in recreational therapy for psychiatric patients (Campbell and Davis, 1939).

Prior to 1970, research investigating the exercise and mental health connection continued to support the notion that positive psychological benefits could be gained from exercise. However many scholars claim that these studies have several methodological problems associated with their research design (Buckworth and Dishman, 2002; Leith, 1994; Morgan, 1988). Morgan (1988) provided a summary of the early empirical studies and reported that they were based predominantly on correlational analysis and cross-sectional comparisons. Further, a causal relationship between psychopathology and fitness measures had not been established, and results could not be generalized beyond the adult psychiatric patients studied in these experiments because of the sampling technique used. Additionally, Morgan observed that these early studies used global measures of mental health (e.g. personality, self-confidence) rather than specific constructs such as depression, anxiety, and mood. In spite of these shortcomings, Morgan did note that the majority of studies demonstrated psychological benefits associated with involvement in physical activities.

Studies conducted since 1980 attempted to address the aforementioned problems (Leith, 1994; Morgan 1988). Reviews by Doan and Scherman (1987), Folkins and Sime

(1981) and Leith (1994) observed trends towards improved experimental research. They also found that more experiments are being conducted on healthy sample populations. With the improved methodological rigor, the majority of studies still have reported that exercise is associated with significant psychological improvements in the participants.

Models of Exercise

Just as several models have been proposed to describe stress, models have also been developed to explain how exercise helps to improve mental health. These models include: endorphin, monoamine, thermogenic, distraction, and self-efficacy. The endorphin model is the most popular explanation of the psychological benefits of exercise (Buckworth and Dishman, 2002; Hughes, 1984; Leith, 1994). When endorphins were first discovered, they were called “the brain’s own morphine” because of their ability to ease pain, and in some cases to produce feelings of euphoria (Hughes, 1984). Researchers found that endorphins are released from the pituitary gland during stress in approximately the same quantities as the stress-related adrenocorticotrophic hormone (Rossier, Bloom, & Guillemin, 1980). Exercise, which causes stress on the body, actually lowers sensitivity to pain (Hughes, 1984; Leith, 1994; Rossier, Bloom, & Guillemin, 1980). A study by Haier, Quaid, and Mills (1981) found that all 15 subjects who ran one mile could, after the run, withstand the pain of a three-pound weight on the tips of their fingers almost 70% longer than they could before the run. When subjects were asked to repeat the run after receiving a shot of Naloxone, a drug that suppresses endorphin activity in the brain, the subjects lost their protection against this pain. The authors concluded that it was the

endorphins produced during exercise that allowed the participants to withstand pain after the one mile run without the Naloxon.

The neurotransmitter model suggests that the improved mood and stress reduction associated with exercise can be explained by changes in one or more of the brain neurotransmitters: dopamine, norepinephrine, and/or serotonin (Leith, 1994). Certain areas in the brain and neural pathways form systems that are associated with mental processes such as anxiety, depression, pleasure, pain, and organized thought (Anderson and Sutherland, 2002; Leith, 1994). Each system utilizes particular neurotransmitters, which are chemical messengers that transmit signals across the synaptic gap and bind with specific receptor sites. If enough neurotransmitters bind with receptor sites, the message is transmitted. The number of these neurotransmitters available along neural pathways is related to our moods, and this number is affected by drugs and exercise (Anderson and Sutherland, 2002; Buckworth and Dishman, 2002; Leith, 1994).

The thermogenic model is based on the elevation of core body temperature. From research regarding passive heating, deVries (1987) proposed that the stress-reducing benefits of exercise are related to elevations in body temperature. Whole body warming has been shown to reduce muscle tension (deVries, Beckman, Huber, & Dieckmeir, 1968). Horne and Staff (1983) compared the body heating effects of exercise with those of a hot bath and found that high rates of body heating triggers a slow wave sleep response. Because slow wave sleep is a portion of the sleep cycle most conducive to relaxation and renewal, “exercise indeed has the potential to result in mental health benefits” (Leith, 1994, p. 11).

The distraction model, also called the time out hypothesis (Breus & O'Connor, 1998) proposes a psychological mechanism, as opposed to the physiological mechanisms described previously, to explain the reduction in stress levels from exercise. The distraction hypothesis maintains that being distracted from stressful stimuli, or simply taking time out from routine activities is responsible for the improvements in mental health (Anderson and Sutherland, 2002; Leith, 1994; Morgan, 1988). Morgan (1973) investigated the distraction hypothesis by measuring state anxiety in 40 men before and after 25 minutes of vigorous exercise and found a significant decrease in anxiety levels after exercise. The reductions in anxiety were then compared to reductions after meditation or quiet rest in a group. And they were found to be similar. This study is often cited in the literature because it generated the hypothesis that the key feature common to the conditions was "time-out" or diversion from the source or symptoms of anxiety. This supports the idea that distraction might be a plausible explanation for anxiety reduction after exercise.

Breus & O'Connor (1998) tested the distraction or time out hypotheses in 18 women who scored as highly anxious on the State-Trait Anxiety Inventory. The participants completed four randomly ordered conditions: Exercise Only, 20 minutes of cycling followed by 20 minutes of recovery; Study Only, 40 minutes of studying while sitting on cycle ergometer; Exercise/Study, 20 minutes of cycling while studying followed by 20 minutes of studying while sitting on the cycle ergometer, and Control, sitting quietly on the cycle ergometer. Anxiety levels were measured before and after the treatment conditions by the State-Trait Anxiety Inventory. The results showed that anxiety was significantly reduced in one of the conditions, the Exercise Only condition.

Because the reduction in anxiety was blocked in the Exercise/Study condition, the authors concluded that the findings support the hypothesis that anxiety reduction following exercise occur because exercise affords individuals a time out from daily worries.

Morgan (1988) argued that the distraction hypothesis does not rule out the influence of physiological mechanisms, but the psychological effects often attributed to exercise may actually be caused by these factors in combination with exercise

Self-efficacy is another mechanism that has been posited to explain the improved mood and antidepressant effects associated with the exercise (Bandura, 1997). The self-efficacy model of exercise assumes that improved mood that follows exercise can be attributed to the improved feeling of accomplishment that comes along with exercise. To test this hypothesis, Bodin and Martinsen (2004) examined 12 clinically depressed men and women. The participants completed 45 minute exercise sessions consisting of stationary bike use and marital arts. The study was completed using a true experimental protocol, using repeated measures and counter-balancing of the two treatments. All participants participated in both activities. Half the participants began with martial arts, followed by stationary bike exercise three days later. The other half started with stationary bike followed by martial arts three days later. All four exercises began with a waiting control of 30 minutes. Participants were assessed with the Specific Self-Efficacy assessment, the Positive and Negative Affect Scales, and the State-Trait Anxiety Inventory before and after each exercise session. The results indicated that following martial arts the participants experienced significant increases in positive affect and reductions in negative affect and state anxiety as compared to the stationary biking

participants. The authors concluded that these results indicate that an increase in self-efficacy may be important for mood benefits to occur during exercise.

Although researchers are not exactly certain which model best explains how exercise helps psychological well-being, the research clearly indicates that exercise does indeed help with symptoms of depression, anxiety, and stress. In the next sections, this research will be reviewed.

Exercise and Depression

The literature supporting the effectiveness of exercise in alleviating depression is vast and can be broken down into both clinical (Babyak, Blumenthal, & Herman, 2000; Slawson, 2005; Tkachuk & Martin, 1999) and nonclinical (Blumenthal, Babyak, Carney, Huber, Saab, Burg, Sheps, Powell, Taylor, and Kaufman, 2004; Boyll, 1985; Cai, 2000; Iverson & Thordarson, 2005; Lavie and Milani, 1997) studies.

With regards to nonclinical populations, Cai (2000) investigated the effect of guided imagery, aerobic exercise which included tai chi, and a control group on 71 nonclinical college students' anxiety and depression in the physical education instructional setting. Each exercise session was 50 minutes long and the treatment lasted for eight weeks. Anxiety and depression were assessed with the Profile of Moods States (POMS) before and after the eight weeks of treatment. The results indicated that the aerobic exercise was significantly better than the guided imagery and control at improving the college students' levels of both anxiety and depression.

In a similar study, Ahmadi, Samavat, Sayya, and Ghanizadeh (2002) investigated the exercise-depression connection in college students. However, the 311 participants in

this study were randomly selected female athletes. The participants were administered the Beck Depression Inventory (BDI). Initially, 60 participants who had gone through a body-building class for less than one month took the inventory, and again after another four weeks of training. This group had a decline in mean depression of three to five points, which was a significant change. In the next phase of the study, 100 women new to body building and 100 women who had completed two months of body building were compared; the mean scores were 13.3 and 10.22, respectively, which represents a significant difference. Finally, 40 females who had swam for less than one month were compared with professional swimmers. Their mean difference was also significant at 10.5 and 6.5, respectively, thus indicating that exercise is associated with lower mean scores on the Beck Depression Inventory.

Iverson & Thordarson (2005) examined the relationship between amount of physical activity and depression in a nonclinical population. The participants were 111 primary care outpatients who were referred by their primary care physicians. All participants wore a heart rate monitor for 24 hours a day and were administered a structured interview using the Structured Clinical Interview for the DSM-IV prior to beginning the experiment. The depression levels of all participants were assessed with the Beck Depression Inventory and the Symptom Checklist-90-Revised. The results indicated that women in the low activity were 15.7 times more likely to be depressed than women in the normal activity group. Additionally, 91% of the low activity group and 39% of the normal activity group were diagnosed with depression.

Exercise has often been prescribed after major health-related surgeries and major health events for its physical benefits. However, researchers are now finding that the

exercise is also improving patients' overall mood and mental health. For example, Lavie and Milani (1997) compared the effects of an exercise program on 70 women after major coronary events to 574 control subjects who also experienced a major coronary event. The authors found that not only did the 60 exercisers experience improvement in their exercise capacity, body mass index, percent in body fat, and LDL/HDL ratio, they also showed quality of life improvements via reduced levels of anxiety and depression.

Blumenthal, et al. (2004) investigated both the physical and mental health benefits of exercise after a health related concern surfaced. The researchers looked at the importance of exercise in the lives of patients with acute myocardial infarction (AMI) completing Enhanced Recovery in Coronary Heart Disease (ENRICHD). The patients were 2,078 men and women who had symptoms of depression and perceived low social support, both of which put a patient at risk of reinfarction or death after AMI. Patients' levels of depression were measured by the Beck Depression Inventory. Exercise habits were self-reported six months after suffering the AMI and then two years later. The results after two years showed that 187 fatal events occurred among the sample. The patients who reported exercising regularly had less than half the fatal events of those who reported exercising regularly (at least three times per week for 30 minutes per session). The regular exercisers also reported significantly lower levels of depression than the nonexercisers.

Kritz-Silverstein, Barrett-Connor, and Corbeau (2001) investigated the exercise–depression link in patients who were originally seen for a health-related concern at the Rancho Bernardo Heart and Chronic Disease Center. In the original study, 2,375 people aged 50 and over were seen at the clinic from 1984 to 1987, and, 8 years later (1992

through 1995); 1,180 survivors participated in a follow-up visit. Participants were interviewed by trained personnel and depression was assessed with the Beck Depression Inventory. After exclusion of patients who were physically inactive, data were used for cross-sectional analysis. The results showed that exercise was significantly associated with fewer symptoms of depression. The authors concluded that exercise not only helped the participant stay well physically, it also helped them stay well mentally via reduced symptoms of depression.

Stich (1998) conducted a meta-analysis of aerobic and nonaerobic exercise as treatments for both depression and anxiety. The major inclusion criteria was the use of a relevant comparison group, which could include: a no-treatment or minimal treatment control group, psychotherapy, pharmacotherapy, or an alternative form of exercise (aerobic vs. nonaerobic). Differences between the effect sizes for various classes of comparison groups were analyzed. These included: waitlist or no treatment control; psychotherapy; pharmacotherapy; social activities, leisure activities, or occupational therapy; aerobic vs. non-aerobic and low-intensity vs. high intensity exercise. The findings suggested that exercise can produce large effect sizes in the reduction of anxiety and depression. Effect sizes were similar for participant groups with psychiatric diagnosis and without diagnosis. However, effect size magnitude was strongly affected by the type of comparison group used, with no treatment control or waitlist control resulting in the highest effects sizes. Additionally, the meta-analysis found that attrition data demonstrate that exercise is well tolerated, with low intensity exercise being better tolerated than high intensity exercise. The author concluded that exercise has been consistently shown to be

effective at lowering symptoms of anxiety and depression in participants, especially when there is a comparison group.

With regards to clinical depression, exercise has been found to be as effective as pharmacotherapy treatment of depression (Babyak, Blumenthal, & Herman, 2000; Singh, Clements, & Fiatarone, 2001), and exercise has been described as an antidepressant in the sports medicine literature (Anthony, 1991). In their survey of physicians, Morgan and O'Connor (1989) reported that 85% of the participants prescribed exercise for the treatment of depression. In their well-designed randomized controlled trial (RCT) investigation of 156 people, aged 50 years and older, who had major depressive disorder, Babyak, Blumenthal, & Herman (2000) assessed the value of exercise therapy. The participants were randomly assigned to a four-month course of one of the following three treatments: supervised aerobic exercise (cycling or brisk walking for 30 minutes, three times per week, at 70 to 85% of maximum heart rate); antidepressant therapy with sertraline of 50 mg/d, titrated until a therapeutic dosage was achieved (up to 200mg/d); or a combination of exercise and the antidepressant. Depression levels were assessed before and after the four month treatment by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), Hamilton Scale for Depression (HRSD), and the Beck Depression Inventory (BDI). After the four months of treatment, exercisers showed significantly lower rates of depression than patients in the antidepressant group and the combination group.

Similarly Singh, Clements, & Fiatarone (2001) concluded after their investigation of controlled resistance training on 32 seniors who met the criteria of the DSM-IV for clinical depression. The participants were given 10 weeks of supervised weight lifting

exercise followed by 10 weeks of unsupervised exercise.. Levels of depression were assessed via the Beck Depression Inventory and the Ewart's Self Efficacy Scale before and after the 20 weeks of treatment. Participants showed a 60% improvement in depression symptoms as compared to control subjects. Similar to Babyak, et al., 2000, the authors concluded that "there is no drug in current or prospective use that holds as much promise for sustained health as a lifetime program of physical exercise" (p. 503)

In another study conducted on seniors with major depression, Dimeo, Bauer, & Varhram (2001) found that regular exercise can help depression in the elderly. In their pilot study of 12 patients who met the diagnosis of a major depressive episode as defined in the Diagnostic and Statistical Manual (DSM-IV) patients performed a supervised walking program on a treadmill for 30 minutes a day for 10 days. Following the exercises, the patient self-assessment of symptom intensity was significantly lowered after exercise (23.2 before, 17.7 after). Reductions in psychiatrist-derived depression scores correlated with changes in the self-assessment scores. The authors concluded that the patients exhibited a clinically-relevant and statistically significant reduction in depression scores because of their exercise.

On a sample of 80 clinical patients, aged 20 to 45, Slawson (2005) investigated the effects of exercise, with mild to moderate depression. Patients were randomly assigned to one of three exercise treatments: 7.0 kcal per kg per week (low dose) performed three to five times per week; 17.5 kcal per kg per week (high dose) performed three to five times per week; or flexibility exercise only (control group). The high dose is consistent with public health recommendations for physical activity. Patients were assessed prior to beginning exercise and after 12 weeks of treatment with the Hamilton

Rating Scale for Depression. Results showed that both high and low dose aerobic exercise were significantly more effective at relieving symptoms of depression than the control group.

Exercise has also been found to be as effective as other types of treatment such as psychotherapy for alleviating depression. In a meta-analysis of 33 studies that compared exercise to other forms of treatment for clinically depressed patients, North, McCullagh, and Tran (1990) found that aerobic exercise reduced depression more than other treatment approaches. They concluded that exercise is as effective as psychotherapy; talking with a friend, and a wait-list control. However, the authors noted that the combination of exercise and psychotherapy seemed to be most effective because of their joint effects.

In their review of exercise treatment studies written between 1981 and 1999 Tkachuk & Martin (1999) found that exercise has consistently been found to reduce both mild and moderate depression in addition to anxiety, body image problems, developmental disabilities, and chronic pain. Their findings led the authors to conclude that regular exercise is (a) a viable, cost-effective, but underused treatment for mild to moderate depression that compares favorably to individual psychotherapy, group psychotherapy, and cognitive therapy, (b) a necessary ingredient in effective behavioral treatments that reduce self-reported pain.

Chard (2002) reviewed the findings of Dr. William Strawbridge and his colleagues, of the Public Health Institute, Berkeley, California, and his colleagues who studied the effect of physical activity on prevalent and incident depression over a 5-year period in 1,947 adults. Although specific information about the findings were not

available, Strawbridge concluded that regular physical exercise will reduce the risk of subsequent depression in people who suffer from both ongoing and single incident depression.

Exercise and Anxiety

The research literature supporting the ability of exercise to reduce anxiety in both clinical and nonclinical populations is substantial (Bahrke & Morgan, 1978; Boyll, 1985; Broman-Fulks, Berman, & Rabian, 2004; Broocks, Bandelow, Pekrun, George, Meyer, Bartmann, Hillmer-Vogel, & Ruther, 1998; Landers and Petruzello, 1994; McDonald and Hodgdon, 1991; Szabo, 2003). In fact, several meta-analyses have been conducted that show exercise is very effective at reducing anxiety in both clinical and nonclinical populations (Long and Van Stavel, 1995; Petruzzello, Landers, Hatfield, Kubitz & Salazar, 1991; Slawson, 2005; Tkachuk & Martin, 1999). For instance, Petruzzello, Landers, Hatfield, Kubitz & Salazar (1991) conducted three separate meta-analyses on a total of 104 research studies to quantitatively review the exercise-anxiety literature for state anxiety, trait anxiety, and psychophysiological correlates of anxiety. Their results substantiated the claim that exercise is associated with reductions in anxiety, but only for aerobic exercise. These effects were generally independent of both the participant (e.g. age and health status) and descriptive characteristics. For state anxiety, exercise was associated with reduced anxiety, although it had effects similar to other known anxiety-reducing treatments (e.g. relaxation). The trait anxiety meta-analysis revealed that random assignment was important for achieving larger effects when compared to intact groups. The research revealed that treatment programs also need to exceed 10 weeks

before significant changes on trait anxiety can occur. For psychophysiological correlates, cardiovascular measures of anxiety (e.g. blood pressure, heart rate) yielded significantly smaller effects than did other measures. The only variable that was significant across all three meta-analyses was exercise duration. Aerobic exercise of at least 21 minutes seems necessary to achieve reductions in both state and trait anxiety. The authors concluded that exercise offers therapeutic benefits for reducing anxiety without the dangers or costs of drug therapy or psychotherapy. However, it remains to be determined precisely why exercise is associated with reductions in anxiety since several mechanisms may be operating simultaneously.

Tkachuk & Martin (1999) reviewed exercise treatment studies written between 1981 and 1999 and found that exercise has consistently been found to reduce both mild and moderate depression in addition to reducing anxiety, body image problems, developmental disabilities, and chronic pain. Their findings led the authors to conclude that regular exercise is (a) a viable, cost-effective, but underused treatment for mild to moderate depression that compares favorably to individual psychotherapy, group psychotherapy, and cognitive therapy, (b) a necessary ingredient in effective behavioral treatments that reduce self-reported pain.

Another meta-analysis of the effectiveness of exercise at alleviating anxiety was conducted by Long and Van Stavel (1995). These researchers looked at 40 studies that were grouped into two categories: 1) exercise training studies that examined change from pre- to post-treatment and 2) studies that examined both change over time and between group differences. The unbiased weighted average effect sizes were .45 and .36, respectively. Thus, exercise training improved anxiety levels an average of .36 standard

deviations over alternative or control conditions. The authors noted that adults who were more likely to have a stressful lifestyle benefited more from the exercise training than those who did not have a stressful lifestyle.

Slawson (2005) conducted a meta-analysis of 28 articles that investigated which complementary and alternative medicines are effective at treating anxiety disorders. Although the thorough meta-analysis provided little support for most complementary and alternative medicines, support was found for exercise, dance and movement therapy, meditation, and relaxation therapy for significantly reducing levels of anxiety in both clinical and nonclinical populations.

Many of the studies published from 1960 to 1994 indicated an average reduction of anxiety from one-fourth (McDonald and Hodgdon, 1991; Petruzzello et al., 1991) to one-half (Landers and Petruzzello, 1994) of one standard deviation after exercise that lasted 20 to 30 minutes. Researchers have reported that exercise is as effective as biofeedback and drugs (Broocks, Bandelow, Pekrun, George, Meyer, Bartmann, Hillmer-Vogel, & Ruther, 1998), meditation (Bahrke & Morgan, 1978), and quiet rest and distraction (Bahrke & Morgan, 1978; Breus & O'Connor, 1998) in decreasing state anxiety.

In studying anxiety, researchers have documented that decreased levels of anxiety can occur by means of both objective physiological measures and self-reports. Physiological measures indicating that reduced anxiety levels were reduced following exercise include reductions in muscle tension (deVries, 1987; deVries, & Adams, 1972; deVries, Beckamn, Huber, & Dieckmeir, 1968), reductions in blood pressure (Hannum & Kasch, 1981; Raglin & Morgan, 1987; Raglin, Turner, & Eksten, 1993), reductions in

resting heart rate (Wilfley & Kuncze, 1986; Williams & Getty, 1986), and decreased cortical activation (Boutcher & Landers, 1988).

Although the literature regarding exercise and anxiety includes studies that objectively measure anxiety, greater attention has been focused on the relationship between exercise and psychometrically measured (i.e., self-reported) symptoms of anxiety (Buckworth & Dishman, 2002; Leith, 1994). The psychometric scales used most frequently in the literature are the Beck Anxiety Inventory (Beck & Steer, 1990), the state anxiety scale from the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970) and the Profile of Mood States (McNair, Lorr, & Droppleman, 1971). These instruments measure the “how you feel right now” aspects of anxiety. The majority of studies utilized the above scales because of their specificity and ease of administration (Leith, 1994). A major weakness of these measures is the transparency in their content and goals, leading to the possibility that the reduction in anxiety after exercise was confounded by subject expectancy regarding the psychological effects of exercise (Morgan, 1997)

Szabo (2003) utilized psychometric measurements in comparing the effectiveness of humor and exercise to alleviate anxiety in a nonclinical sample. The participants were 39 university students who were tested, at weekly intervals, three times: running/jogging at self-selected pace, watching a humorous stand-up comedy, and watching a documentary video. Mood and state anxiety were determined five minutes before and after each treatment with the following psychometric measures: the Subjective Exercise Experience Scale and the Spielberger State Anxiety Inventory. The results showed that

both humor and exercise significantly reduced psychological distress and anxiety and significantly increased positive well-being.

Another recent study to utilize psychometric measurement in a nonclinical sample was conducted by Broman-Fulks, Berman, & Rabian (2004). The researchers investigated whether aerobic exercise would reduce not only generalized anxiety, but also reduce anxiety sensitivity on 54 participants. All participants completed six 20-minute treadmill exercise sessions at either a high-intensity (n=29) or low-intensity (n=25) level. Self-ratings of anxiety sensitivity, fears of physiological sensations associated with anxiety, and generalized anxiety were obtained at pretreatment, post-treatment, and one-week follow-up. Results indicated that both high and low-intensity exercise reduced anxiety sensitivity and general anxiety. However, high-intensity exercise caused more rapid reductions in a global measure of anxiety sensitivity and produced more treatment responders than low-intensity exercise. Additionally, only high intensity exercise reduced fear of anxiety-related bodily sensations.

The comparison of land and water aerobic exercise in reducing state anxiety in a nonclinical sample was examined by Watanabe, Takeshima, & Okada (2000). Seventy-three healthy participants were recruited and randomly assigned to either water exercise (n=36) or land exercise (n=37). State anxiety was assessed before and after exercise. Participants in the water exercise performed a 70-minute exercise program consisting of a 10-minute warm-up and 10-minute cool down. The land exercise program contained a 10-minute warm-up and a 30 minute combined endurance and resistance exercise, followed by a 10-minute cool down. Results showed that both groups scored significantly

lower on anxiety after exercise; however, there was no significant difference between the land and water exercise group's reduction in anxiety.

Boyll (1985) examined the effectiveness of active exercise versus passive electronic muscle stimulation and no treatment on 42 nonclinical college students. Participants were randomly assigned to one of the three treatment groups for a six week treatment: 1) the exercise group received a combined aerobic and anaerobic workout for 50 minutes twice per week, 2) the electronic stimulation group received treatment for 50 minutes twice per week, and 3) the control group received no treatment. Participants completed instruments both before and after treatment that assessed self-concept, anxiety, and depression. Results showed significant improvements in levels of anxiety and self-concept in both the exercise and electrostim groups as compared to the control group.

Blumenthal, Williams, Needels, and Wallace (1982) investigated the anxiety reducing benefits of exercise in a nonclinical sample. In this study, 16 participants participated in a 10-week program of regular walking-jogging, while a matched control group maintained their sedentary life-styles. All participants completed the following battery of psychological tests before and after the 10-week treatment period: the Profile of Mood States, the State-Trait Anxiety Inventory and a retrospective questionnaire regarding self-perceptions of change. The results revealed that scores for the exercise group almost always improved, whereas the scores for the control group remained the same or deteriorated. The exercise group exhibited significantly less state and trait anxiety, less tension, depression, and fatigue, and more vigor than the control group. The authors concluded that these results document the potential utility of regular exercise in promoting psychological health in normal adults.

Just as the effectiveness of exercise in alleviating anxiety in nonclinical populations has been established, it has also been recognized in clinical populations. Brooks, Bandelow, Pekrun, George, Meyer, Bartmann, Hillmer-Vogel, and Ruther (1998) compared the therapeutic effectiveness of exercise for patients with panic disorder to a drug treatment of proven efficacy and to a placebo. The participants, 46 outpatients suffering from moderate to severe panic disorder with or without agoraphobia, were randomly assigned to a 10-week treatment protocol of one of the following: 1) regular aerobic exercise (walking or running four miles four times per week), 2) clomipramine (112.5 mg/day), or 3) placebo pills. The following set of clinician and self-rated measures were completed before treatment, and after 2, 4, 6, 8, and 10 weeks of treatment: the Hamilton Anxiety Rating Scale, observer-rated and patient-rated versions of the Panic and Agoraphobia Scale, and the Fear Questionnaire, the Beck Anxiety Inventory, the Beck Depression Inventory, and the Montgomery-Asberg Depression rating Scale. According to all anxiety measures, results indicated that in comparison with the placebo, both exercise and clomipramine led to a significant decrease in symptoms of anxiety. A direct comparison of exercise and clomipramine revealed that the drug treatment improved symptoms of anxiety earlier and slightly more effectively. Depressive symptoms were also significantly improved by exercise and drug treatment. The authors concluded that regular aerobic exercise alone is associated with significant clinical improvement in symptoms of anxiety and depression in patients suffering from panic disorder.

Another clinical sample that has been helped by exercise is those suffering from Posttraumatic Stress Disorder (PTSD). Manger and Motta (2005) assessed the impact of a

12-session exercise program on symptoms of anxiety, depression, and PTSD in 36 people who suffered from PTSD. Symptoms of anxiety, depression, and PTSD were assessed via questionnaires before beginning exercise, at the end of the 12-session program, and at a one-month follow-up. The results showed that, as compared to a control group, the exercise program significantly reduced symptoms of anxiety, depression, and PTSD. Additionally, the reductions were maintained at a one-month follow-up. The authors concluded that exercise programs may be valuable resources for managing treatment-resistant participants with PTSD and may also have a beneficial effect on anxiety and depression

Just as exercise has been found to be as effective as pharmacological treatment for depression (Babyak, Blumenthal, & Herman, 2000; Singh, Clements, & Fiatarone, 2001), it is also effective for anxiety. deVries and Adams (1972) compared the tranquilizer effect of a single dose of exercise and meprobamate (400mg) in 10 participants who met the diagnosis for generalized anxiety disorder. They found only one exercise session increased body temperature and relaxed muscles enough to lower anxiety levels that significantly exceeded the anxiety lowering of the medication meprobamate. The authors concluded that “the exercise modality should not be overlooked when a tranquilizer effect is desired, since in single doses, at least, exercise has a significantly greater effect of musculature, without any undesirable side effects, than does, meprobamate” (p. 140).

Exercise and Stress

The evidence that exercise helps in reducing stress is substantial. Crews & Landers (1987) conducted a meta-analysis of 34 studies to examine the relationship

between aerobic activity and psychosocial stress. The results of the studies having 92 effect size estimates from 1,449 participants were statistically combined to compare psychosocial stressor tasks and arousal measures. The average effect size estimate of .48 was significantly different from zero ($P < .01$) indicating that aerobically fit participants had a reduced psychosocial stress response compared to either control group or baseline values. Additionally, none of the proposed moderating variables altered the aerobic fitness-psychosocial reactivity relationship. The authors noted that in terms of determining the effectiveness of exercise at alleviating stress several methods are used. These include reduced heart rate and blood pressure; increased stroke volume, maximal oxygen uptake, and core temperature; and improved cognitive performance.

Two studies investigating exercise lowering stress levels via improved cognitive functioning were conducted by Kramer and Colcombe and reported by Bower (2004). In the first study, it was found that after 41 adult participants walked one mile they performed better at an attention task and had increased blood flow to the brain than before the walk. Additionally, it was found that for adults who were already fit, they exhibited intense blood flow in frontal-brain areas implicating in allocating attention and minimal neural activity in a frontal region that usually perks up in situations of indecision. In the second study, it was found that 14 adults who completed a 6-month course of aerobic training of 45 minutes three times per week had brain activity that resembled those of the highly fit in the first study. In contrast, 14 adults who completed a six month course of stretching and toning, but not aerobic exercise, showed little improvement in the attentions task. The researchers concluded that encouraging adults to

walk three times a week would enhanced blood flow to the their brain and subsequently lower stress levels.

In a similar study, Weuve (2004) investigated the exercise habits of 18,766 women over a period of 8 to 15 years. It was found that when the women reached 70 years of age and had their memory, learning, and attention abilities tested, the women who engaged in a moderate amount of activity that included walking at a relaxed pace two to three hours per week, performed significantly better than those who did not exercise.

In a study to test the effectiveness of exercise in helping regulate participants' hearts via the parasympathetic nervous system during psychological stress, Spalding (2000) assessed the heart rate periods and respiratory sinus arrhythmia of 10 aerobically trained and 10 untrained college-aged men at rest and during three psychological challenges and three minutes of recovery. The aerobically trained men were recruited from running and cycling clubs in a metropolitan area. Runners reported running an average of 40 miles per week for an average of 4.5 years and cyclists reported riding 300 miles per week for an average of 3.3 years. The untrained men were recruited from a large university in the same metropolitan area. Ratings of perceived stressed were obtained via questionnaire at the end of the rest period, at the midpoint of each stressor, and at 30 minutes into recovery. The results showed that the aerobically trained did exhibit longer heart period at rest and during psychological stress and recovery than did the untrained men. This indicates the aerobically trained men did not have the increased heart rate response and subsequent stress response that the untrained men did,

demonstrating increased aerobic capacity enables one to cope better with psychological stress.

Steffen, Sherwood, Gullette, Georgiades, Hinderliter, and Blumenthal (2001) conducted another study to assess the effects of exercise on stress levels. This investigation assessed the effects of exercise training on blood pressure associated with physical activity and emotional stress during daily life. The 112 participants, who had high normal or stage one or two hypertension, were randomly assigned to one of three conditions: 1) a combined exercise and behavioral weight management program; 2) exercise-only group, or 3) a wait list control group. Blood pressure was assessed before treatment and after six months of treatment. Emotional distress was monitored daily via questionnaire. The results showed that, prior to treatment, increased levels of physical activity and emotional distress were associated with increased systolic blood pressure, diastolic blood pressure, heart rate, and rate pressure product. After treatment, the exercise and weight management program, as compared to the control group, had significantly lower heart rate, diastolic blood pressure, and rate pressure product during both high and low levels of physical activity and emotional distress. The exercise only group had similar blood pressure levels as the exercise and weight management program, although the exercise group had significantly lower blood pressure than the control group during low but not high levels of physical activity and emotional distress. The authors concluded that the findings provide further support that exercise reduces blood pressure levels at rest and in situations that typically elevate blood pressure such as intense physical activity and emotional distress thus lowering stress levels.

Exercise and Graduate Students

Few studies have examined the role of exercise in graduate students' lives. A thorough literature review revealed three studies that examined the percentage of graduate students who exercised (Brown & Robinson, 1993; Heins, Fahey, & Leiden, 1984; Turbow, 1985). In their investigation of the perceived stress levels in medical, law and graduate students, Heins, Fahey, and Leiden (1984) asked the 350 participants to indicate as part of the Demographic Questionnaire if they exercised 4-7 times per week. The results revealed that 64% of the medical students exercised 4-7 times per week; 65% of law students exercised 4-7 times per week; 60% of psychology graduate students exercised 4-7 times per week; and 58% of chemistry graduate students exercised 4-7 times per week. Turbow (1985) also gathered baseline information on the exercise habits of 891 upperclassman and graduate students and found that two-thirds of the participants in the study exercised at least three hours per week. Finally, Brown and Robinson (1993) found that 62 of the 103 participants (60%) in their study exercised regularly (twice per week). These numbers are higher than the national norms reported by the Surgeon General's report on physical fitness and activity that reported that 60% of Americans do not engage in the recommended amount of exercise, which is 3-5 times per week for 20 to 30 minutes (United States Department of Health and Human Services, 1996). This information from the three studies that investigated exercise prevalence in graduate students indicates that approximately 40% of graduate students do not exercise regularly.

The literature review categorized exercise among graduate students in two ways: 1) how exercise impacts the lives of graduate students, and 2) graduate students' attitudes towards exercise. With regard to the impact exercise has on graduate students, Turbow

(1985) utilized a sample of 891 upperclassman and graduate students in 48 randomly selected classes at California State University, Fullerton to assess via survey the relationship of exercise to selected demographic characteristics, academic achievement, and sense of well-being. Participants completed a survey of exercise and personal development and exercisers were compared with nonexercisers on academic achievement (as measured by grade point average) and sense of well-being (defined as comprising satisfaction with self and satisfaction with various aspects of life and measured via survey). The major findings from the study were: 1) men were more likely to exercise than women 2) full-time students were more likely than part-time students to exercise at least three times per week, 3) vigorous exercisers (those who exercised seven or more hours per week) earned significantly lower grade-point averages than did moderate exercisers (those who exercised three to six hours per week) or nonexercisers and 4) exercise was significantly related to satisfaction with self 5) those who exercised for seven or more hours per week were more likely to be very satisfied with themselves than were moderate exercisers or nonexercisers, and finally, 6) students who engaged in aerobic exercise were significantly more likely than others to be very satisfied with themselves and their lives and to have a higher sense of well-being.

Similar to Turbow (1985), Brown and Robinson (1993) examined the relationship exercise has to personal characteristics of graduate students. In their investigation, Brown and Robinson looked at the relationship between regular meditation and/or physical exercise and three dimensions of self actualization of 103 advanced graduate counseling students via survey.. Based on reported exercise and meditation activities, the 103 participants were classified into one of four categories: 1) 33 exercised regularly (at least

two times per week), 2) 20 meditated at least twice per week, 3) 29 exercised at least twice per week and meditated twice per week, and 4) 21 did neither. The self-actualizing variables of interest were inner-directedness, living in the present, and lessened anxiety. The results indicated that counselor trainees who meditated and exercised were significantly more inner-directed than students who did neither. Mean scores for exercisers, meditators, and those who did both were higher on the Time Competence Scale than those trainees who neither meditated nor exercised. Finally, counselor trainees who both exercised and meditated reported significantly less trait anxiety than those who did neither. The authors concluded that both exercise and meditation appear to have a centering effect on graduate students. Thus, graduate students should be encouraged to implement both into their lives to cope with the stressors of graduate school.

In their qualitative investigation of 10 mature female graduate students, Anderson and Mieztis (1999) examined the coping methods participants used to manage family, work, and school stressors. One of the most commonly used coping mechanisms for the graduate students was exercise. One participant said

“I work out five or six times a week...I do it just as much for mental reasons as for physical reasons....I remind myself that time away is just as important as time on the computer, or at the books, or whatever, that it is rejuvenating and that’s why I take the time, take a couple of hours and go work out; I don’t view it as lost time. It’s just quality time, so I can get back and improve my concentration”.

(p. 37)

The authors of the article concluded that those who use positive coping methods such as exercise are more likely to complete graduate school.

A study by Tichy and Means (1990) investigated the impact exercise had on graduate students' ability to cope with the stress of graduate school. The authors examined the stress levels of 236 graduate students in Oregon. The participants provided their perceptions of the level of stress they felt and personal health status as students, their responses to stress, and positive coping methods. Similar to the finding of Anderson and Mieztis (1999), exercise was the most common positive coping method. The authors concluded that those who exercise had a lowered stress response and better coping abilities to deal with the stress of graduate school.

A thorough literature review revealed three studies that examine graduate students' attitudes towards exercise. Hart (1984) examined the relationship between self-verbalization about exercise and actual exercise behavior on 174 male and female graduate students at the University of Tennessee, Knoxville. Two questionnaires were utilized for this study: the Physical Activity Questionnaire and the Self-Talk and Exercise Questionnaire. The Physical Activity Questionnaire provided information about amount of time and effort spent in exercise during the cold and warm seasons of the year and made it possible to divide the sample into low, medium, and high exercisers. The Self-Talk and Exercise Questionnaire provided information about the frequency and influence of a variety of proexercise and antiexercise statements for these groups. Results indicated there was a relationship between verbalization and exercise and that there were differences in the frequency and influence of the self-statements of the groups. During the winter conditions, high exercisers emitted more proexercise and fewer antiexercise self-statements than did the low exerciser and gave a higher rating to their proexercise statements; and low exercisers emitted more antiexercise self-statements than did the

middle and high groups. During the summer conditions, the low exercisers emitted more antiexercise self-statements than did the middle and high groups. The authors conclude that those who told themselves more positive things about exercise, the more likely they were to exercise regularly.

A study by Mowatt, DePauw, and Hulac (1988) examined that graduate students' attitudes towards exercise. These researchers examined the viewpoints of 564 students enrolled in an elective activity course program at a Northwest Land Grant University. Participants were divided evenly among 20 activity classes and the classes were randomly assigned to either receive a mini lecture about exercise or not receive one. The 20-item survey instrument, which was created for this study, was divided into three categories that assessed: 1) general attitudes towards physical activity, 2) attitudes towards physical education being offered in a college curriculum, and 3) how the participants assessed the scientific basis of exercise. The attitude survey was administered during the first two weeks of class, then again the last two weeks of class. Half the classes received mini-lectures about exercise during the treatment period, whereas the other half participated in the exercises only. The most significant findings were as follow: 1) students exhibited general agreement that there is a scientific basis for the value of physical activity; 2) students indicated it was important to be fit, and that physical activity was worth the effort; 3) females tended to have more positive attitudes towards physical activity than males; 4) attitudes toward physical activity did changes over the course of the experimental period; and 5) the use of mini-lectures was primarily effective in changing attitudes in those classes in which fitness/conditioning was emphasized. The authors concluded that the graduate students in this study tended to value exercise and

think it is important, and the use of mini-lectures was not particularly helpful for students who already had an intrinsic interesting physical activity.

The third study to examine graduate students' attitudes towards exercise was conducted by Maltby (2001). In this study, the relationship between exercise motives and the psychological well-being of 227 undergraduate and graduate students who exercise at least two to three times per week was investigated. The participants were divided into two groups based on how long they had been exercising: 1) more than six months and 2) less than six months. The participants completed four questionnaires that measured exercise motives (the EMI-2), self-esteem (the Rosenberg Self-Esteem Scale), psychological well-being (the General Health Questionnaire), and stress (the Hassles Scale). The results of comparing the two groups on the four different questionnaires indicated that students who had been exercising for less than six months scored higher on extrinsic motives for exercising (social recognition, affiliation, competition, and appearance); these scores were related to significantly poorer psychological well-being (anxiety, somatic symptoms, social dysfunction, and lower scores on self-esteem). However, the participants who had been exercising for more than six months scored significantly higher on several intrinsic motives for exercising (stress management, enjoyment, and challenge) and were significantly related to better psychological functioning (lower scores on anxiety, social dysfunction, and depression; and higher scores on self-esteem). The authors concluded that, in the short term, extrinsic motives for exercise are significantly related to poorer psychological wellbeing, whereas in long-term, intrinsic exercise motives for exercise are related to aspects of better psychological well-being. This is consistent with the view that individuals internalize exercise

motivation over time and that this affects psychological well-being. The findings also support the Self-determination theory in that it is important to understand the relationship between exercise motivation and psychological well-being.

In summary, this section gave an overview of exercise; presented the research on the effectiveness of exercise in alleviating stress, anxiety, and depression; and covered the literature pertaining to graduate students and exercise. The next section will provided a summary of this chapter.

Summary

Collectively, previous research confirms that graduate students must deal with stress, anxiety, depression, and loneliness. The effects of stress on the body and mind have been clearly delineated. The importance of social support for graduate students to deal with this stress has been noted, and the effectiveness of exercise in alleviating stress, depression, and anxiety was established. However, the review of literature did not reveal any research investigating the effects a support group or the effects of an exercise program on anxiety, depression, loneliness, and stress levels of graduate students majoring in counseling.

CHAPTER III

METHODOLOGY

Introduction

Chapter II presented research depicting the need to conduct research on the psychological needs of graduate students. It also detailed the strengths of both group counseling and exercise to meet these needs. Although researchers addressed the stressors that graduate students experience, few studies were designed to find a solution to the problem. This chapter outlines the methodology for this study. This chapter will be divided into the following sections: variables in the study, participants, instrumentation, procedures, hypotheses and research design, and statistical analysis.

Variables in the Study

The dependent variables for this study were the levels of depression, anxiety, stress, and loneliness experienced by graduate counseling students. These variables were measured by the Beck Depression Inventory (Beck, 1970) (Appendix C), Beck Anxiety Inventory (Beck and Steer, 1990) (Appendix D), Perceived Stress Scale (Cohen & Williamson, 1988) (Appendix E), and the UCLA Loneliness scale (Russell, 1996) (Appendix F). The independent variables for this study were the three treatment conditions: group counseling, exercise, and control. Levels of depression, anxiety, stress, and loneliness were assessed with the aforementioned inventories before and after participant involvement in 10 weeks of group counseling, exercise, or no treatment.

Participants

All participants were students enrolled in a CACREP accredited master's level counseling class in a mid-size southwestern city. The researcher visited the counseling class in which the students were enrolled and solicited their participation in the study. Participants were solicited during the first week of class during Fall, 2003 and Spring, 2004. Participants were given an overview of the study and were told participation was voluntary and compensation would not be provided. Those students who agreed to participate were given an informed consent form to sign and were assigned a random number. This random number was then placed on the packet of inventories. A master list of all participants' names and random identifying number were kept in a locked file cabinet throughout the data collection. Once the data had been collected and analyzed, this list was destroyed.

A total of 57 graduate students participated in this study. From this total, 20 participants agreed to participate in the group counseling group. Since three 3 participants did not return their posttest packet, this left a sample size of 17 in the group counseling treatment. Of these 17 participants, 2 (11.8%) were males and 15 (88.2%) were females. In the group counseling group, sixteen participants (94.1%) were Caucasian and one participant (5.9%) was Asian. There were 7 participants (41%) who were married, 4 participants (24%) were divorced and 6 (35%) had never been married. In the group counseling group, 12 participants (71%) reported they were currently employed with a mean number of hours worked of 19.3. In the group counseling group, 11 participants (65%) commuted to school average commute of 13.6 miles, and 6 participants (35%)

reported currently that they take an antidepressant medication, while 4 students (24%) reported taking an anxiolytic medication.

There were 19 participants in the exercise group: three males (15.8%) and 15 females (88.2%). In the exercise group, 16 participants (84.2%) were Caucasian and three (15.8%) were Hispanic. There were 13 participants (68%) in the exercise group who were married, two participants (10.5%) who were divorced, and four participants (21%) who had never been married. The exercise group consisted of 14 participants (74%) who were employed, and were working an average of 18.6 hours per week. Three participants (1.5%) commuted to school with an average commute distance of 4.7 miles. There were three participants (16%) who were currently taking antidepressant medication, and 1 student (5.2%) taking an anxiolytic.

Twenty-one participants were in the control group, 4 students (19%) were males and 17 students (81%) were females. In the control group, three participants (14.3%) were Hispanic, two participants (9.5%) were African American, and 16 (76.2%) were Caucasian. With reference to marital status, seven participants (33%) in the control group reported being married, six participants (29%) were divorced, and eight participants (38%) were never married. In the control group, 18 participants (85%) reported that they were currently employed and worked an average of 30.7 hours per week. With regard to commuting, six participants in the control group (29%) said they commute to school an average of 2.4 miles. There were four participants (19%) in the control group who reported currently taking antidepressant medication while no participants in the control group reported taking an anxiolytic.

Instrumentation

The instruments administered to all participants as pretest and posttest measured symptoms of depression, anxiety, loneliness, and stress were as follow: (1)the Beck Depression Inventory (BDI, Beck, 1970) (see Appendix C), (2) the Beck Anxiety Scale (BAI, Beck & Steer, 1990)(see Appendix D), (3) the UCLA Loneliness Scale (Russell, 1996) (see Appendix E), and (4) the Perceived Stress Scale (PSS, Cohen & Williamson, 1988) (see Appendix F). The participants were also asked to complete a demographic questionnaire (see Appendix B) at pretest and a set of qualitative questions (see Appendix H) during posttest

Demographic Questionnaire

A demographic questionnaire was designed for this study. This form included the following information: 1) Gender 2) Age 3) Ethnic Group 4) Marital Status 5) Educational Level 6) Program currently enrolled in and number of hours currently enrolled 7) Number of semesters completed in program 8) Whether the participant commutes to school and if so, how many miles 9) Employment status and number of hours worked 10) Whether the participant currently counsels clients 11) Whether participant exercises regularly and if so, how often 12) Whether the participant was taking an antidepressant or 13) anxiolytic. This questionnaire was used to describe the sample on for this research study.

Beck Depression Inventory

Depression levels were assessed with the Beck Depression Inventory (BDI, Beck, 1970), the most commonly used self-report measure of depression. Permission to use the Beck Depression Inventory was achieved by purchasing the inventories through Harcourt Assessment, an assessment publishing company.

The BDI is a Likert type scale that consists of 21 multiple choice items representing either a symptom or attitude related to depression. These symptom and attitude items include the following: 1 = mood, 2 = pessimism, 3 = sense of failure, 4 = self-dissatisfaction, 5 = guilt, 6 = punishment, 7 = self-dislike, 8 = self-accusations, 9 = suicidal ideas, 10 = crying, 11 = irritability, 12 = social withdrawal, 13 = indecisiveness, 14 = body image changes, 15 = work difficulty, 16 = insomnia, 17 = fatigability, 18 = loss of appetite, 19 = weight loss, 20 = somatic preoccupation, and 21 = loss of libido (Beck & Steer, 1987).

Several studies have been conducted to establish the psychometric properties of the BDI (Beck, Epstein, Brown, and Steer, 1988; Carter & Dacey, 1996; (Katz, Katz, & Shaw, 1999; Skorikov & Vandervoort, 2003; Yin and Fan, 2000). For instance, Beck, Epstein, Brown, and Steer (1988) conducted a meta-analysis of 25 published papers using the BDI on individual diagnosed with schizophrenia, substance abuse, college students; and depressed students; the authors reported that reliabilities were consistently high, ranging from .73 to .95. Test-retest reliability for the scores on the BDI is stable for non clinical populations, ranging from .70 to .90 for periods of 1 to 2 weeks (Beck & Steer,

1987). For psychiatric patients, test-retest reliability has been reported to range from .48 to .86 over various treatment periods (Katz, Katz, & Shaw, 1999).

Yin and Fan (2000) conducted a meta-analysis on the BDI and found results similar to those of Beck, Epstein, Brown, and Steer (1988). Yin and Fan investigated reliability coefficients for 1,200 research papers that have utilized the BDI. They found an overall mean reliability coefficient of .824, internal consistency of .837, and test-retest of .69. For different age ranges and study participants the internal consistency reliability coefficient were as follows: adolescent: .82; adult: .848; senior adult: .796; student participants: .835; nonstudent participants: .841; substance addicts: .769; nonsubstance addicts: .843. The test-retest reliability coefficients for different age ranges and study participants are as follows: adult: .67; senior adult: .862; physically ill: .630; normal: .693; substance addicts: .587; nonsubstance addicts: .713.

In their investigation of the psychometric properties of the BDI with 261 undergraduate participants, Skorikov & Vandervoort (2003) found the BDI had a reliability of .86. Validity was established by correlating the BDI with the Major Depression Subscale.

Carter & Dacey (1996) investigated the validity of the BDI in 118 hospitalized adolescents. The adolescents were divided into two groups: 66 depressed patients and 52 nondepressed patients. The results indicated significant differences between the means of the two groups, thus establishing concurrent validity. Correlation coefficients among the BDI and MMPI-D were found to be significant, again supporting concurrent validity

BDI scores have been shown to have concurrent validity. Beck et al. (1988) cited studies where correlations were reported between the BDI and other well-established

instruments. These include the Hamilton Psychiatric Rating Scale (Hamilton, 1960), Zung Self-Reported Depression Scale (Zung, 1965), the Multiple Affect Adjective Checklist Depression Scale (Zukerman & Lubin, 1965), and the clinicians' ratings of depth depression (Salkind, 1969). The correlations coefficients between the BDI and these other measures ranged from .59 to .96. The most significant relationship was found between the clinicians' ratings and the BDI where the correlation was reported at .96.

Although, the BDI is useful for assessing many features of clinical depression, it does not provide enough information to establish a DSM diagnosis. The content validity of the BDI does assess for six of the nine DSM-IV-R criteria for a depressive episode; these are fatigue, insomnia, feelings of worthlessness, indecisiveness, suicide ideation, and loss of pleasure (Katz, et al., 1999) The BDI does not assess for weight gain, hypersomnia, psychomotor agitation or retardation. Thus, the Beck Depression Inventory is best suited for assessing symptoms of depression, as it was in this study, not for diagnosing major depression.

Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI, Beck & Steer, 1990) was used to assess symptoms of anxiety. Permission to use the use the Beck Depression Inventory was achieved by purchasing the inventories through Harcourt Assessment, an assessment publishing company.

The Beck Anxiety Inventory is a 21-item, self-report instrument that assesses the overall severity of anxiety. Respondents are asked to rate the severity of each symptom using a 4-point scale ranging from (0) "Not at all bothered" to (3) "Severely bothered".

Summing the ratings for all of the 21 symptoms scores the Beck Anxiety Inventory (BAI) total scores can range from 0 to 63. According to the manual (Beck & Steer, 1990), The total score can be interpreted as follows: 0 to 9 reflects normal anxiety, 10 to 18 indicates mild to moderate anxiety, 19 to 29 is considered moderate to severe anxiety, and 30 to 63 suggests severe anxiety.

With respect to reliability, several studies have demonstrated that the BAI serves as a reliable measure. The internal consistency of the BAI appears to be quite high with alphas ranging from .90 to .94 in both clinical and nonclinical samples at a variety of developmental stages (Beck, Epstein, Brown, & Steer, 1988; deBeurs, Wilson, Chambless, Goldstein, Feske, 1997; Fydrich, Dowdall, Chambless, 1992; Jolly, Aruffo, Wherry, & Livingston, 1993; Kabakoff, Segal, Hersen, Van Hasselt, 1997; Steer, Kumar, Ranieri, & Beck, 1995). Analysis of test-retest reliability in a 7- to 11-day period yielded correlations of .67 (Fydrich et al., 1992) and .75 (Beck et al., 1988); deBeurs et al. (1997) reported high test-retest reliability ($r = .83$) and stability over a 1-month period.

Regarding validity, scores on the BAI have displayed concurrent validity with both other self-report measures of anxiety and clinical ratings of anxiety. For example, the correlation of the Hamilton Anxiety Rating Scale (HARS; Hamilton, 1959) with the BAI is .56, $p < .001$ (deBeurs et al., 1997). The BAI has also been found to correlate with the State and Trait scales of the State-Trait Anxiety Inventory (Form Y; Spielberger, 1983) at .47 ($p < .01$) (Spielberger, 1983) and .58 ($p < .001$), respectively (Kabakoff et al., 1997). Convergent validity of the BAI has also been established in adult clinical populations (Beck et al., 1988; deBeurs et al., 1997; Fydrich et al. 1992), adolescent psychiatric patients (Jolly et al., 1993; Steer et al., 1995), older adult psychiatric patients

(Kabakoff et al., 1997), and community samples (Borden, Peterson, & Jackson, 1991; Creamer, Foran, Bell, 1995).

In their investigation with 217 older adult outpatients, Kabakoff Segal, & Hersen, Van Hasselt .(1997) found that the BAI demonstrated high internal consistency with a Cronbach's coefficient alpha of .90. Discriminate validity was assessed by examining mean score differences between patients who meet criteria for an anxiety disorder diagnosis and patients who did not meet criteria. A significant mean total difference between patient with an anxiety disorder and those without was found. The BAI also demonstrated good factorial validity, with somatic anxiety and a subjective anxiety factor emerging. It was also found that the BAI can be useful as a quick screening instrument in detecting the presence of a current anxiety disorder.

Fydrich, Dowdall, & Chambless (1992) investigated the psychometric properties of the BAI with two studies. In the first study , the test-retest reliability and internal consistency of the scale were examined with 40 outpatients having anxiety disorders. The BAI showed high internal consistency (Cronbach's alpha = .94) and reliability over an average time lapse of 11 days ($r = .67$). The second study was conducted on 71 outpatients with anxiety disorders to assess the convergent and divergent validity of the inventory. The participants completed the BAI, the State-Trait Anxiety Inventory, the Beck Depression Inventory, and Daily Diary Ratings of Anxiety and Depression. The BAI performed better on tests of convergent and discriminate validity than did the Trait Anxiety. The correlation between the BAI and Diary Anxiety was significantly higher than that between the BAI and the Diary Depression. As compared to the State-Trait

Anxiety Inventory, the BAI was significantly less confounded with measures of depression.

In a sample of 82 patients suffering from panic disorder with agoraphobia, deBeurs, Wilson, Chambless, Goldstein, & Feske (1997) investigated the convergent and divergent validity of the BAI. Before and after brief treatment the patients completed a battery of questionnaires and for two-week periods, kept a daily panic diary. The BAI showed good test-retest reliability (.83) over a five-week period. To assess discriminate validity three measures of anxiety were used: the BAI, Beck Symptom Inventory – anxiety Subscale (BSI), and the daily anxiety rating. For depression the BDI and BDI-depression were utilized. The correlation between the BAI and BSI-anxiety was substantial at .78. The correlation between the BAI and BSI-anxiety was significantly larger than the correlation of the BAI with the BDI (.78 vs. .45) or the BAI with the BSI-depression (.78 vs. .55). The BAI also demonstrated statistically significant and comparable change from pre- to posttest.

UCLA Loneliness Scale (Version 3)

The UCLA (University of California, Los Angeles) Loneliness Scale (Version 3) (Russell, 1996) was used to assess levels of loneliness. Permission to use the UCLA Loneliness Scale was gained via an email from the author, Dr. Daniel Russell. The UCLA Loneliness Scale (Version 3) is a 20-item Likert-type scale in which participants answer a question indicating how often they feel the way described. Responses range from (1) Never to (4) Always. There are 11 negatively worded (lonely) items and nine

positively worded (non-lonely) items. Positively worded items are reverse scored and higher scores on the inventory indicate greater degrees of loneliness.

Scores on the UCLA Loneliness Scale (Version 3) have been found to be highly reliable. Russell (1996) examined the reliability and validity of the UCLA Loneliness Scale on a sample of 489 college students, 280 nurses, and 307 teachers, and found coefficient alphas ranging from .89 to .94 and test-retest reliability over a one-year period $r=.73$. Convergent validity for the UCLA Loneliness Scale was also established by correlations with scores on the NYU Loneliness Scale and the Differential Loneliness Scale with correlations of .65 and .72, respectively. Construct validity was demonstrated with these same three samples by scores being significantly related to such traits dimensions as Neuroticism and Introversion-Extroversion. (Russell, 1996).

Hays and DiMatteo (1985) found similar results for on their sample of 199 California college students. In this study the UCLA Loneliness Scale had a reliability of .90. Additionally, loneliness was significantly correlated with social anxiety, satisfaction with friends, sex life, home or family life, and drinking related locus of control.

Perceived Stress Scale

The Perceived Stress Scale (PSS) (Cohen & Williamson, 1988) assessed the participants' levels of stress. Although permission is not necessary to use the PSS for academic purposes, an email was sent to the author of the PSS, Dr. Sheldon Cohen, and permission was granted for its use.

The PSS measures the degree to which one's life situations and circumstances are perceived as stressful. The Perceived Stress Scale is a Likert-type scale consisting of 14-

items that asks participants to respond to a series of statements designed to evaluate the degree of stress experienced. Respondents were asked to rate on a 5-point Likert scale how often they felt or thought a certain way; the rating ranged from (0) never to (4) very often. PSS scores were obtained by reversing the scores on the seven positive items (e.g. items 4, 5, 6, 7, 9, 10, and 13) and then summing all 14 items. The PSS was designed for use with community samples with at least a junior high school education.

With regards to reliability, Cohen, Kamarck, & Mermelstein (1983) found reliabilities ranging from .84-.86 on two samples of colleges students: one with 332 participants and one with 114 participants. Test-retest reliabilities of .85 were also noted in these studies. With respect to validity, the Perceived Stress Scale was shown to have concurrent validity by having correlations ranging from .52 to .76 with symptomological measures of depression and physical indications (Cohen, Kessler, & Gordon, 1995). These measures include the Center for Epidemiologic Studies Depression Scale (Radloff,1977) and the Cohen-Hoberman Inventory of Physical Symptoms (Cohen & Hoberman, 1983). Additionally, scores on the PSS were found to increase with higher scores on the College-Student Life Events Scale and Impact of Life Events Scale (Levine & Perkins, 1980) which measures the number of stressful life events a respondent has experienced recently and its impact.

Open-Ended Questions:

At the conclusion of the treatment each participant was asked to answer seven open-ended questions. These questions were designed to gather more in-depth information about what was and was not helpful about the treatment interventions. The questions were as follows: 1. What was most helpful about the treatment? 2. What was

least helpful? 3. How could the treatment have been improved? 4. In what ways was the treatment helpful to you? 5. How was your stress level affected by the treatment intervention? 6. Would you recommend that other graduate students take part in an exercise program/ support group? Why or why not? 7. Do you have any other comments about your experience?

Procedures

For this study, the participants in the exercise and control groups self-selected into one of these two conditions. Participants in the group counseling group were enrolled in a Group Counseling class and opted either to participate or not. Participants were solicited in person by the researcher the first week of class during the Fall of 2003 or Spring of 2004. When asked to participate in the study, participants were given a description of the study and assured all information would remain anonymous and confidential. Upon agreeing to participate, volunteers were given an informed consent form to sign. After signing the informed consent form, all participants were assigned a random number to assure anonymity and matching of the pre and posttests. This random number was then written on the top of the participants' informed consent and on the top of their pretest packet. A master list of the participants and their random numbers was kept in a locked file cabinet and destroyed after all data had been collected and analyzed. After signing the informed consent form and being assigned a random number, participants were then asked to complete the following battery of instruments at home: Beck Anxiety Inventory (see Appendix D), Beck Depression Inventory (see Appendix C), UCLA Loneliness Scale (see Appendix E) Perceived Stress Scale (see Appendix F), and a Demographic

Questionnaire (see Appendix B). The researcher collected the packet from the participants the following week in their classroom. Participants were again asked to complete the instruments after undergoing one of the three treatment conditions for 10 weeks. Participants in the exercise and group counseling treatments were also asked to answer a set of qualitative questions (see Appendix G) in the posttest packet.

The group counseling treatment consisted of the participants meeting once per week for 1.5 hours for 10 weeks. The counseling group was led by two doctoral level counseling students who had been trained in group counseling. Complying with recommendations by Corey (1994) and Yalom (1995), each group contained six to eight participants. The group followed the format recommended by Corey (1994) and Yalom (1995). This format involved four stages. Stage one involved the screening of group members to make sure they were appropriate for participation; an explanation of the limits of confidentiality, an explanation of the freedom to leave the group at any time, and the setting of ground rules and norms were provided. Stage two entailed dealing with any resistance from the group members and becoming cohesive as a group. Stage three is characterized as the working stage and involves members acting as a cohesive group. Stage three fostered action-oriented behaviors such as self-disclosure, immediacy, mutuality, confrontation, risk taking, and translation of insight into action. Stage four of the group involved termination and helping members transfer their learning to the outside world. At this point, group members were referred to a counselor if necessary, and any unresolved issues were discussed and processed. The initial purpose of the group counseling group was interpersonal, but over time evolved into a support group in response to the immediate needs of students for support. Due to the confidential and

dynamic nature of group counseling, it is difficult to pinpoint exactly what occurred in the group. Additionally, each group consisted of its own leaders and members making a detailed description of each session impractical.

Upon completing the pretests, the participants in the exercise group made an appointment with their primary care physician to obtain permission to exercise. After getting permission from their doctor to exercise, each participant then had an initial meeting with the researcher to discuss safe, effective, and acceptable ways to exercise during the next 10 weeks. Due to scheduling concerns, not all participants met with the researcher at the same time; however, every participant did meet with the researcher within the first week of treatment. During these meetings, the participants discussed how they would fulfill their exercise requirements and asked questions about proper exercise and form. Participants were also instructed on how to take their heart rate to gauge how intensely they were exercising. All participants agreed to exercise twice each week for 45 minutes per session. A 45 minute exercise session twice per week was chosen because of the surgeon general's recommendation that in order to achieve the benefits of exercise at least 30 minutes of sustained activity must be done on most days (United States Department of Health and Human Services, 1996). Unfortunately, due to participants' time constraints, the researcher was unable to require participants to exercise everyday or even "most days" as recommended by the surgeon general. During each 45 minute session, participants agreed to keep their heart rate at 60-90% of maximal heart rate (HRmax) for 25 minutes. The remainder of the exercise session could be used to continue at this pace, slow down, lift weights, or stretch. Each participant kept a log of the exercises they did and the amount of time they spent on each exercise. Throughout the 10

week treatment, each participant in the exercise group met with the researcher three times. It was recommended that all three meetings be in person, but due to scheduling concerns, some meetings were conducted by telephone. These meetings allowed the participants to ask the researcher questions about exercise and allowed the researcher to check on adherence to exercise and assist with any motivation problems. At the end of the 10 week treatment, the researcher returned to the classrooms where participants were originally solicited and asked them to complete the posttest inventories. The researcher returned the next week to collect the completed packets.

Due to the small number of participants during Fall, 2003, these procedures were repeated in Spring, 2004. This allowed the total sample size for the exercise group to be 19 participants.

Upon completing the pretest packet, the control group received no treatment for 10 weeks. After 10 weeks the research returned to the participants' classroom and administered the posttests. The participants took the packet home and returned it the following week. Upon receiving their posttest packets, the researcher offered the option of treatment to those in the control group. As with the exercise procedure, due to too few participants in the Fall, 2003, this study was repeated in Spring, 2004. This allowed the total sample size for the control group to be 21 participants.

Hypotheses and Research Design

The research design for this study was a quasi-experimental, nonrandomized pretest/posttest design with two treatment groups and one control group. The independent variables for this study were the three treatment conditions: group counseling, exercise

and control. The dependent variables were the participants' levels of loneliness, stress, anxiety, and depression, as measured by the scores of the four test instruments, respectively: (1) the UCLA Loneliness Scale (2) the Perceived Stress Scale (3) the Beck Anxiety Inventory and (4) the Beck Depression Inventory. The covariate for the study was the pretest. There were three groups of participants: a) exercise group participants b) group counseling participants and c) control group participants

The following research hypothesis was tested at the $p = .05$ level and is stated in the null form. The research hypothesis involves the differences between the three independent variables' effects on the four dependent variables.

H_0 : There will be no significant difference between the control group's scores, exercise group's scores, and the group counseling group's scores on the Beck Depression Inventory, Beck Anxiety Inventory, Perceived Stress Scale, and the UCLA Loneliness Scale

H_1 : There will be a significant difference between the control group's scores, exercise group's scores, and the group counseling group's scores on the Beck Depression Inventory, Beck Anxiety Inventory, Perceived Stress Scale, and the UCLA Loneliness Scale

Statistical Analysis

In order to test the statistical hypotheses, a computer statistical program was used. Descriptive statistics were used to summarize the demographic information and instrument scores. Inferential statistical analyses were done conducted Multivariate Analysis of Covariance (MANCOVA) (Tabachnick & Fidell, 2001) to determine any

possible effect of the independent variables on the dependent variables. MANCOVA was utilized for this study because of the co-morbidity of loneliness and depression, which both the BDI and UCLA Loneliness Scale assess and because of the co-morbidity of anxiety and depression which the BAI and BDI assess.

Following MANCOVA, follow-up Analysis of Covariances (ANCOVAs) were conducted to determine the effectiveness of the covariates and to investigate which dependent variables differed. Following the ANCOVAs, Post Hoc analyses, consisting of pairwise comparisons, were conducted to determine which independent variable (treatment groups) had the most influence on the dependent variables (levels of stress, depression, anxiety, and loneliness).

CHAPTER IV

RESULTS

This chapter reports the results of the statistical analyses conducted on the data received and the qualitative information the participants provided in their posttest packet. This study assessed group counseling and exercise as treatments for graduate students' stress, depression, anxiety, and loneliness. The independent variable for this study was treatment for symptoms of depression, anxiety, stress, and loneliness. The three conditions for this treatment were: a) the exercise intervention b) the group counseling intervention and c) the control who received no treatment. The dependent variables were the levels of depression, stress, anxiety, and loneliness as measured by test instruments. The following sections are included in this chapter: Research Design, Demographic Information, Reliability of Scores, Covariates, Results of Hypothesis Testing, Results of Follow-up ANCOVAs, Results of Post Hoc Multiple Comparisons, Summary of Statistical Analysis, and Qualitative Data.

Research Design

The research design was a nonrandomized pretest/posttest quasi-experimental design. MANCOVA (Tabachnick & Fidell, 2001) was used to test for differences among the groups. Participants self-selected into one of the three treatment conditions: group counseling, exercise, and control. The instruments used during the pretest and posttest were the Beck Depression Inventory (BDI)(see Appendix C) to measure symptoms of depression, Beck Anxiety Inventory (BAI) (see Appendix D) to test for symptoms of

anxiety, UCLA Loneliness Scale (see Appendix E) to measure loneliness, and Perceived Stress Scale (PSS)(see Appendix F) to assess symptoms of stress. Demographic information was collected (see Appendix B) at pretest, and participants in the counseling group and exercise group responded to qualitative questions (see Appendix G) about the intervention on the posttest. The only identifying information collected was the participant's randomly assigned number. .

The independent variable for this study was the treatment (group counseling, exercise, and control) provided to the graduate students enrolled in a counseling class. The group counseling treatment group received 1.5 hours per week of group counseling for 10 weeks. The exercise treatment group exercised twice per week for 45 minutes each time over a 10 week period. The control group received no treatment for 10 weeks. The dependent variables were the participants' symptoms of stress, anxiety, depression, and loneliness as measured by the PSS, BAI, BDI, and UCLA Loneliness Scale. The following demographic data were also collected: gender, age, ethnicity, marital status, educational level, program enrolled in, number of semesters completed, commute status, employment status, antidepressant and anxiolytic use.

The data obtained from the assessment instruments were analyzed with Multivariate Analysis of Covariance (MANCOVA). The dependent variables were the scores obtained on the PSS, BDI, BAI, and UCLA Loneliness Scale. Multivariate tests were performed using the PSS, BDI, BAI, and UCLA Loneliness Scale pretests as covariates and the treatment (group counseling, exercise, or control) as the independent variable in order to determine if symptoms of stress, anxiety, depression, and loneliness differed among the three treatment groups after adjusting for pre-existing conditions.

Demographic Information

The participants were 57 masters level graduate students enrolled in a Counselor Education (EPCE) class during the 2003-2004 academic year. As table 4.1 illustrates, there was a total of 57 participants. Table 4.1 reveals that participants were predominantly female with 48 (84.2%) females and 9 (15.8%) males. As Table 4.1 further illustrates, 48 (84.2%) of the participants were white, 2 (3.5%) were African American, 6 (10.5%) were Hispanic, and 1 (1.8%) was Asian. Participants reported their marital status into one of three categories: Married, Divorced, or Never Married. Table 4.1 reveals the marital status for all participants (n=57). As shown in the table 4.1, 27 (47%) participants reported being married, 12 (21%) divorced, and 18 (32%) never married.

Table 4.1 Overall Demographic Data: Gender, Ethnicity, and Marital Status

Gender	Ethnicity	Marital Status
N = 57	N = 57	N = 57
Male = 9	White = 48	Married = 27
Female = 48	African American = 2	Divorced = 12
	Hispanic = 6	Never Married = 18
	Asian = 1	

Demographic data were collected regarding participants' employment and commute status, psychotropic medication status and number of hours enrolled. Table 4.2 shows the results of this demographic information. As illustrated in Table 4.2, 20 (35%) participants reported commuting to school a mean commute distance of 6.5 miles and a range of 0-75 miles. With regard to employment, Table 4.2 shows that 44 (77%) of the participants worked an average of 23.3 hours per week. Table 4.2 also shows that 13 (23%) of the participants reported taking an antidepressant medication and 5 (9%)

reported taking an anxiolytic medication. Participants also gave the number of hours in which they were currently enrolled. As Table 4.2 illustrates, the mean number of hours in which participants were enrolled was 7.5 hours, and the range was 3-12 hours

Table 4.2 Overall Demographic Data: Commute and Employment Status, Psychotropic Medication, and Hours Enrolled

Commute Status	Employment Status	Psychotropic Medication Use	Hours Enrolled
N = 57	N = 57	N = 57	N = 57
Yes = 20	Yes = 44	Antidepressant = 13	Range = 3-12
No = 37	No = 13	Anxiolytic = 5	Mean = 7.5
Mean = 6.5 miles	Mean = 23.3 hours		

Table 4.3 presents the demographic information for each of the three groups. As Table 4.3 indicates, there were 21 participants in the control group, 19 in the exercise treatment group, and 17 in the group counseling treatment group. Table 4.3 presents the information on the gender of the participants by group. As shown in Table 4.3, participants were predominantly female with the frequencies for the control group (n=21) being 17 females (81% of the group) and 4 males (19%). Similarly, the exercise group (n=19) consisted of 16 females (84.2% of the group) and 3 males, and the counseling group had 15 females (88.2% of the group) and 2 males (11.8%).

Participants reported their ethnicity as one of the following: Hispanic, African American, Anglo/White, Asian American, or Other. As Table 4.3 indicates, participants were predominantly white with 16 participants (94.1%) in the group counseling group being white and 1 participant (5.9%) being Asian. Table 4.3 shows that the ethnic makeup of the exercise treatment group was: three participants (15.8%) were Hispanic and 16 participants (84.2%) were White; and the ethnic makeup of the control group was

three participants (14.3%) were Hispanic, two participants (9.5%) were African American, and 16 participants (76.2%) were White. Table 4.3 also illustrates the marital status of the participants: for the control group, seven of the participants (33%) were married, six participants (29%) were divorced, and eight participants (38%) had never been married. Also as Table 4.3 illustrates the majority of the participants in the exercise treatment group were married with 16 participants (68%) being married, two participants (10%) were divorced, and four participants (21%) were never married. With regard to the group counseling group, Table 4.3 reveals that seven of the participants (41%) were married, four participants (24%) were divorced, and six participants (35%) were never married. As shown in Table 4.3, the control group had the highest number of participants who were divorced with six participants (29%) being divorced. This group had the highest number of participants who were never married: eight participants (38%).

Table 4.3 reports the commute status of the participants. The commute miles ranged from 0 to 75. As Table 4.3 reveals, the group counseling group had the highest number of participants who commute to school with 11 participants (65%) commuting to school. The exercise group had the fewest number of participants who commute to school, with three participants (15%), commuting while six participants (29%) in the control group commuted to school.

Participants also reported whether they were currently employed. If participants were currently employed, they were asked to indicate the average number of hours worked each week. Table 4.3 shows the percent of participants employed and average hours they worked per week by group and total number of participants. As Table 4.3 indicates, the group counseling treatment group had the lowest percentage of participants

employed with 12 participants (71%) being employed; the control group had the most participants employed, with 18 participants (85%) employed, and the exercise group had 14 participants (74%) who were employed.

Table 4.3 presents the participants' responses to the following questions: "Do you currently take an antidepressant medication?" and "Do you currently take an anxiolytic medication?" As shown in Table 4.3, the group counseling treatment group reported the highest number of participants reporting "yes" to both of these questions. Six participants (35%) in the group counseling group reported taking an antidepressant and 4 participants (24%) reported taking an anxiolytic. Table 4.3 also reveals that three participants (16%) in the exercise treatment group and four participants (19%) in the control group took antidepressant medication. Also Table 4.3 shows that no participants in the control group and one participant (5%) in the exercise treatment group were taking an anxiolytic at the time of this research. Participants reported the total number of credit hours in which they were enrolled while participating in this study. Reported credit hours enrolled in ranged from 3 to 12. As Table 4.3 indicates, the group counseling treatment group had the highest average number of hours in which participants were enrolled, with an average of 8.6 being reported. Table 4.3 also reveals that the control group had the lowest reported average enrollment hours with 6.6., and the exercise treatment group reported being enrolled in an average of 7.6 hours.

Table 4.3. Demographic Information by Group

	Group Counseling Treatment Group (17)	Exercise Treatment Group (19)	Control Group (21)
Gender:			
Female	15	16	17
Male	2	3	4
Ethnicity:			
White	16	16	16
African American	0	0	2
Hispanic	0	3	3
Asian	1	0	0
Marital Status:			
Married	7	13	7
Divorced	4	2	6
Never Married	6	4	8
Commute Status:			
Yes	11	3	6
No	6	16	15
Mean distance (in miles)	13.6	4.7	2.4
Range (in miles)	0-75	0-53	0-15
Employment Status:			
Yes	12	14	18
No	5	5	3
Mean hours per week	19.3	18.6	30.7
Psychotropic Medication Use			
Antidepressant	6	3	4
Anxiolytic	4	1	0
Credit Hours Enrolled In:			
Range	6-12	3-12	3-9
Mean	7.5	8.6	6.6

On the Demographic Sheet (see Appendix B) participants reported their age by range. Ages were grouped as follows: 19-23 years, 24-28 years, 29-33 years, 34-38 years, 39-43 years, 44-48 years, 49-53 years, 54-58 years, and 59 years and older. Results for all groups are reported in Table 4.4. As illustrated in Table 4.4, for the total group of participants (n=57), the age ranges were: 19-23 years were reported by 9 participants (15.8% of total); 24-28 years by 16 participants (28.1%); 29-33 years by 12 participants (21.1%), 34-38 years by 9 participants (15.8%), 39-43 years by 1 participant (1.8%), 44-48 years by 5 participants (8.8%), 49-53 by 3 participants (5.3%), and 2 participants reported their age to be over 53 years (3.5% of total).

Table 4.4. Age ranges of Participants by Group and Total

	Group Counseling Treatment Group <i>f/ %</i>	Exercise Treatment Group <i>f/ %</i>	Control Group <i>f/ %</i>	Total <i>f/ %</i>
Age Ranges:				
19-23	3/17.6	2/10.5	4/19	9/15.5
24-28	8/47.1	3/15.8	5/23.8	16/27.6
29-33	1/5.9	6/31.6	6/31.6	12/20.7
34-38	2/11.8	6/31.6	1/4.8	9/15.5
39-43	0/0.0	0/0.0	1/ 4.8	1/1.7
44-48	1/5.9	2/10.5	2/9.5	5/8.6
49-53	1/5.9	0/0.0	2/9.5	3/5.2
over 53	1/5.9	0/0.0	1/ 4.8	2/3.4

Reliability of Scores

The reliability of the scores in this study on the Beck Anxiety Inventory (see Appendix D), Beck Depression Inventory (see Appendix C), Perceived Stress Scale (see Appendix F), and the UCLA Loneliness Scale (see Appendix E) were computed with the

Cronbach coefficient alpha which denoted internal consistency. The reliabilities ranged from .78 to .95. These findings are similar to previous research (Beck, Epstein, Brown, & Steer, 1988; Beck, Steer, & Garbin, 1988; Cohen, Kamarck, and Mermelstein, 1983; Russell, 1996) utilizing these instruments. In this study, the total Beck Anxiety Inventory had a reliability of .95 at pretest and .92 at posttest. This is similar to results found by Beck, Epstein, Brown, and Steer (1988) who found a coefficient alpha of .92 in 411 psychiatric patients. The Beck Depression Inventory had a reliability of .85 at pretest and .84 at posttest. This is similar to the finding of Beck, Steer, and Garbin (1988) who conducted a meta-analysis of 25 published papers using the BDI found reliabilities consistently ranging from .73 to .95.

The UCLA Loneliness Scale was found to have a reliability of .78 at both pretest and posttest. This is consistent with research reported by Russell (1996) who examined the reliability and validity of the UCLA Loneliness Scale and found coefficient alphas ranging from .79 to .94 on the following three samples: 489 college students, 280 nurses, and 307 teachers. In this study, the Perceived Stress Scale had a reliability of .90 at both pretest and posttest. This is similar to findings by Cohen, Kamarck, & Mermelstein (1983) who found reliabilities of .86 on a study of 332 college students.

Descriptive Statistics for Dependent Variables

This section will provide the descriptive statistics for each of the dependent variables in this study. The dependent variables were the participants' scores on the BDI, BAI, UCLA Loneliness Scale, and PSS. Scores on these inventories represent the participants symptoms of depression, anxiety, loneliness, and stress, respectively.

Symptoms of Depression

The Beck Depression Inventory (Beck, 1970) measured symptoms of depression in this study (see Appendix C). The BDI has 21 Likert type questions that measure a symptom or attitude related to depression. These 21 items are individually rated on a numerical scale from 0 (low intensity) to 3 (high intensity). Scores on the BDI are obtained by summing the ratings; scores from 0-5 indicate a low level of depression, scores ranging from 6-14 indicate a moderate level of depression, and scores from 15-63 indicate a high level of depression. In other words, lower scores on the BDI indicated fewer symptoms of depression and higher scores indicated more symptoms of depression.

Table 4.5 provides the descriptive statistics, including the means and standard deviations grouped by independent variable. As Table 4.5 illustrates, the mean pretest score for all participants (n=57) was 9.3 and the mean posttest score was 6.8, both indicating moderate levels of depression. As shown in Table 4.5, the mean scores for all groups were in the moderate range of depression. Table 4.5 also reveals that both the group counseling and exercise treatment group's average BDI posttest score lowered from pretest to posttest, 7.4 to 5.8 and 12.9 to 5.9 respectively. However, as shown in Table 4.5, the control group's average BDI score increased from 7.9 at pretest to 8.3 posttest. This indicates that group counseling and exercise may have been helpful at lessening symptoms of depression as measured by the BDI.

Table 4.5. Descriptive Statistics for the BDI.

	Pretest		Posttest	
	M	SD	M	SD
BDI				
Control Group	7.9	6.3	8.3	7.0
Exercise Treatment Group	12.9	7.3	5.9	3.7
Group Counseling Treatment Group	7.4	4.2	5.8	4.8
All Participants	9.3	5.9	6.8	5.6

Symptoms of Anxiety

The Beck Anxiety Inventory (BAI)(Beck & Steer, 1990) (see Appendix D) was used to measure symptoms of anxiety. The Beck Anxiety Inventory measures anxiety by using the participants' responses to items. Participants rate the severity of each symptom using a 4-point Likert scale ranging from (0) Not at all to (3) I could barely stand it. The BAI is scored by summing the ratings for all of the 21 symptoms. The score obtained indicates whether the parson has a low level of anxiety (scores 0-21), moderate anxiety (scores 22-35), or high level of anxiety (scores above 36). In other words, higher scores on the BAI indicate more symptoms of anxiety.

Table 4.6 provides the descriptive statistics, including the mean and standard deviation grouped by independent variable for the participants' scores on the BAI. As Table 4.6 shows, the average pretest score for all participants was 13.4 and average posttest score was 9.5. Table 4.6 also reveals that whereas both the group counseling and exercise treatment scores on the BAI dropped from pretest to posttest, the control group's

scores increased. This indicates that both group counseling and exercise helped to lower participants' levels of anxiety.

Table 4.6. Descriptive Statistics for the BAI.

	Pretest		Posttest	
	M	SD	M	SD
BAI				
Control Group	10.7	10.7	12.1	11.3
Exercise Treatment Group	15	9.5	7.6	7.5
Group Counseling Treatment Group	14.4	14.8	7.8	5.8
All Participants	13.4	11.7	9.5	8.9

Symptoms of Loneliness

The UCLA (University of California, Los Angeles) Loneliness Scale (Version 3) (Russell, 1996) measures loneliness with a Likert type scale (see Appendix E). The UCLA Loneliness Scale consists of 20 questions, 11 questions are negatively worded (lonely) items and 9 questions are positively worded (non-lonely) items. These 20 questions are individually rated on a numerical scale from 1 (never) to 4 (always). The score is obtained by reverse scoring positively stated items and adding all responses together and can range from 20-80 with higher numbers indicating a higher degree of loneliness.

Table 4.7 provides the descriptive statistics for the participants. As Table 4.7 shows, the average retest score for all participants was 45.9 and the average posttest score was 45.2, indicating moderate levels of loneliness. Table 4.7 also reveals that the group counseling and exercise treatment's scores on the UCLA dropped slightly, whereas the control group's scores increased. Although not found to be statistically significant at the

p=.05 level, this does indicate group counseling and exercise may have been helpful in alleviating symptoms of loneliness in the participants.

Table 4.7. Descriptive Statistics for the UCLA Loneliness Scale

	Pretest		Posttest	
	M	SD	M	SD
UCLA Loneliness Scale				
Control Group	45.3	7.4	46	6.8
Exercise Treatment Group	45.9	6.5	44.9	7
Group Counseling Treatment Group	46.4	5.4	44.2	4.6
All Participants	45.9	6.4	45.2	6.3

Symptoms of Stress

Symptoms of stress in the participants were measured by the Perceived Stress Scale (PSS) (Cohen, Kamarack, & Mermelstein, 1983) (see Appendix F). The PSS is a 10-question Likert type scale that measures the degree to which one's life situations and circumstances are perceived as stressful by using the participants' responses to items. These 10 items are individually rated on a numerical scale from 0 (never) to 4 (very often). Scores are obtained by reverse scoring the positively stated questions (items 4, 5, 7, and 8) and then summing all items; they can range from 0-40 with higher scores indicating more stress. The mean norm score for females on the PSS is 13.7 with a standard deviation of 6.6, and the mean norm score for males is 12.1 with a standard deviation of 5.9 (Cohen & Williamson, 1988).

As Table 4.8 illustrates, the mean score for all participants at pretest was 27.8, while the mean at posttest was 25.8. This signifies both the average pretest and posttest

scores for this sample was approximately two standard deviations above the norm mean and indicates extremely high levels of stress. As Table 4.8 reveals, both the exercise and group counseling group's scores on the PSS dropped from pretest to posttest, whereas the control group's scores increased slightly. This indicates the group counseling and exercise were effective at lowering the stress levels of participants.

Table 4.8. Descriptive Statistics for the Perceived Stress Scale

	Pretest		Posttest	
	M	SD	M	SD
Perceived Stress Scale				
Control Group	26.9	8.1	27.9	6.7
Exercise Treatment Group	29.6	5.3	24.6	4.7
Group Counseling Treatment Group	27	5.9	24.9	7.11
All Participants	27.8	6.4	25.8	6.4

Covariates

The covariates for this study were the participants' pretest scores on the Beck Anxiety Inventories, Beck Depression Inventory, UCLA Loneliness Scale, and the Perceived Stress Scale. The MANCOVA conducted on the pretest scores indicate all pretest served as effective covariates. All showed a significance at the .0001 level ($p=.0001$), thus indicating they had an influence on the posttest scores. The follow-up ANCOVAs provided Partial Eta Squares for all the pretests as covariates. Table 4.5 shows the results of the Partial Eta squares. As illustrated in Table 4.5, the Beck Anxiety Inventory had a Partial Eta squared of .412. This means that the Beck Anxiety Inventory pretest explains 41% of the variance in the BAI posttest. As Table 4.5 reveals, the Beck Depression Inventory had a Partial Eta Squared of .257. This indicates the BDI pretest

explains 26% of the variance of the BDI posttest. As illustrated in Table 4.5, the Perceived Stress Scale had a Partial Eta Squared of .538, indicating the PSS pretest accounts for 54% of the variance in the PSS posttest. Table 4.5 also reveals the Partial Eta Squared for the UCLA Loneliness Scale pretest was .405. This indicates .41% of the variance of the UCLA Loneliness Scale was explained by the UCLA pretest and demonstrates it was a viable covariate. Therefore, all pretest inventories served as effective covariates for this study.

Table 4.9. Effectiveness of Pretests as Covariates

Source	Dependent Variable	Partial Eta Squared (η^2)
BAI Pretest	BAI Posttest	.412
BDI Pretest	BDI Posttest	.257
PSS Pretest	PSS Posttest	.538
UCLA Pretest	UCLA Posttest	.405

Results of Hypothesis Testing

The results of the hypothesis testing are provided in the following sections. Descriptive and multivariate statistical analyses are reported following a description of each hypothesis. An alpha level of .05 was used for all statistical tests. The BDI, BAI, PSS, and UCLA Loneliness Scale pretest scores were used as covariates in order to adjust for prior attitudes and symptoms. The research hypothesis involves all three groups: control, exercise, and group counseling.

H₀: There will be no significant difference between the control group's scores, exercise group's scores, and the group counseling group's scores on the Beck Depression Inventory, Beck Anxiety Inventory, Perceived Stress Scale, and the UCLA Loneliness Scale posttest scores

H₁: There will be a significant difference between the control group's scores, exercise group's scores, and the group counseling group's scores on the Beck Depression Inventory, Beck Anxiety Inventory, Perceived Stress Scale, and the UCLA Loneliness Scale posttest scores

A one-way multivariate analysis of covariance (MANCOVA) was conducted to determine the effectiveness of the treatments (control, exercise, and counseling group) on the four dependent variables (depression, anxiety, stress, and loneliness). Significant differences were found among the three treatments on the dependent variables, Wilk's Lambda = .58 $F(8, 88) = 3.46, p = .05$. This means the results of the MANCOVA indicate there was a significant difference among the groups on at least one dependent variable. Therefore the Null Hypotheses was rejected.

Follow-up Analyses of Covariances (ANCOVA) were conducted to determine which of the dependent variables differed. Post Hoc multiple comparisons were then conducted to compare the independent variables for effectiveness. Results of the follow-up ANCOVAs, post hoc comparisons, and descriptive statistics will be presented in the following sections.

Results of Follow-up ANCOVAs.

The results of the MANCOVA indicated there were significant differences between the treatment groups on at least one dependent variable. Follow-up ANCOVAs were conducted to see which dependent variables differed. Table 4.6 shows the results of the follow-up ANCOVA. As illustrated in Table 4.6, the Beck Depression score was found to be significant, $F(2, 47) = 9.21, p = .05, \eta^2 = .28$. This means there were

significant differences between at least two of the independent variables (treatment groups) on levels of depression. The Partial Eta squared (η^2) of .28 indicates 28% of the variance in BDI scores can be explained by the independent variable and what treatment group participants were in. Table 4.6 also reveals the BDI had an observed power of .97, indicating there is 97% chance significance would be found in a future sample.

As revealed in Table 4.6, the Beck Anxiety Inventory scores were also found to be significant, $F(2, 47) = 10.3, p = .05, \eta^2 = .31$. This signifies there were significant differences between at least two of the treatment groups on levels of anxiety. It also points out that 31% of the variance in BAI scores is explained by treatment group membership. Furthermore, Table 4.6 shows that the BAI had an observed power of .98, signifying there is a 98% probability that significance would be found in a future sample. As illustrated in Table 4.6, the Perceived Stress Scale scores were also found to be significant, $F(2, 47) = 8.0, p = .05, \eta^2 = .26$. This indicates there were significant differences between at least two of the treatment groups on levels of stress. Table 4.6 also shows 26% of the variance in the PSS scores is explained by the independent variable. In other words, 26% of the variance in the PSS scores was determined by treatment group membership. Table 4.6 also points out the observed power of the PSS was .95, suggesting there is a 95% likelihood that significance would be found in a future sample.

As indicated by Table 4.6, the follow-up ANCOVA did not yield significant effects on loneliness levels, $F(2, 47) = 2.65, p = .05, \eta^2 = .101$. This means there were no significant differences among the treatment groups on levels of loneliness at $p = .05$. However, as shown in Table 4.6, at the $p = .10$ level, significant differences were found among the treatment groups. As Table 4.6 reveals, the observed power of the UCLA

Loneliness Scale was .50, indicating if this study was replicated there is a 50% chance the same results would be found. Table 4.6 also shows that only 10% of the variance in loneliness scores can be attributed to treatment group membership.

Table 4.6. Tests of Between Subjects Effects.

Dependent Variable	F	Sig.	Partial Eta Squared	Observed Power
Beck Anxiety	10.33	.000	.31	.98
Beck Depression	9.21	.000	.281	.97
Stress Scale	8.04	.001	.26	.95
Loneliness Scale	2.65	.08	.10	.50

Results of Post Hoc Comparisons

In a previous section, the results of the MANCOVA were discussed, and these results indicated there were significant differences between the treatment groups on at least one dependent variable. Results of the follow-up ANCOVAs were discussed, and the results indicated that at the $p=.05$ level there were significant differences between at least two of the independent variables (treatment groups) on levels of depression, anxiety, and stress. Additionally, the follow-up ANCOVAs indicated that at the $p=.10$ level, significant differences were found between at least two of the independent variables on levels of loneliness. To investigate which independent variables differed on the four dependent variables, pairwise comparisons were conducted. This section will discuss the results of these comparisons.

Control Group versus Exercise Group

The results of the comparison conducted on the control group and exercise group are reported in Table 4.11. As shown in Table 4.10, the significance levels for the comparison of the control group and exercise group on levels of anxiety were .0001, on levels of depression .0001, on levels of stress .001, and on levels of loneliness .21. These significant levels indicate noteworthy differences were found between the control group and exercise group on levels of depression, anxiety, and stress. The results presented in Table 4.11 in combination with the descriptive statistics on the four dependent variables indicate the exercise group was significantly superior at reducing symptoms of depression, anxiety, and stress than the control group was. Table 4.11 also reveals a significance level of .21 was obtained on levels of loneliness, indicating no significant differences were found between the exercise group and the control group on levels of loneliness. This means neither the exercise group nor the control group performed better at lessening symptoms of loneliness.

Table 4.11. Post hoc Comparison results of Exercise Group and Control Group.

Dependent Variable	F	Sig.
Beck Anxiety Inventory	16.29	.000
Beck Depression Inventory	17.65	.000
Perceived Stress Scale	13.07	.001
UCLA Loneliness Scale	2.7	.21

Control Group versus Group Counseling Group

Table 4.12 reports the results of the post hoc comparison of the control group and group counseling group on the four independent variables. As illustrated in Table 4.12, significant differences were found between the control group and the exercise group on levels anxiety, depression, stress, and loneliness. Table 4.12 reveals the significance level for participants' scores on the BAI was .02, on the BDI was .035, on the PSS was .007, and on the UCLA Loneliness Scale was .04. These results in combination with the descriptive statistics on the four dependent variables indicate the group counseling group was significantly better at reducing symptoms of anxiety, stress, depression, and loneliness in graduate counseling students than was the control group.

Table 4.12. Post hoc Comparison results of Group Counseling Group and Control Group.

Dependent Variable	F	Sig.
Beck Anxiety Inventory	10.66	.002
Beck Depression Inventory	4.69	.035
Perceived Stress Scale	7.83	.007
UCLA Loneliness Scale	4.21	.04

Group Counseling Group versus Exercise Group

The results of the post hoc comparison between the group counseling group and the exercise group are reported in Table 4.13. As shown in Table 4.13, the significance levels for the comparison of the group counseling group and the exercise group on levels of anxiety was .430, on levels of depression was .069, on levels of stress was .417, and levels of loneliness was .781. This means no significant differences were found between the exercise group and group counseling group on participants' symptoms of anxiety, depression, stress, and loneliness. The results revealed in Table 4.13 and the descriptive statistics provided on the four dependent variable indicate it can be concluded that neither

the exercise group nor the group counseling were significantly better at lessening graduate counseling students' symptoms of stress, loneliness, and anxiety.

Table 4.13. Post hoc Comparison results of Group Counseling Group and Exercise Group.

Dependent Variable	F	Sig.
Beck Anxiety Inventory	.63	.430
Beck Depression Inventory	3.47	.069
Perceived Stress Scale	.67	.417
UCLA Loneliness Scale	.078	.781

Summary of Statistical Analysis

This study was conducted on 57 participants enrolled in a master's level counseling class. Demographic data collected from the participants indicated most participants were between 24-38 years of age (63.8%). The majority of the participants were female (84.2%). Most of the participants reported their ethnicity as Anglo/White (84.2%). About half (47%) of the participants were married and most reported working (77%) with a reported 23.3 average number of hours worked per week.

The descriptive statistics of the instruments provide additional information about the participants. The participants reported low levels of depression ($M = 9.3$) and anxiety ($M = 13.4$). With regards to loneliness and stress, the participants reported an average amount of loneliness ($M = 45.9$) and an above average level of stress ($M = 27$).

To determine the effectiveness of the treatments provided to the graduate students, a MANCOVA was conducted. The results of the MANCOVA indicated there was a significant difference among the treatments. Thus, the null hypothesis was rejected. Follow-up ANCOVAs were conducted at the $p = .05$ level to determine which dependent

variables differed. The results of the follow-up ANCOVAs found differences on at least two independent variables on levels of depression, anxiety, and stress. At the $p=.10$ level, significant differences were found on levels of loneliness. Post hoc multiple comparisons were conducted to determine which groups differed. Results showed the exercise group was superior to the control group on alleviating symptoms of stress, depression, and anxiety in graduate counseling students. The group counseling group was found to surpass the control group in lessening symptoms of stress, anxiety, depression; and loneliness. No significant differences were found between the group counseling and exercise groups. In summary, the data indicate that the group counseling and exercise interventions, in comparison to no treatment, significantly lessened the symptoms of depression, anxiety, and stress in graduate counseling students. The results of this study give strong support to exercise and group counseling as valuable treatment options for graduate counseling students.

Open-Ended Questions

Participants in the exercise and counseling group treatments were given seven qualitative questions to answer in their posttest packets. All participants answered at least three of these questions, while most answered all questions. In the following sections, the counseling group's responses are examined followed by the exercise group's responses.

Group Counseling Group:

Question #1: What was most helpful about the treatment?

Sixteen (94%) of the participants in the group counseling group answered this question, while one participant (6%) left it blank. The majority of the comments made by the participants echoed one of Yalom's (1995) therapeutic factors. Cohesion, the most often mentioned therapeutic factor, was mentioned by 6 (35%) participants. Although no participants used the words 'group cohesion', their comments involved such phrases as: "forming strong, close bonds with other groups members", "becoming close friends with people in the group", "feeling comfortable and secure in the group", "the strength and unity of the group helped me grow" and "knowing I could depend on the group". These phrases indicate cohesion.

Universality, the second most frequently mentioned therapeutic factor, was helpful for 4 participants (24%). Universality was conveyed with comments such as "I was able to see that what stress I was going through and others were going through it too", "I found that people whom I thought I had nothing in common with struggled with what I do", and "I saw that I was not the only one who felt stressed"

Both catharsis and installation of hope were helpful to two participants (12% each). Catharsis was implied by the following statements "being able to vent my feelings and frustrations" and "expressing strong emotions I usually do not show". Instillation of hope was indicated by such comments as "meeting people who encouraged me and helped me to feel like I would make it through my troubles" and "realizing going back to school was the right thing for me to do"

Socializing techniques, or interpersonal learning, was mentioned by three participants (18%) with comments such as "learning how to grow with others", "built relationships with people I otherwise would not have been able to", and "learned how to

communicate my feelings better”. Two participants (12%) stated that learning about the process of group and counseling techniques used was helpful for them.

Question #2: What was least helpful about the treatment?

All participants answered this question. Six participants (35%) wrote that nothing was unhelpful about the treatment. Two participants (12%) noted that there was not enough time for group: “time constraints” and “not enough sessions” were their comments.

Four respondents (24%) mentioned characteristics of the other members as least helpful. Their remarks included “members who monopolize time”, “members who were not open and did not share”, “members who talked too much” and “working through problems of other members, I could not relate to”.

Three participants (18%) commented on the conclusiveness of the group. They remarked “looking back, I don’t see any closure or transfer into my life”, “it seems like there was no closure” and “issues that were never resolved”.

Question #3: how could treatment have been improved?

One participant (6%) left this question blank, and 7 participants (41%) wrote that nothing could have improved treatment. Four participants (24%) mentioned time constraints; their responses include “could have been longer”, “longer time for each session”, “extended number of sessions”, “follow-up sessions would have been helpful.”

Four respondents (24%) mentioned leadership style. Responses to this question include “more experienced leaders”, “group leaders could have gotten the initial session off to a better start”, “more leadership”, and “leaders should have stopped members who monopolize time”.

Question # 4: In what ways was the treatment helpful to you?

All participants answered this question. One participant (6%) responded with “undetermined”. Five participants (41%) noted group cohesion in the form of making friends was very helpful for them. Their comments consisted of the following: “support from leaders and members”, “helped me start some good friendships”, “made close friends”, “felt supported by others in the group”.

Intrapersonal learning, one of Yalom’s therapeutic factors, was mentioned most frequently with 6 (35%) participants citing it as helpful. Their comments include “learned about myself and ways that I can change to improve my life”, “helped me to see how I come across to others”, “learned about myself-strengths, weaknesses, and personal goals”, “helped me concentrate in the good and bad points of myself and how I can improve them”, “learned that the way others see me is how I thought they did”, and “forced me to look at myself”.

Two respondents (12%) mentioned that learning about the process of group was helpful for them. They wrote “experienced the group process and learned how it works” and “learned about and witnessed group techniques”.

Both universality and catharsis were mentioned by one participant (6%). Universality was expressed as “see that others struggle like I sometimes do”, while catharsis was conveyed as “great for me to let go of old baggage”.

Question # 5: How was your stress level affected by treatment?

All participants answered this question. Eleven participants (65%) said their stress levels were decreased because of the group. Some of their comments included “it helped a lot. It was a time I could relax and get away from my stressors”, “the support of the

group helped to decrease my stress”, and “group allowed me to express feelings and vent- this helped to lower my stress levels”.

Three participants (18%) wrote that their stress level was unaffected by the group. Two participants (12%) said their stress levels increased because of group. Their comments were “I was so stressed by the group because it brought up painful issues” and “it increased my stress levels because I sometimes felt pressured to share more than I wanted”. One participant (6%) said “it increased my stress levels while I was in group and decreased them outside of group”.

Question # 5: Would you recommend that other graduate students take part in a counseling group? Why or why not?

All participants (100%) answered yes to this question. Reasons for recommending that other students should participate in group counseling included “personal and professional growth”, “gain insight about yourself”, “learn about the process of group”, “to see what to feels like to be on the other side”, and “it makes you a more self aware person which makes you a better counselor”.

Question # 6: How would you label the type group you were in ?

All participants answered this question. Ten participants (59%) said “interpersonal growth group”. Six participants (24%) said “support group” and one participant (6%) said both “interpersonal and support group”.

Exercise Group:

This section presents the responses of the participants in the exercise group to the qualitative questions.

Questions # 1: What was most helpful about the treatment?

All participants answered this question. Ten participants (53%) wrote that it held them accountable for exercising. Their remarks include “it made me exercise”, “it forced me to find time to exercise”, “I felt responsible to exercise”, and “when I skipped I felt guilty-this made me exercise”.

Stress relief, better mood, and increased energy were all mentioned by seven participants (37%). Stress relief was expressed by “release of tension when I exercised”, “exercise relived a lot of stress”, and “it calmed my nerves”. Better mood was expressed as “I felt better about myself”, “I was more upbeat after I exercised” and “I think exercising made me look at the world more optimistically”. Those who had increased energy levels communicated it by writing “I got more done on the days I exercised because I had more energy”, “I felt more alive when I exercised”, and “I felt so much more energetic after I exercised”.

Question # 2: What was least helpful about the treatment?

Three participants (16%) left this question blank. Eight participants (42%) wrote either “nothing” or “n/a”. Six participants (32%) mentioned time constraints as the least helpful aspect of the treatment. Their remarks include “it was very, very hard to fit it into my schedule”. “it took time away from other things”, “finding the time to do it was nearly impossible”, and “it was hard to find time”.

One participant (1%) mentioned having trouble sleeping in addition to time constraints. This participant wrote “if I exercised too late I couldn’t sleep, but it was almost impossible to find time earlier”. Two participants (11%) referenced the location of

where they were exercising as being unhelpful. They said “sometimes the weather was bad outside so I could not do it” and “I did not like the gym I went to”.

Question # 3: How could the treatment have been improved?

Four participants (21%) left this question blank. Ten participants (53%) wrote either “not sure”, “nothing”, or “n/a”. Both having a personal trainer at each session and a better facility to exercise in were mentioned by two participants (11%). Those who cited wanting a personal trainer said “I had no idea how to work some of those machines, a personal trainer would have helped” and “I would have liked to have had someone encouraging me during my workouts”. The participants who mentioned a facility in which to exercise “a free, quality place to exercise would have been nice” and “it would have been much easier if I had exercise equipment at home” One participant(1%) mentioned getting college credit for being involved in the treatment.

Question # 4: In what ways was the treatment helpful for you?

All participants (100%) answered this question. Six participants (32%) wrote one comment, seven participants (37%) wrote 2 comments, and six participants (32%) wrote three comments. Ten participants (53%) wrote that exercising relieved stress. Some of their comments include “relieved stress”. “made me feel less tense”. “helped me to relax”, and “I was not as tense after I exercised”.

Both improved sleep and improved concentration were mentioned by four participants (21%). Those who remarked about their sleep said “I slept so much better at night”, “When I exercised I did not have trouble falling asleep” , “I slept more soundly”, and “improved sleep”. Participants who had improved concentration wrote “It was easier

for me to focus”, “I always exercised at lunch and when I went back to work I was really able to think more clearly”, “less distracted after exercise”, and “better mental focus”.

Three participants (16%) mentioned that they lost weight during the treatment. They wrote “I lost 4 pounds doing this research”, “my clothes are much looser”, and “I lost a few pounds which makes me feel a lot better about myself”. Improved self image was also cited by three people as being helpful. They wrote “I like myself better”, “improved my self esteem”, and “I feel better about myself”.

Both increased energy and improved mood were mentioned by three participants (16%). Those whose energy was increased commented “increased energy”, “I felt more alive”, and “I had more ‘oomph’”. Those who experienced improved mood revealed “I was able to get off Zoloft because I felt so much better”, “better frame of mind”, and “more optimistic”. One participant revealed (1%) that she thought her counseling skills were improved. She wrote “I think it made me a better counselor because I was no longer just preaching self care, I was also practicing it”.

Question # 5: Would you recommend that other graduate students take part in an exercise program? Why or why not?

All participants (100%) answered this question. All participants answered “yes” (100%) to this question. Some of the reasons included “it helps to relieve stress”, “the best stress reliever”, “improves the way you feel about yourself!”, “although it is hard to fit in it there are so many rewards”, “physical and mental benefits”, and “better health”.

CHAPTER V

DISCUSSION

Summary of Investigation

Fewer than 50% of those who enter graduate school persevere long enough to obtain an advanced degree (Dinham & Scott, 1999; Golde, 2004; Hodgson & Simoni, 1995; Mallinckrodt, Leong, & Fretz, 1985; Smallwood, 2004). Graduate students face many stressors that contribute to high dropout rates, including interpersonal concerns, financial strains, life and role transitions, time constraints, and employment concerns. Assisting graduate students in finding ways to cope effectively and complete graduate school is an important endeavor and the focus of this study.

Individuals in the helping profession are extremely susceptible to stress because of their tendency to perform long term “others oriented” work. Graduate students in counseling face many of the challenges encountered by established professionals (i.e. challenging caseload, emotional drain of listening to others and taking on their problems, lack of support from institutional administrators). Graduate students are additionally challenged to meet a number of program demands (i.e. completing assignments, studying for and passing exams, attaining and completing internships, dealing with the dynamics of the supervisory relationship, and passing comprehensive exams). Moreover, the majority of graduate students in counseling have important family roles to play. While research on graduate students has acknowledged the difficulties associated with

managing multiple roles (Polson & Nida, 1998; Mallinckrodt & Leong, 1992), stress that graduate counseling students experience has been studied infrequently. This is in spite of the obvious academic, financial, social, and emotional demands inherent in graduate education in counseling. More specifically, no research on stress experienced by graduate counseling students has focused exclusively on master's level students and implemented a treatment to help this group of students.

The current study was conducted to determine the effectiveness of group counseling and physical exercise as interventions for graduate counseling student stress. The study examined the factors of depression, perceived stress, anxiety, and loneliness to assess the effectiveness of a group led by a qualified counselor and an exercise program for graduate counseling students.

The inspiration for this study came from the experiences of the researcher and other graduate students. Often, graduate students experiencing stress and loneliness seek out support from their peers or engage in other ways to relieve stress. In fact, graduate students often spend a good deal of time with other graduate students, and having close relationships with their peers helps to defuse the stress they are feeling. As the demands on graduate students increase, there is often an increase in stress levels and physical and emotional problems.

Other major factors provided additional momentum for this study. First, a review of the literature showed that one of the major deficiencies is the lack of empirical research evaluating the effectiveness of stress reduction programs for graduate students. Additionally, there is little research on graduate students in the counseling field, and no research on interventions for them. Schools that are CACREP accredited are required to

offer students the opportunity to be involved in an interpersonal growth group while enrolled in a Group Counseling class. However, little research has been conducted on the effectiveness of these groups. Considering the literature review, the need for interventions, and interest in the effectiveness of the interpersonal growth group offered in Group Counseling classes, this study sought to answer three major questions:

(a) Does a support group have an effect on graduate students' reports of depressive symptoms, anxiety symptoms, perceived stress, and loneliness as compared to a control group?

(b) Does an exercise program have an effect on graduate students' reports of depressive symptoms, anxiety symptoms, perceived stress, and loneliness as compared a control group?

(c) Is there a statistically significant difference between the effects the support group and the exercise program on graduate students' reports of depressive symptoms, anxiety symptoms, perceived stress, and loneliness?

Fifty-seven master's level graduate students participated in this study: 21 were in the control group, 19 in the exercise group, and 17 in the group counseling group. Each participant completed an instrument protocol consisting of an informed consent form, a demographic sheet (see Appendix B), and five test instruments: the Beck Depression Inventory (Beck, 1970), the Beck Anxiety Inventory (Beck & Steer, 1990), the UCLA Loneliness Scale (Russell, 1996), the Perceived Stress Scale (Cohen & Williamson, 1988). The independent variables for this study were: (a) group counseling (b) an exercise program and (c) a control group. The dependent variables were the levels of depression, anxiety, loneliness, and perceived stress as measured by the test instruments.

The participants for the counseling group were students enrolled in a Group Counseling class. The graduate students in the control and exercise groups self selected between the two groups. All groups received 8 weeks of treatment.

The 57 participants reported being enrolled in an average of 7.5 hours, and commuting an average of 6.5 miles to attend school. Most of the participants were female (84.2%) between the ages of 24 and 33 (48.3%). The majority of the participants reported their ethnicity as Anglo/White (84.2%).

About half (47%) of the participants reported that they were married. 21 % were divorced, and 32% had never married. Most participants (77%) reported they were currently employed, working an average of 23.3 hours per week. Thirty-five percent of the participants reported they commuted to school. The commute range of all participants was less than 75 miles, with an average commute of 6.5 miles. With regard to medication, 23% reported taking an antidepressant medication and 9% were taking an anxiolytic.

Results of the statistical analyses performed on the data provide strong support for the use of exercise and group counseling for stress, anxiety, and depression of graduate counseling students. No support was found for the use of an exercise program for symptoms of loneliness in graduate students. No support was found for preferring group counseling over an exercise program for graduate counseling students' symptoms of stress, anxiety, or depression.

A more comprehensive discussion of these findings will be presented and related to past research in the next section. Implications of the study as they related to future research, practice, and training will then be addressed. The limitations of this

investigation concerning participants, instrumentation, and methodology will then be considered. Finally, recommendations for future research will be presented.

Discussion of Findings

This section provides a discussion of findings and conclusions. It begins with a discussion and integration of findings with attention given to the relationship between the independent variables (group counseling and exercise) and the dependent variables (symptoms of depression, anxiety, stress, and loneliness).

Exercise and Depression

The participants' level of depression was measured by the Beck Depression Inventory (Beck, 1970). Three participants (16%) in the exercise group reported currently taking an antidepressant medication. Significant differences were found between the exercise group's posttest scores on the Beck Depression Inventory (Beck, 1970) compared to the control group's scores. These results suggest that graduate students involved in an exercise program have a significant decrease in symptoms of depression, as compared to no treatment. This finding is consistent with other studies that have been conducted on the effectiveness of exercise as an intervention for symptoms of depression (Blumenthal, Babyak, Carney, Huber, Saab, Burg, Sheps, Powell, Taylor, and Kaufman, 2004; Boyll, 1985; Cai, 2000; Iverson & Thordarson, 2005; Lavie and Milani, 1997). In fact, Moore and Blumenthal (1998), in their comprehensive review of the literature, argue that if the scientific findings continue to be supportive of the exercise-depression link "...exercise might become the primary treatment of choice" (p. 51).

One of the most noteworthy and often quoted of the exercise-depression link studies was conducted by Babyak, Blumenthal, and Herman, 2000. These researchers found that regular exercise is at least as effective as antidepressant medication in treating depression and keeping the condition from returning. In fact, the authors concluded that “there is no drug in current or prospective use that holds as much promise for sustained health as a lifetime of physical fitness” (p. 503). Although the current study did not examine the use of antidepressants compared to exercise, it did confirm the finding that exercise is an effective treatment for symptoms of depression. Additionally, one participant commented in the qualitative part of the posttest that one of the most helpful aspects of treatment was “I was able to get off Zoloft”. At least for one participant, exercise was as effective as antidepressant medication. Other researchers have found that exercise is as effective as or more effective than pharmacotherapy treatment (Morgan & O’Connor, 1989; Singh, Clements, & Fiatarone, 2001).

Other comments in the qualitative section echoed the idea that exercising helped with symptoms of depression. Comments indicating better mood included “I felt better about myself”, “I was more upbeat after I exercised”, and “I think exercising made me look at the world more optimistically”, and “better frame of mind”. Increased energy levels were communicated by “I got more done on the days I exercised because I had more energy”, “I felt more alive when I exercised”, “I felt so much more energetic after I exercised”, “I felt more alive”, and “I had more oomph”. Improved sleep was also mentioned by three participants.

Several authors in the counseling field have recently addressed the issues of incorporating exercise into the treatment of clients with anxiety and depression (Dubbert,

2002; Dixon, Mauzey, and Hall, 2003; Pollock, 2001; Stamford, 1995). Most noteworthy is Dixon, Mauzey, and Hall's (2003) review of Dubbert's (2002) article that explained the implications of advances in exercise for the counseling profession. This study incorporated Dixon, Mauzey, and Hall's recommendations of having clients engage in activity with someone who is trained in both physical fitness and counseling. Pollock (2001) also addressed this issue stating that research over the past two decades strongly suggests that exercise can have a beneficial effect on depressions. Yet patients rarely follow through with the suggestions by their therapist to exercise, thus increasing the need for counselors to employ exercise promotion and maintenance in their treatment. This study addressed these needs by incorporating exercise in a structured way by a counselor trained in physical fitness. The findings from this study will add to the body of literature revealing the benefits of exercise for depression. The unique features of this study are the usage of graduate counseling students and, again, incorporating exercise in a structured way by a counselor trained in physical fitness.

Exercise and Anxiety

The participants' levels of anxiety were assessed by the Beck Anxiety Inventory (Beck & Steer, 1990). All scores from the BAI indicated the participants had a low level of anxiety at the time of both pre and posttest. One participant in the exercise group indicated currently taking an anxiolytic medication,

Significant differences were found between the exercise group's posttest scores on the Beck Anxiety Inventory (Beck & Steer, 1990) compared to the control group's scores. These results provide strong support for the idea that graduate students involved

in an exercise program significantly decrease symptoms of anxiety. Several other studies have found similar results (Bahrke & Morgan, 1978; Boyll, 1985; Broman-Fulks, Berman, & Rabian, 2004; Broocks, Bandelow, Pekrun, George, Meyer, Bartmann, Hillmer-Vogel, & Ruther, 1998; Landers and Petruzello, 1994; McDonald and Hodgdon, 1991; Szabo, 2003).

Additionally, several meta-analyses regarding the effects of exercise on anxiety support the finding that exercise does decrease anxiety levels (Long and Van Stavel, 1995; Petruzello, Landers, Hatfield, Kubitz & Salazar, 1991; Slawson, 2005; Tkachuk & Martin, 1999). The findings from this study, add to the support for exercise as an effective anxiety reducing mechanism.

The qualitative responses of the participants echoed the quantitative findings that anxiety levels were lowered by exercise. For instance participants wrote “it calmed my nerves”, “helped me to sleep better”, “I was not as worried after I exercised”, and “It helped me to focus”. All of these comments address symptoms of anxiety and indicate that the exercise did help participants with their anxiety levels.

Previous studies have found that graduate students do suffer from anxiety (Munir & Jackson, 1997; Onwuegbuzie, 1999; Sapp, 1996). These problems range from mild to severe. Based on these results and the previous studies, graduate students should be encouraged to be involved in an exercise program.

Exercise and Stress

Participants’ stress levels were assessed by the Perceived Stress Scale (Cohen & Williamson, 1988). The participants in this study scored more than two standard

deviations above the mean of the norm at pretest, and is indicative of extremely high stress levels. In other words, the students in this study were very, very stressed. This finding corresponds with the other studies conducted on stress levels of graduate students (Adams, 2004; Baird, 1969; Bloom, 1975; Caple, 1995; Goplerud, 1980; Guy, 1987; Kovach, 2003; Martiny, 2004; Stecker, 2004; Turner, 2003).

Significant differences were found between the exercise group's posttest scores on the Perceived Stress Scale (Cohen, Kamarack, & Mermelstein, 1983) compared to the control group's scores. These results indicate that graduate students engaged in exercise have significantly decreased symptoms of stress as compared to those not involved in exercise. This is consistent with a large body of research espousing the benefits of exercise in stress relief (Anderson and Sutherland, 2002; Buckworth & Dishman, 2002; Dishman, 1997; Dishman, & Jackson, 2000; Hughes, 1984; Leith, 1994). Additionally, meta-analyses found that exercise is indeed effective in lessening symptoms of stress. (Crews & Landers, 1987; Long & Van Stavel, 1995; Petruzzello, Landers, Hatfield, Kubitz, & Salazar, 1991). In fact, in Long and Van Stavel's (1995) meta-analyses of 40 studies they found that adults who had a stressful lifestyle benefit more from exercise than do those who are not stressed. This coincides with the finding that these students were very stressed and did benefit greatly from exercise treatment.

Participants' answers to the qualitative posttest questions reiterated the stress relief they found from exercising. When participants were asked "What was most helpful about treatment?" responses included "exercise relieved a lot stress", "release of tension when I exercised", and "it calmed my nerves". To the question "In what ways was

treatment helpful for you?” participants wrote “relieved stress”, “made me less tense”, helped me to relax”, and “I was not as tense after I exercised”.

To close, the results of this study coincide with past studies indicating that graduate students are severely stressed and that exercise is an effective way to help alleviate symptoms of stress. These findings give strong support to the notion that graduate students should be engaging in an exercise program.

Exercise and Loneliness

Participants’ levels of loneliness were measured by the UCLA Loneliness Scale (Version 3) (Russell, 1996). The participants’ scores on the UCLA Loneliness Scale indicate that the participants in this study had a moderate level of loneliness at both pretest and posttest.

No significant differences were found between the exercise group’s posttest scores on the UCLA Loneliness Scale (Version 3) (Russell, 1996) compared to the control group’s score. This finding was expected. The participants in this study were not required to exercise with another person or in a group. Therefore, no impact on loneliness was expected.

With regard to research on exercise and loneliness, there have been some researchers who examined the effects of exercise on loneliness (Fox & Stathi, 2002; McAuley, Blissmer, Marques, Jerome, Kramer, & Katual, 2000). The results of these studies suggest that when older clients engage in exercise with other people they do have a significant reduction in levels of loneliness. Other researchers (Page & Hammermeister, 1995; Page & Tucker, 1994; Page & Page, 1994) have examined what role loneliness

plays in exercise initiation and adherence. These researchers concluded that those who are lonely are less likely to participate in, initiate, or adhere to exercise. Additionally, the psychosocial hypothesis about why exercise has such mental health benefits claims it is the interaction with others, and that it is the subsequent lowered loneliness that improves levels of stress, anxiety and depression. Perhaps if the participants in this study had exercised as a group or had been encouraged to exercise with another, there would have been a decrease in levels of loneliness.

In summary, the participants in this study reported a moderate level of loneliness and the exercise program did not affect their levels of loneliness significantly. Although other researchers have suggested that when people participate in exercise together they are more apt to have fewer feelings of loneliness, the current study did not ask that participants exercise with another person; therefore, these results were not surprising. As will be discussed in a later section, an area of future research would be to have participants exercise with another person or as a group.

Group Counseling and Depression

The participants' level of depression was measured by the Beck Depression Inventory (Beck, 1970). The participants' scores on the BDI indicate a moderate level of depression. Six participants (35%) in the counseling group reported that they were taking antidepressant medication. Among the participants in all groups in this study, thirteen, or 23%, reported taking antidepressant medication. A thorough literature review found only two studies that examined the numbers of graduate students that took antidepressant medications, and both found significantly lower percentages than the participants in this

study. Polson and Nida (1998) found that 11% of the 329 graduate students surveyed took antidepressants whereas Tjia, Givens, and Shea (2005) found that 13% of 450 graduate students were taking antidepressant medication.

Significant differences were found between the counseling group's posttest scores on the Beck Depression Inventory (Beck, 1970) compared to the control group's scores. This result suggests that being involved in group counseling significantly decreases symptoms of depression compared to no treatment at all. These results correspond to other research studies discussed in Chapter II that investigated the effectiveness of group counseling on symptoms of depression (Aguero-Trotter, 2005; Biggam and Power, Clarke, 1999; 2002; Dittrich and Trapold, 1983; Freudenberger, 1990; Kuhns, 1993; Ladish, 1993; Lee and Hett, 1990; Pfeffer, Jiang, Kakuma, Hwang, and Metsch, 2002; Peterson and Halstead, 1998; Pomeroy, 1995; Trozzolino, 2003; Warman, Grant, Sullivan, Caroff, and Beck, 2005).

Yalom (1995) claimed that depression is due to interpersonal pathology, which means the inability to have healthy, reciprocal relationships with others. According to Yalom, in order to treat depression we must first translate it into its interpersonal issues. These interpersonal issues must then be addressed in group counseling. The participants' qualitative responses in the posttest echoed this sentiment by writing that group counseling did indeed help with their interpersonal issues. Their comments included "learning how to grow with others", "built relationships with people I otherwise would not have been able to", "helped me to see how I come across to others", and "learned how to communicate my feelings better".

Rogers (1992) claimed that depression stems from intrapersonal difficulties called incongruence. Incongruence is a difference between what one wants and feels and what one expresses. Intrapersonal issues must then be examined within group to help alleviate symptoms of depression. Responses from group participants expressing their intrapersonal learning include “learned about myself and ways that I can change to improve my life”, “helped me to see how I come across to others” “learned about myself-strengths, weaknesses, and personal goals”, “helped me concentrate in the good and bad points of myself and how I can improve them”, learned that the way others see me is not how I thought they did”, and “forced me to look at myself”.

Group cohesion has been labeled the most important therapeutic factor in group counseling (Golembiewski, 1962; Lott & Lott, 1965) and a necessary condition for groups to progress to the working stage of group (Corey, 1994; Yalom, 1995). It has been argued that group cohesion is crucial for any type of interpersonal learning to occur (Festinger, Schachter, & Back, 1950; Scott, 2002). Clearly, group cohesion is an important part of how group counseling helps with alleviating symptoms of depression. Participants’ comments confirmed that group cohesion was a very important part of their group experience in that it was the most often mentioned therapeutic factor when discussing the most helpful aspect of treatment. Participants’ comments that indicated they experienced group cohesion include “forming strong, close bonds with other group members”, becoming close friends with people in the group”, feeling comfortable and secure in the group, the strength and unity of the group helped me grow, and “knowing I could depend on the group”

One of the symptoms of depression is loss of hope. Thus, the therapeutic factor of instillation of hope found in groups is credited with helping to alleviate symptoms of depression in group members. Participants' comments that indicated that they experienced instillation of hope were "meeting people who encouraged me and helped me to feel like I would make it through my troubles" and "realizing going back to school was the right thing for me to do".

In sum, the results of this study indicate that group counseling is effective at alleviating symptoms of depression. This is consistent with other research. Additionally, participants' written comments in the qualitative section indicate similarities to other research regarding the effectiveness of group therapeutic factors of helping with symptoms of depression. Specifically, the therapeutic factors mentioned included: group cohesion, interpersonal learning, intrapersonal learning, and instillation of hope.

Group Counseling and Anxiety

The participants' levels of anxiety were assessed by the Beck Anxiety Inventory (Beck & Steer, 1990). The participants' pretest scores on the BAI indicate a moderate amount of anxiety, whereas their posttest scores indicate a low level of anxiety.

Significant differences were found between the group counseling group's posttest scores on the Beck Anxiety Inventory (Beck & Steer, 1990) compared to the control group's scores. This result suggests that being involved in group counseling significantly decreases symptoms of anxiety as compared to no treatment at all. This finding is consistent with both Miller and Irby (1999) and Streeter (1984) who also examined the effects of a support group on graduate students' levels of anxiety and found that when

compared to no treatment a support group does indeed help with symptoms of anxiety in graduate students. The finding of this study is also consistent with the research discussed in Chapter II on populations other than graduate students that have found group counseling does undeniably help with symptoms of anxiety (Aguero-Trotter, 2005; Biggam and Power, 2002; Dittrich and Trapold, 1983; Dowling, 2002; Evans, 1995; Freudenberger, 1990; Hayward, 2000; Lee and Hett, 1990; Pfeffer, Jiang, Kakuma, Hwang, and Metsch, 2002; Wang and Li, 2003).

Further support for group counseling assisting in the lowering of anxiety comes from the participants' qualitative responses. Yalom (1995) stated that the therapeutic factor of instillation of hope has often been correlated with the reduction of anxiety in clients. Qualitative responses from participants demonstrate that instillation of hope took place in their group counseling experience. These comments include "meeting people who encouraged me and helped me to feel like I would make it through my troubles", "realizing going back to school was the right thing for me to do". These qualitative responses of the participants add further support to the idea that group counseling helps with symptoms of anxiety.

In conclusion, the results of this study in combination with previous studies strongly suggest graduate students should be encouraged to take part in group counseling to help alleviate anxiety problems

Group Counseling and Stress

Participants' stress levels were assessed by the Perceived Stress Scale (Cohen & Williamson, 1988). The participants' in the groups counseling group scored over two

standard deviations above the mean of the norm. This is indicative of extremely high stress levels. This finding corresponds with other studies conducted on stress levels of graduate students (Adams, 2004; Baird, 1969; Bloom, 1975; Caple, 1995; Goplerud, 1980; Guy, 1987; Kovach, 2003; Martiny, 2004; Stecker, 2004; Turner, 2003). This means graduate students are extremely stressed, and this study addressed this concern.

Significant differences were found between the group counseling group's posttest scores on the Perceived Stress Scale (Cohen, Kamarack, & Mermelstein, 1983;) compared to the control group's scores. These results provide strong support for graduate students being involved in group counseling to decrease symptoms of stress. This is consistent with a large body of research espousing the benefits of social support and group counseling for stress relief (Heins, Fahey, & Leiden, 1984; Hodgson and Simoni, 1995; Leiter & Durup, 1996; Mallinckrodt & Leong, 1992; Stecker, 2004).

A large portion of what makes group counseling successful at relieving symptoms of stress are curative factors: group cohesion, universality, instillation of hope, and catharsis (Yalom, 1995). Group cohesion can be described as the group's attractiveness to its members (Yalom, 1995). Group cohesiveness indicates the group members feel comfortable, valued, and unconditionally accepted in the group. This in turn allows the group members to feel supported and encourages the release of stress. Participants' comments indicated that they did experience group cohesiveness and the resultant support. Comments indicating support came in response to the question "what was most helpful about treatment?" Participants' replies included "forming strong, close bonds with other group members", "becoming close friends with people in the group", "feeling comfortable and secure in the group" "the strength and unity of the group helped me

grow”, “support from leaders and members”, “felt supported by others in the group” and “knowing I could depend on group”.

Catharsis in its simplest form is the venting or expressing of feelings. However, it can also play an important role in interpersonal process in that catharsis can allow a member to express positive or negative feelings toward another group member. Catharsis is associated with group cohesiveness in two ways. First, it is more helpful once dependable group connections have been formed. But catharsis also helps to develop cohesiveness, since people who express strong, honest feelings to one another and work through them form intimate, reciprocated connections. Participants expressed the benefits of catharsis by writing “being able to vent my feelings and frustrations”, “expressing strong emotions I usually do not show”, and “great to help me let go of old baggage”.

Universality is the curative factor that allows group members to see there are others who feel the same as they do. Universality will often help to relieve stress by allowing a client to see that there are others with the same problem, and helps to remove the feeling of uniqueness of situations. Comments of the participants that signify universality include “I was able to see that what stress I was going through others were going through it too”, “I could that people who I thought I had nothing in common with struggled with what I do”, “see that others struggle the way I sometimes do” and “I saw that I was not the only one who felt stressed”.

Instillation of hope is the faith a participant feels when they see another group member succeed, or when they hear of another group member who has overcome a problem similar to their own. Instillation of hope is helpful for graduate students in alleviating stress because in seeing that other graduate students complete their programs

and succeed; they begin to see things as “doable”. Instillation of hope was indicated by participants as being helpful in the statements “meeting people who encouraged me and helped me to feel like I would make it through my troubles”, and “realizing going back to school was the right thing for me to do”.

In response to the qualitative question in the posttest packet “How was your stress level affected by treatment?” eleven participants said their stress levels were decreased because of the group. Some of their comments include “it helped a lot. It was a time I could relax and get away from my stressors”, “the support of the group helped to decrease my stress”, and “group allowed me to express feelings and vent-this helped to lower my stress levels”.

Three participants wrote that their stress level was unaffected by the group, and two said their stress levels increased because of group. Their comments were “I was so stressed by the group because it brought up painful issues” and “it increased my stress levels because I sometimes felt pressured to share more than I wanted”. One participant said “it increased my stress levels while I was in group and decreased them outside of group”. Yalom (1995) stated that it is not uncommon for participants to feel anxious and nervous about the group experience. However, these feeling usually subside after the beginning stages of group. For those participants that continued to feel this way throughout group there it is likely because of one of the following reasons reasons: 1)they were doing a lot of good work on themselves, which is supposed to be difficult, and is a good thing; or 2) they were not appropriate for the group at this time, perhaps because of other issues, such as a crisis or serious mental illness they were dealing with. It is hoped

that those in the latter category are prescreened and they are not accepted into the group, however, sometimes these issues are missed.

In summary, several researchers (Anderson and Mieztis, 1999; Dell'Oliver, Koch, and Buckler, 2001; Hodgson and Simoni, 1995) have found that social support does help with stress relief among graduate students. The findings of this study agree with these researchers in suggesting that group members who experience the supportive nature of group counseling and the associated curative factors do indeed have significantly fewer symptoms of stress than those who receive no group counseling.

Group Counseling and Loneliness

Participants' levels of loneliness were measured by the UCLA Loneliness Scale (Version 3) (Russell, 1996). The participants' scores at both pretest and posttest indicate that a moderate level of loneliness at both pretest and posttest.

No significant differences were found between the counseling group's posttest scores on the UCLA Loneliness Scale as compared to the control group's score at the $p < .05$ level. However, at the $p < .10$ level significant difference were found between the group counseling group's posttest scores and the exercise group's posttest scores. This produces a 90% confidence level that group counseling did significantly improve participants' levels of loneliness as compared to no treatment and the exercise treatment. This is consistent with other research that says the group counseling can be effective at alleviating symptoms of loneliness (Hoopps, Pepin, Boisvert, 2003; Mojica-Castillo, 2003; Sorensson, 2003). Therapeutic factors that help with alleviating loneliness in group counseling are group cohesiveness, universality, and inter- and intrapersonal learning.

Group cohesiveness is helpful in lessening loneliness by helping participants feel like an important part of the group. Group cohesiveness allows members to feel appreciated and important. Participants statements that reflect group cohesiveness and the subsequent reduction in loneliness are “support from leaders and members”, “helped me start some good friendships”, “made close friends”, “felt supported by others in the group”, “forming strong, close bonds with other groups members”, “becoming close friends with people in the group”, “feeling comfortable and secure in the group”, “the strength and unity of the group helped me grow” and “knowing I could depend on the group”.

Universality assists in lessening loneliness by helping participants learn that they are not the only one with problems, and that others often struggle with the same issues. Comments from participants that echo universality are “I was able to see that what stress I was going through others were going through it too”, “I found that people who I thought I had nothing in common with struggled with what I do”, and. “I saw that I was not the only one who felt stressed”.

Sullivan’s (1953) interpersonal theory explained how interpersonal learning helps to alleviate feeling of loneliness. Interpersonal theory asserts that we need people in order to survive. It is through these interactions, most notable the perceived appraisals received by others, that we develop our self concept. It is this self concept that determines who we interact with, how we interact with them, and why we interact with them; factors that affect levels of loneliness. Through group counseling, interpersonal learning encourages the participants to examine their perceived appraisal and check their accuracy. In other words, it allows people to see whether they see themselves in the same way others see them. In examining and altering these perceived appraisals, participants become better

able to relate to others and have a subsequently lessened feeling of loneliness. Several participants expressed that they benefited from interpersonal learning through their group process. Their comments include “learned about myself and ways that I can change to improve my life”, “helped me to see how I come across to others”, “learned about myself-strengths, weaknesses, and personal goals”, “helped me concentrate in the good and bad points of myself and how I can improve them”, “learned that the way others see me is how I thought they did”, and “forced me to look at myself”. From these comments it can be concluded that the participants did indeed experience interpersonal learning that helped achieve a reduction in loneliness.

In conclusion, the results of this study did not find significance for the effectiveness of group counseling on loneliness at the $p < .05$ level. However, at the $p < .10$ level, group counseling was found to significantly reduce the participants feelings of loneliness as compared to no treatment and the exercise treatment. This corresponds with the findings of previous researchers (Hoopps, Pepin, Boisvert, 2003; Mojica-Castillo, 2003; Sorensson, 2003) who have suggested that group counseling does help lessen feelings of loneliness. Additionally, the therapeutic factors of universality, group cohesion, and interpersonal learning that the participants’ experiences add further credence to the idea that treatment of group counseling helps in alleviating feelings of loneliness.

Summary

In summary, the results of this study strongly suggest that both exercise and group counseling help to alleviate symptoms of stress, depression, and anxiety experienced by

graduate counseling students. The results also suggest that group counseling helps to lessen feelings of loneliness that graduate counseling students experience. These results correspond with the findings of previously conducted studies. (Kovach, 2003; Martiny, 2004; Stecker, 2004; Turner, 2003).

There are other noteworthy findings of this study. The graduate students who participated in this study were extremely stressed. This, unfortunately, is a very common finding when graduate students' stress levels are examined. This, along with the high dropout rate of graduate students, ought to encourage faculty members to examine how this stress can be alleviated. From the results of this study it appears that the implementation of group counseling and/or encouraging the adoption of an exercise regimen would assist in this endeavor.

With regard to exercise, it often has been said that if the effects of exercise could be put in pill form, it would be the top selling medication because of the benefits it produces. Many researchers have spent years exploring and substantiating this claim. This study supports that idea, and identifies graduate students as a group who could benefit greatly from such activity. Coghlan (1994) claims that it doesn't matter what fitness level is obtained, it is simply the act of exercising that matters. This implies that there are not only many physical benefits of exercising, but there is also the psychological sense of mastery that comes with exercise.

Yalom (1995) labeled and described the therapeutic factors at work in group counseling. These factors have been seen time and time again in research conducted on group counseling. The healing benefit of these therapeutic factors cannot be understated. The therapeutic factors participants mentioned as being a beneficial part of group therapy

were group cohesion, interpersonal learning, universality, catharsis, and instillation of hope. Similar to previous research, group cohesion was the most frequently mentioned beneficial aspect of group counseling, and interpersonal learning was mentioned second in frequency

Through the triangulation of the quantitative results of this study, qualitative writings of the participants in this study and previous research, much credence can be given to the idea that group counseling helps people, and in this case graduate counseling students. .

Implications of the Study

The results of this study suggest several opportunities for future endeavors. This section will explore the implications of this study in three areas: implications for research, implications for practice, and implications for training.

Implications for Future Research

Several research opportunities are recommended as a result of this study. While these results add to the body of research concerning graduate student stress, the findings of this study also suggest future research in graduate student stress, anxiety, loneliness, and depression intervention. Specifically, there could be great value in a study investigating the use of ‘group exercise’ in which participants get the physical and psychological benefits of exercise, while at the same time receiving the social import and therapeutic factors that come with group counseling. Similarly, a study might explore the benefits of having group members exercise together and then have a group counseling

session (session could be scheduled to meet one day or having separate weekly sessions for exercise and counseling).

In addition to the graduate student community, the results of this study and implications for future research can be broadened to include other groups of people. Teachers, social workers, nurses, psychologists and doctors could likely benefit from research interventions involving group counseling and exercise with their peers. Finally, adolescents and families could gain from the dual treatment of exercising together and also receiving group or family counseling.

Implications for Practice

The outcomes of this investigation have implications for future practical application in the counseling profession. First, this study supports the effectiveness of exercise as an intervention for graduate student symptoms of stress, depression, and anxiety, and group counseling as an effective treatment for depression, and anxiety, stress, and loneliness. The findings indicate that the inclusion of exercise and group counseling into the lives of graduate students can decrease symptoms of stress, anxiety, and depression in graduate students. This study converges with earlier research on exercise and group counseling as an effective component of therapeutic interventions (Adams, 2004; Hofmann, 2004; Hopps, Pepin, Boisvert, 2003; Husaini, Cummings, & Kilbourne, 2004; Kansas, 2004; Leszcz, 2004, Llewelyn & Haslett, 1986 Mojica-Castillo, 2003; Peng, 2001; Sorensson, 2003; Stecker, 2004; Turner, 2003; Twenge, 2001) and strongly recommends their integration into future interventions. Group counseling can be

used as an adjunct to individual counseling or stand on its own. Exercise can be used in conjunction with group counseling, individual counseling or also on its own.

Second, this study has implications for the effort to lower the dropout rate of graduate students. Implementing group counseling and exercise programs into the lives of graduate students, may at first seem like a stressor to them, but once the benefits of physical and psychological health and social support are received students will have a greater sense of self-mastery and be better able to cope with stressors that come their way. Ideally, this approach should be combined with direct action approaches at both the individual level by increasing graduate students' sense of self-efficacy, and the organizational level through the help of graduate faculty members and the university counseling center.

Finally, this study opens up another avenue for the counseling profession to work with their clients. As has recently been suggested in the counseling field, physical exercise can be an effective adjunct to individual and group therapy (Dixon, Mauzey, Hall, 2003; Dubbert, 2002). The benefits of incorporating exercise into treatment include alleviating symptoms of stress, depression, and anxiety. Additionally, exercise appears to be one of the most cost effective ways to help clients in our care. Also attractive is the fact that exercise does not need to be arduous to attain the psychological and physical benefits. Moderate activity will improve both physical and mental health.

Implications for Training

In addition to having implications for future research and practice, this study has implications for training counselors. The results of this study establish the importance of

the professional counselor and the graduate faculty member in counselor education. Specifically, collaborative efforts between graduate faculty and professional counselors or student counseling center should include graduate student support groups. Simply offering the groups is not quite enough since graduate students, like those in this study, may initially view them as another stressor. Graduate advisors ought to strongly encourage advisees to become involved in these groups.

The findings of this study also suggest that counselor education programs should consider encouraging the promotion of new standards for counselor education students. These standards should include ongoing group counseling for graduate students and recommendations for a structured exercise program for graduate students.

Finally, counselors ought to have the opportunity to specialize or receive training in exercise and exercise promotion; this would allow for clinicians to gain the experience needed to provide exercise as an adjunct to counseling services. In 1996, McEntee and Halgin found in their survey of 250 counselors that the majority of them have favorable opinions about the benefits of exercise; however, few recommend exercise to their clients. The following reasons were given for not incorporating exercise into counseling: (a) perceived inappropriateness of discussing exercise, (b) wanting to avoid confusion of the counseling relationship, (c) fear of setting the client up for failure, (d) concern about being perceived as insensitive or increasing resistance, and (e) feeling unfamiliar with different types of exercise. Most of these concerns are due to a lack of knowledge or misconceptions about using exercise in counseling, since exercise intervention is rarely a topic of training in counselor education programs (Chung & Baird, 1999). Therefore, as recommended by Dixon, Mauzey, and Hall (2003), counselors should be educated

themselves with the regulations established by the American College of Sports Medicine (Pate, Pratt, Blair, Haskell, Macera, & Bouchard, 1995) and the 1996 Surgeon General's report on exercise (U.S. Department of Health and Human Services, 1996) so that they are aware of all the benefits of exercise and the vast number of people who can be helped by it.

Limitations

Limitations should be considered when assessing the utility of the data obtained from the present investigation. The limitations occurred in three general areas: sampling, instrumentation, and methodology.

Sample Limitations

Participants for this study were limited to graduate students in the counseling field. The experiences and needs of graduate students in other fields may not accurately be reflected by this investigation. Additionally, the sample size for this study was small (n=57) and, therefore, may not be wholly representative of graduate students in counselor education. The statistical power of the study could have been increased if there had been more participants. Additionally, with a larger sample more information could have been gained from the investigation. As a result of the fact that all participants were volunteers, it is impossible to determine how those who did not participate in the study differed from the sample. Finally, the participants in the exercise and control groups self-selected which group they would participate in as opposed to being randomly assigned. Those in the group counseling group were in this group due to their enrollment in the Group

Counseling class. This lack of random assignment of the participants may likely have lead to nonequivalent treatment groups and limit generalizability.

Furthermore, the results of this study may not be representative of findings in other parts of the United States because the participants were all enrolled in a public university in the southwestern United States. Expectations and requirements for counselors vary from state to state, and therefore, the results may not accurately reflect the experience of other counselor education students, particularly those in a different regions or in, for example, a private educational institution. In light of these limitations, generalizations to other populations of graduate students should be made with caution.

Another caution inherent in this study concerns the homogeneity, or lack of diversity, of the participants. The participants in this study were primary Caucasian women. Although this happens to the demographic characteristics of students enrolled in most counselor education programs, it is certainly not indicative of the total population of graduate students in the United States. The appropriateness of generalizability is limited by he lack of multicultural factors and diversity presented in this study, considering the special concerns that may exist in such populations.

Instrumentation Limitations

Another limitation of this study is the self-report nature of the instruments utilized. Due to the instruments relying solely on the participants' perceptions, the accuracy of the study could be influenced by imprecise self-reports or mistaken perceptions of a situation. Due to participants trying to anticipate the socially "correct"

answer rather than responding honestly, the reliability of the instruments is always a concern in self report situations.

Additionally, because the participants in this study are counseling graduate students, they may be more likely to be familiar with the instruments; that is, they may have known what construct was being measured and what the study was investigating, and, again, answered with a perceived “correct” response as opposed to a straightforward response.

Methodology Limitations

This research may be limited because of the methodology utilized. First, as is the case with any group counseling research, it is difficult to say exactly what is helpful about the experience. Every group is different, every leader is different, and the dynamics of groups vary widely. This is the nature of group, and one of the limitations of investigating them. Another limitation involving the group counseling treatment is that the groups had already met one time as a group before they completed the pretest. This was due to the academic calendar and scheduling difficulties. This may have impacted the amount of influence the group counseling experience had on the graduate students’ symptoms. A final limitation involving the group counseling treatment was that the 17 participants were divided into four groups with six to eight members per group. In the pretest packet participants were asked to write their group leaders’ names on the demographic questionnaire to allow for the groups to be analyzed separately, however, only two participants did so. This made it impossible for the researchers to compare the separate groups for initial and final differences. Thus, all participants’ responses were

analyzed together as one group. However, previous research conducted on support groups for graduate students (Barnette, 1989; Miller & Irby, 1999; Perrone, Smith, & Carlson, 2003; Streeter, 1984) and other samples (Biggam & Power, 2002; Clarke, 1999; Evans, 1995; Hayward, 2000; Peterson & Halstead, 1998; Pfeffer, Jiang, Kakuma, Hwang, and Metsch, 2002; Trozzolino, 2003) indicates that when multiple groups of the same type are used authors will often analyze all the groups as one data set

The second type of methodological limitation of the study was the length of treatment. Although, the literature is inconclusive regarding the time it takes for effective stress interventions, Higgins (1986) and Murphy (1984) suggested that brief programs that met at least 6 hours were beneficial. However, Flathouse (1995) asserts that most participants need more than six weeks. This study used a 10 week intervention, which certainly contributed to the significant results. However, longer interventions, perhaps an entire semester may have supplied more significant and more statistically robust results.

A third type of methodological limitation involves the amount of time the exercise participants spent exercising per session. It would have been more beneficial to have the participants exercise three times per week for 30 minutes, as opposed to twice per week for 45 minutes. In fact, the Surgeon General (United States Department of Health and Human Services, 1996) recommends that all adults exercise for at least 30 minutes on most, if not all, days of the week and it would have been even more beneficial if the participants could have done so. However, it was not feasible to ask participants to exercise on most, if not all, days of the week. In fact, due to time constraints, participants were only willing to commit to exercising twice per week.

Recommendations for Future Research

One of the most noteworthy contributions of this study was the stimulation of questions and ideas for future research. The significant results of this study lead to a number of other avenues for the use of group counseling and exercise as treatment interventions:

1. One of the limitations of this study was the lack of geographic representation of the participants and the sample size. This study should be replicated with graduate students enrolled in counselor education across the United States, with attention paid to different states and private universities. Larger sample sizes should be used and perhaps a longer treatment duration should be implemented
2. Implementing this treatment to graduate students in different disciplines would add to the research. Few studies have been conducted that introduce an intervention into the lives of graduate students. Examining the effectiveness of group counseling and exercise across different disciplines could prove quite productive.
3. Prospective research could also additionally focus on the more specific identification of stressors endorsed by graduate students. Research could also focus on identifying the type of social support most beneficial to alleviating the negative impact of identified stressors.
4. Future studies should include follow up data collection at 1 month, 3 months, and months after the treatment. This follow-up data collection would allow for exploration of the variability and stability of the findings over time

5. An examination the effectiveness of group exercise (graduate students exercising together) would add to the body of research in addition to group counseling. The results of the current study indicate this type of future research would be quite powerful. If the participants could receive both the mental and physical benefits of exercise, but also the social support of being with other graduate students, the results would likely be extremely valuable.

6. Another alternative for prospective research would be to examine the effectiveness of having the graduate students exercise as a group and have them meet at another time for group counseling. This should be examined among different fields of graduate study.

7. Future research should also include examining the effectiveness of group counseling and exercise across other populations such as families, adolescents, teachers, nurses, physicians, pregnant women, and those suffering from cancer, heart disease, AIDS, and addictions.

References

- Adams, J. (2004). Straining to describe and tackle stress in graduate students. *Medical Education, 38*(5), 463-4.
- Aguero-Trotter, D. (2005). Effects of a stress management and coping skills training program on psychological distress, coping, and adjustment of cancer patients. *Dissertation Abstracts International, 65*(05B), 2084
- Ahmadi, J., Samavat, F., Sayya, M., and Ghanizadeh, A. (2002). Various types of exercise and scores on the Beck Depression Inventory. *Psychological Reports, 90*, 821-822.
- American Psychiatric Association. (1968). *Diagnostic and statistical manual of mental disorders*. Washington, DC: Committee in nomenclature and statistics.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*, 4th Edition, Text Revision. Washington, DC: Author.
- Anderson, B.J., & Mieзитis, S. (1999). Stress and life satisfaction in mature females graduate students. *Initiatives, 59* (1), 33-43.
- Anderson, M.B., & Sutherland, G. (2002). Working out those tensions: Exercise and the reduction of stress. In D.L. Mostofsky and L.D. Zaichikowsky (Eds.), *Medical and psychological aspect of sport and exercise* (pp. 19-31). Morgantown, WV: Fitness Information Technology, Inc.
- Anthony, J. (1991). Psychological aspects of exercise. In N.A. DiNubile (Ed.), *Clinics in sports medicine: Vol. 10, The exercise prescription* (pp.171-180.). Philadelphia, PA: W.B. Saunders
- Antonovsky, A. (1974). Conceptual and methodological problems in the study of

- resistance resources and stressful life events. In: B.S. and B.P. Dohrenwend (Eds.), *Stressful life events: Their nature and effects*. (pp. 136-170). New York: Wiley.
- Arkin, R.M., & Burger, J.M. (1980). Effects of unit relation tendencies on interpersonal attraction. *Social Psychology Quarterly*, 43, 380-391.
- Aves, A. (2005). Choose to move. *Sunset*, 214 (1), 82-5.
- Avison, W.R., & Gottlieb, I.H. (1994). *Stress and mental health: Contemporary issues and prospects for the future*. New York: Plenum Press
- Babiyak, M., Blumenthal, J., & Herman, S. (2000). Exercise is a feasible therapy for major depressive disorder. *Geriatrics*, 55(12), 66-7.
- Bahrke, M., & Morgan, W.P. (1978). Anxiety reduction following exercise and meditation. *Cognitive Therapy and Research*, 2(4), 323-333.
- Bair, C., & Hawthorn, J. (1999). Doctoral student attrition and persistence: A meta-synthesis of research. Paper presented at the annual meeting of the association for the study of higher education, San Antonio, TX. (ERIC Document Reproduction Service No. ED 437 008)
- Baird. (1969). Study of role the role relations of graduate students. *Journal of Educational Psychology*, 60 (1), 15-21.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman & Co.
- Bandura, Ross, D., & Ross, S. (1963). Vicarious reinforcements and imitative learning. *Journal of Abnormal and Social psychology*, 67, 601-7.
- Barnette, E.L. (1989). Effects of a growth group on counseling students' self-actualization. *The Journal for Specialists in Group Work*, 14(4), 202-210

- Beck, A. (1970). *Depression: Causes and treatment*. Philadelphia: University of Pennsylvania.
- Beck, A. (1976). *Cognitive therapy and the emotional disorders*. New York: International Press.
- Beck, A., Epstein, N., Brown, G., Steer, R. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*, 893-897.
- Beck, A., & Steer, R. (1987). *Beck Depression Inventory manual*. New York: The psychological Corporation, Harcourt Brace Jovanovich.
- Beck, A., & Steer, R. (1990). *Manual for the Beck Anxiety Inventory*. San Antonio, TX: Psychological Corporation.
- Beck, A., Steer, R., Garbin, M. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8*, 77-100.
- Benjamin, L., & Walz, G.R. (1990). Counseling students and faculty for stress management. ASHE-ERIC *Clearinghouse on Counseling and Personnel Services*.
- Benkin, E.M. (1984). *Where have all the doctoral students gone?: A study of doctoral attrition at UCLA*. *Dissertations Abstracts International, 53*(10B)
- Berger, B.G., & Molt, R. (2000). Exercise and mood: A selective review and synthesis of research employing the profile of mood states. *Journal of Applied Sport Psychology, 12*, 69-92.
- Bermak, G.E. (1977). Do psychiatrists have special emotional problems? *The American*

- Journal of Psychoanalysis*, 37, 141-146.
- Biggam, F., & Power, K. (2003). A controlled problem-solving, group-based intervention with vulnerable incarcerated young offenders. *International Journal of Offender Therapy & Comparative Criminology*, 46(6), 678-698.
- Biglan, A. (1973). Relationships between subject matter and the structure and output of university departments. *Journal of Applied Psychology*, 57 (3), 204-213.
- Bloom, B.L. (1975). *Psychological stress in the campus community: Theory, research, and action*. New York: Behavioral Publications.
- Blumenthal, J.A., Babyak, M.A., Carney, R.M., Huber, M., Saab, P.G., Burg, M.M., Sheps, D., Powell, L. Taylor, C.B., and Kaufman, P.G. (2004). Exercise, depression, and mortality after myocardial infarction in ENRICHD trial. *Medicine & Science in Sports & Exercise*, 36(5), 746-755.
- Blumenthal, J.A., Babyak, M.A., Moore, K.A., Craighead, W.E., Herman, S., Khatri, P. (1999). Effects of exercise training on older patients with major depression. *Archives of Internal Medicine*, 159, 2349-2356.
- Blumenthal, J.A., Williams, R.S., Needels, T.L., & Wallace, A.G. (1982). Psychological changes accompanying aerobic exercise in healthy middle-aged adults. *Psychological Medicine*, 44, 529-536,
- Blythe, P. (1973). *Stress Disease: The growing plague*. New York: St. Martin's Press.
- Bodin, T., & Martinsen, E. (2004). Mood and self-efficacy during acute exercise in clinical depression: A randomized, controlled study. *Journal of Sport & Exercise Psychology*, 26, 623-633.
- Boll, D.M. (1998). The application of a short-term, time-limited, closed homogeneous

- outpatient psychotherapy group to individuals with schizophrenia: An exploratory clinical study. *Dissertation Abstracts International*, 54 (01B), 5071.
- Borden, J., Peterson, D., Jackson, E. (1991). The Beck Anxiety Inventory in nonclinical samples: Initial psychometric properties. *Journal of Psychopathology and Behavioral Assessment*, 13, 345-356.
- Boutcher, S.H., & Landers, D.M. (1988). The effects of vigorous exercise on anxiety, heart rate, and alpha activity of runners and nonrunners. *Psychophysiology*, 25, 696-702.
- Bower, B. (2004). Aerobic activity fuels elderly brains, minds. *Science News*, 165(8), 115.
- Boyll, J. (1985). The effects of acute exercise versus passive electronic muscle stimulation on self-concept, anxiety, and depression. Eric Document. Accession Number ED264470.
- Breus, M.J., & O'Connor, P.J. (1998). Exercise induced anxiolysis: A test of the "time out" hypothesis in high anxious females. *Medicine and Science in Sports and Exercise*, 30 (7), 1107-1112
- Broman-Fulks, J.J., Berman, M.E., & Rabian, B.A. (2004). Effects of aerobic exercise on anxiety sensitivity. *Behaviour Research and Theory*, 42(2), 125-36.
- Broocks, A., Bandelow, B., Pekrun, G., George, A., Meyer, T, Bartmann, U., Hillmer-Vogel, U., and Ruther, E. (1998). Comparison of aerobic exercise, clomipramine, and placebo in the treatment of panic disorder. *American Journal of Psychiatry*, 155 (May), 603-609.
- Brookfield, S. (1986). *Understanding and facilitating adult learning. A comprehensive*

- Analysis of principles and effective practices.* San Francisco: Jossey-Bass.
- Brown, L.L., & Robinson, S.E. (1993). The relationship between meditation and/or exercise and three measures of self-actualization. *Journal of Mental Health Counseling, 15*(1), 85-93.
- Buck. (1972). *Working under pressure.* New York: Crane, Russak & Co.
- Buckworth, J., & Dishman, R.K. (2002). *Exercise Psychology.* Champaign, IL: Human Kinetics Publishers, Inc.
- Bugental, J.F. (1964). The person who is the psychotherapist. *Journal of Consulting Psychology, 28*, 272-277.
- Burtenshaw, R. P. (1997). An ethnic comparison of the ranked value of Yalom's therapeutic factors among chemically dependent incarcerated adult males in group psychotherapy. *Dissertation Abstracts International, 48*(02A), 0590.
- Burton, R. (1632). *The anatomy of melancholy.* Oxford: Printed by Ion Lichfield for Henry Cripps.
- Butler, H.F. (1972). Student role stress in education for the professions. *American Journal of Occupational Therapy, 26*, 399-405.
- Cahir, N., Morris, R. (1991). The psychology student stress questionnaire. *Journal of Clinical Psychology, 47*, 414-417.
- Cai, S. (2000). Physical exercise and mental health: A content integrated approach in coping with college students' anxiety and depression. *The Physical Educator, 57*(2), 69-76.
- Campbell, D.D., & Davis, J.E. (1939). Reports of research and experimentation in exercise and recreational therapy. *American Journal of Psychiatry, 96*, 915-933.

- Caplan, G. (1974). *Support Systems and community mental health*. New York: Behavioral Publications.
- Caplan, G. (1976). The family as a support system. In G. Caplan and M. Kililea (Eds.), *Support systems and mutual help*. New York: Grune & Stratton.
- Caplan, G. (1981). Mastery of stress: Psychosocial aspects. *American Journal of Psychiatry*, *138*, 413-420.
- Caplan, R.D. & Jones, K.W. (1975). Effects of workload, role ambiguity, and type A personality on anxiety, depression, and heart rate. *Journal of Applied Psychology*, *60*, 713-719.
- Caple, R.B. (1995). Counseling graduate students. *New Directions for student services*, *72*, 43-50.
- Carroll, L., Gilroy, P.J., & Murra, J. (2003). The effect of gender and self-care behaviors on counselors' perceptions of colleagues with depression . *Journal of Counseling and Development*, *81*(1), 70-77.
- Carter, C., & Dacey, C. (1996). Validity of the Beck Depression Inventory, MMPI, and Rorschach in assessing adolescent depression. *Journal of Adolescence*, *19*, 223-231.
- Cassel, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology*, *104*, 107-123.
- Chard, M. (2002). Depression risk among elderly reduced with increasing physical activity. Reuters Health Information 2002. Retrieved May 15, 2003 from http://www.medscape.com/viewarticle/440657_print.
- Cherniss, C. (1980). *Professional burnout in human service organizations*. New York:

Praeger

- Chung, Y.B., & Baird, M.K. (1999). Physical exercise as a counseling intervention. *Journal of Mental Health Counseling, 21*(2), 124-135.
- Clarke, G.N. (1999). Cognitive-behavioral treatment of adolescent depression: efficacy of acute group treatment and booster sessions. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(3), 272-9.
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*, 300-314.
- Cobb, S. (1979). Social support and health throughout the life course. In M.W. Riley (Ed.), *Aging from birth to death*. Boulder, CO: Westview Press.
- Coghlan, A. (1994). Life getting you down? Go work up a sweat. *New Scientist, 143*, 9-11.
- Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*, 99-125.
- Cohen, S., Kamarack, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.
- Cohen, S., Kessler, R., & Gordon, L. (1995). *Measuring stress*. Oxford: Oxford University Press, Inc.
- Cohen, S. & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont symposium on applied social psychology* (pp.31-67). Newbury Park, CA.
- Cohen, S. & Wills, T. (1985). Stress, social support, and the buffering hypothesis.

- Psychological Bulletin*, 98, 310-357.
- Corey, G. (1994). *Theory and practice of group counseling*. California: Brooks/Cole Publishing.
- Crabbe, J.B., & Dishman, R.K. (2000). Exercise and brain electrocortical activity: a quantitative synthesis. *Medicine and Science in Sport and Exercise*, 32, 143-168.
- Creager, J. (1965). *Predicting doctoral attainment with GRE and other variables*. Washington, DC: National Academy of Sciences, Office of Scientific Personnel.
- Creamer, M., Foran, J., Bell, R. (1995). The Beck Anxiety Inventory in a nonclinical sample. *Behavior Research and Therapy*, 33, 477-485.
- Crews, D.J., & Landers, D.M. (1987). A meta-analytic review of aerobic fitness and reactivity to psychosocial stressors. *Medicine and Science in Sports and Exercise*, 19, 114-120.
- Crouch, E., Bloch, S., & Wanlass, J. (1994). Therapeutic factors: Interpersonal and intrapersonal mechanisms. In A. Fuhriman & G. Burlingame (Eds.). *Handbook of Group Psychotherapy* (pp.269-315). New York: Wiley.
- Cutrona, C. (1986). Behavioral manifestations of social support: A microanalytic investigation. *Journal of Personality and Social Psychology*, 51, 201-208.
- Davis, G., & Parker, C. (1997). *Writing the doctoral dissertation: A systemic approach* (2nd ed.). Hauppauge, NY: Barrons.
- Deck, M., & Morrow, J. (1989). Supervision: An interpersonal relationship. In L.J. Bradley (Ed.), *Counselor supervision: Principles, process, practice* (2nd ed.) (pp.35-62). Munice, IN: Accelerated Development Inc.
- Deutsch, F. (1927). *Applied psychoanalysis: Selected objectives of psychotherapy*. New

York: Grune and Stratton.

deBeurs, E., Wilson, K., Chambless, D., Goldsetin, A., Feske, U. (1997). Convergent and divergent validity of the beck anxiety inventory for patients with panic disorder and agoraphobia. *Depression and Anxiety*, 6, 140-145.

deRosenroll, D, Norman, T., & Sinden, S. (1987). The development of a support seminar for entering graduate level students in school counseling/counselling psychology programs. *Canadian Journal of Counselling*, 21(2-3), 157-61.

deVries, H.A. (1987). Tension reduction with exercise. In W.P. Morgan and S.E. Goldston (Eds.), *Exercise and mental health* (p.99-104). Washington, DC: Hemisphere.

deVries, H.A., & Adams, G.M. (1972). Electromyographic comparisons of single doses of exercise and meprobamate as to effects on muscular relaxation. *American Journal of Physical Medicine*, 51, 130-141.

deVries, H.A., Beckamn, P., Huber, H., & Dieckmeir, L, (1968). Electromyographic evaluation of the effects of sauna on the neuromuscular system. *Journal of Sports Medicine and Physical Fitness*, 8, 1-11.

Dimeo, F., Bauer, M., & Varhram, I. (2001). Benefits from aerobic exercise in patients with major depression: A pilot study. *British Journal of Sports Medicine*, 35(2), 114-117.

Dimond, M. (1979). Social support and adaptation to chronic illness: The case of maintenance hemodialysis. *Research in Nursing and Health*, 2, 101-108.

Dinham, S., & Scott, C. (1999). Doctorates: Why so many give up. *The Times Higher Education Supplement*, 1411, 34-5

- Dishman, R.K. (1997). Brain monoamines, exercise, and behavioral stress: Animal models. *Medicine and Science in Sports and Exercise*, 29, 63-74.
- Dishman, R.K., & Jackson, E.M. (2000) Exercise, fitness, and stress. *International Journal of Sport Psychology*, 31, 175-203.
- Dittrich, J.E., & Trapold, M.A. (1983). *Wives of alcoholics: A treatment program and outcome study*. Paper presented at the annual meeting of the Southeastern Psychological Association, Atlanta, GA.
- Dixon, W.A., Mauzey, E.D., & Hall, C.R. (2003). Physical activity and exercise: Implications for counselors. *Journal of Counseling & Development*, 81(4), 502-505.
- Doan, R.E., & Scherman, A. (1987). The therapeutic effect of physical exercise on a measure of personality: A literature review. *Journal of Counseling and Development*, 66 28-36.
- Dowling, V. (2002). A coping skills short-term psychotherapy group for psoriasis patients: Understanding and coping with the psychological and physical effects of psoriasis. *Dissertation Abstracts International*, 63(10B), 4897.
- Dubbert, P.M. (2002). Physical activity and exercise: Recent advances and current challenges. *Journal of Consulting and Clinical Psychology*, 70, 526-536.
- Dunbar, H. (1947). *Mind and Body: Psychosomatic medicine*. New York: Random House.
- Ehrenberg, R.G., & Mavros, P.G. (1995). Do doctoral students' financial support patterns affect their times-to-degree and completion probabilities? *The Journal of Human Resources*, 30, 581-609

- Ellis, A. (1977). Rational-Emotive Therapy: Research data that supports the clinical hypothesis of RET. *The Counseling Psychologist*, 7(1), 2-42.
- Erickson, G. (1977). The concept of personal network in clinical practice. *Family Process*, 14, 487-498.
- Evans, R. (1995). Comparison of brief group therapies for depressed cancer patients receiving radiation treatment. *Public Health Reports*, 10, 306-311
- Evans, T.J. (1996). From ABD status to Ed.D.: A successful dissertation support group. *Journal of Higher Education*, 12, 62-74.
- Everly, G.S. (1985). Occupational stress. In G.S Everly & R. Feldman (Eds.), *Occupational health promotion* (pp. 49-73). New York: Wiley.
- Everly, G.S., & Lating, J.M. (2002). *A clinical guide to the treatment of the human stress response*. New York: Plenum Publishers.
- Farber, B.A. (1983). *Stress and burnout in the human service professions*. New York: Pergamon Press.
- Farber, B.A. (1991). *Crises in education: Stress and burnout in the American teacher*. San Francisco: Jossey-Bass Publishing.
- Farber, B.A., & Heifetz, L.J. (1981). The satisfactions and stresses of psychotherapeutic work: A factor analytic study. *Professional Psychology*, 12, 621-630
- Faulkner, G., & Biddle, S.J. (2004). Exercise and depression: Considering variability and contextuality, 26(1), 3-18.
- Feldman, S.D. (1974). *Escape from a doll's house*. New York: McGraw-Hill.
- Ferrer de Valero, Y. (2001). Departmental factors affecting time-to-degree and completion rates of doctoral students at one land-grant research institution.

- Journal of Higher Education*, 72(3), 341-67.
- Festinger, L.A. (1954). A theory of social comparison processes. *Human Relations*, 7, 117-140.
- Festinger, L.A., Schachter, S., & Back, K. (1950). *Social pressures in informal group study of human factors in housing*. New York: Harper & Row.
- Figuroa, I. (2003). Developing a community of practitioner researchers: History and analysis of the human and work dimensions of an adult education doctoral support group. *Dissertation Abstracts International*, 64, 09A.
- Flathouse, P. (1995). *Coping with stress: The comparative effects of group versus an audiocassette program for school counselors*. Unpublished doctoral dissertation: Texas Tech University.
- Folkins, C.H., & Sime, W.F. (1981). Physical fitness training and mental health. *American Psychologist*, 35, 373-389.
- Ford, E.S. (1963). Being and becoming a psychotherapist: The search for identity. *American Journal of Psychotherapy*, 17, 472-482.
- Forsyth, D.R. (2004). Therapeutic groups. In M. Brewer, & M. Hewstone, (Eds.), *Applied Social Psychology* (pp.79-110). Malden, MA: USishers.
- Fox, K.R. & Stathi, A. (2002). Physical activity and mental health in older adults: Current evidence and future perspectives. *Psychology: The Journal of the Hellenic Psychological Society*, 9(4), 563-80
- Franz, S.I., & Hamilton, G.V. (1905). The effects of exercise upon the retardation of conditions of depression. *American Journal of Insanity*, 62, 239-256.
- Freudenberger, H.J., & Richelson, G. (1980). *Burnout: The high cost of achievement*.

New York: Doubleday.

Freudenberger, H.J. & Robbins, A. (1979). The hazards of being a psychoanalyst. *The Psychoanalytic Review*, 66(2), 275-296.

Freudenberger, L.B. (1990). The successful incompetent in group therapy: The drug-abusing adolescent and group therapy (Doctoral dissertation, Adelphi University, The Institute of Advanced Psychological Studies, 1990). *Dissertation Abstracts International*, 51, 3129.

Fremont, J., & Craighead, L.W. (1987). Aerobic exercise and cognitive therapy on the treatment of dysphoric moods. *Cognitive Therapy and Research*, 11, 241-251.

Fydrich, T., Dowdall, D., Chambless, D. (1992). Reliability and validity of the Beck Anxiety Inventory. *Journal of Anxiety Disorders*, 6, 55-61.

Gauvin, L., Rejeski, W.J. , & Reboussin, B.A. (2000). Contributions of acute bouts of vigorous physical activity to explaining diurnal variation in feeling states in women. *Health Psychology*, 19(4), 365-375.

Gilbody, S., Whitty, P. & Grimshaw, J. (2003). Educational and organizational interventions to improve the management of depression in primary care: A systematic review. *JAMA*, (289)23, 3145-51.

Golde, C.M. (2004). Why do graduate students drop out? *The Chronicle of Higher Education*, 50(22), 17-22.

Golembiewski, R.T. (1962). *The small group*. Chicago: University of Chicago Press.

Goplerud, E.N. (1980). Social support and stress during the first year of graduate school. *Professional Psychology*, 11(2), 283-290.

Goplerud, E.N. (2001). Stress and stress mastery in graduate school. In S. Walfish & K.

- Allen (Eds.), *Succeeding in graduate school: The career guide for psychology students*. (pp.129-140). Mahawah, NJ: Lawrence Erlbaum Associates, Publishers
- Gottlieb, B.H. (1981). *Social networks and social support*. Beverly Hills: Sage.
- Graham-Bonnie, F.E. (1972). *The doctor's guide to living with stress*. New York: Drake Publishers.
- Greenberg, S.F. & Valletutti, P.J. (1980). *Stress and the helping professions*. Baltimore, Maryland: Paul H. Brooks Publishing Co., Inc.
- Guy, J.D. (1987). *The personal life of the psychotherapist*. New York: John Wiley & Sons.
- Hays, K. (1999). *Working it out: Using exercise in psychotherapy*. Washington, DC: American Psychological Association.
- Hayward, C. (2000). Cognitive-behavioral group therapy for social phobia in female adolescents: results of a pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39(6), 721-726.
- Haier, R.J., Quaid, B.A., & Mills, J.S. (1981). Naloxone alters pain perception after jogging. *Psychiatry Research*, 5, 231-232.
- Hall, E., Ekkekakis, P., Petruzzello, S. (2002). The affective benefits of vigorous exercise revisited. *British Journal of Health Psychology*, 7(1), 47-66.
- Halleck, S.L. (1976). The emotional problems of graduate students. In J. Katz & R. Harnett (Eds.), *Scholars in the making*. (pp. 161-176). Cambridge, MA: Ballinger Publishing Company.
- Halleck, S.C., & Woods, S.M. (1992). Emotional problems of psychiatric residents.

Psychiatry, 25, 339-346

Hamilton, M. (1959). The assessment of anxiety states by rating. *British Journal of Medical Psychology*, 32, 50-55.

Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery, and Psychiatry*, 23, 56-62

Hannum, S.M., & Kasch, F.W. (1981). Acute post exercise blood pressure response of hypertensive and normotensive men. *Scandinavian Journal of Sports Science*, 3(1), 11-15.

Hanson, T. (1992). The ABD phenomenon: The "At Risk" population in higher education and the discipline of communication. Paper presented at the annual meeting of the speech communication association, Chicago. (ERIC Document Reproduction Service No. ED 351 732)

Hays, R., & DiMatteo, R. (1985). *Reliability, validity, and dimensionality of the UCLA Loneliness Scale*. Paper presented at the annual meeting of the Western Psychological Association. San Jose, CA.

Harnett & Katz. (1977). The education of graduate students. *Journal of Higher Education*, 38(6), 646-664.

Hart, L.A. (1984). Self-talk and exercise behavior (self-verbalization, self-statement). (Doctoral dissertation, The University of Tennessee, 1984). *Dissertation Abstracts International*, 45, 0656.

Heil, R.A. (1992). A comparative analysis of therapeutic factors in self-help groups. *Dissertation Abstracts International*.

Heins, M., Fahey, S.N., and Leiden, L.I. (1984). Perceived stress in medical, law, and

- graduate students. *Journal of Medical Education*, 59, 169-179.
- Henry, W.E. (1966). Some observations on the lives of healers. *Human Development*, 9, 47-56.
- Henry, W.E., & Sprey, S.L. (1971). *The fifth profession*. San Francisco: Jossey-Bass.
- Higgins, N. (1986). Occupational stress and working women: The effectiveness of two stress reduction programs. *Journal of Vocational Behavior*, 29, 66-78.
- Hodgson, C., & Simoni, J.M. (1995). Graduate student academic and psychological functioning. *Journal of college student development*, 36(3), 244-253.
- Hofmann, S.G. (2004). Cognitive mediation of treatment change in social phobia. *Journal of Consulting and Clinical Psychology*, 72(3), 392-9.
- Holt, R.R. (1999). Personality growth in psychiatry residents. *AMA Archives of Neurology and Psychiatry*, 81, 203-215.
- Holy Bible, New International Version. (1986). Nashville, TN: Holman Bible Publishers.
- Holzman, L., Searight, H., Hughes, H. (1996). Clinical psychology graduate students and personal psychotherapy: Results of an exploratory study. *Professional Psychology: Research and Practice*, 27, 98-101.
- Hopps, S.L., Pepin, M., & Boisvert, J.M. (2003). The effectiveness of cognitive-behavioral group therapy for loneliness via inter relay chat among people with physical disabilities. *Psychotherapy: Theory, Research, Practice, Training* 40(1-2), 136-147.
- Horne, J.A., & Staff, C.H. (1983). Exercise and sleep: Body heating effects. *Sleep*, 6, 36-46.

- House, J.S. (1981). *Work stress and social support*. Reading, MA: Addison-Wesley Publishing Company.
- Hughes, J.R. (1984). Psychological effects of habitual aerobic exercise: A critical review. *Preventive Medicine, 13*, 66-78.
- Husaini, B.A., Cummings, S., and Kilbourne, B. (2004). Group therapy for depressed elderly women. *International Journal of Group Psychotherapy, 54*(3), 295-319.
- Inman, A.G., & Silverstein, M.E. (2003). Dissertation support group: To dissertate or not is the question. *Journal of College Student Psychotherapy, 17*(3), 59-69.
- Iverson, G.L., & Thordarson, D.S. (2005). Women with low activity are at increased risk for depression. *Psychological Reports, 96*(1), 133-40.
- Johnson, J.E. (2004). Group climate, cohesion, alliance, and empathy in group psychotherapy: multilevel structural equation models. *Dissertation Abstracts International, 65*(1-B), 440.
- Johnson, R., & Conyers, L. (2001). Surviving the doctoral dissertation: A solution-focused approach. *Journal of College Counseling, 4*(1), 77-80.
- Jolly, J., Aruffo, J., Wherry, J., Livingston, R. (1993). The utility of the Beck Anxiety Inventory with inpatient adolescents. *Journal of Anxiety Disorders, 7*, 95-106.
- Kabakoff, R., Segal, D., Hersen, M., & Van Hasselt, V. (1997). Psychometric properties and diagnostic utility of the Beck Anxiety Inventory and State-Trait Anxiety Inventory with older adult psychiatric outpatients. *Journal of Anxiety Disorders, 11*, 33-47.
- Kahn, R.L. & Antonucci, T. (1980). Convoys over the life cycle: Attachment, roles, and social support. In P. Baltes and O. Brim (Eds.), *Lifespan development and*

- behavior* (pp. 192-218). Boston: Lexington, 1980.
- Kanas, N. (2004). Group therapy for bipolar patients. *International Journal of Group Psychotherapy*, 54(3), 419-25.
- Kapur, R., Miller, K., & Mitchell, G. (1988). Therapeutic factors within inpatient and outpatient psychotherapy groups. *British Journal of Psychiatry*, 152, 229-33.
- Katz, J., & Hartnett, R. (1976). *Scholars in the making*. Cambridge, MA: Ballinger.
- Katz, R., Katz, J., & Shaw, B.F. (1999). Beck Depression Inventory and hopelessness scale. In M.E. Maruish (Ed.), *The use of psychological testing for treatment planning and outcomes assessment*. 2nd ed. (pp. 921-934). Mahwah, NJ: Erlbaum.
- Keim, J., Fuller, C., & Day, J. (1996). *Stress among psychology graduate students*. Paper presented at the Meetings of the American Psychological Association. Toronto, Canada.
- Kennedy, M., & Humphreys, K. (1995). Understanding worldview transformation in members of mutual help groups. In F. Lavoie, T. Borkman, & B. Gidron (Eds.), *Self-help and mutual aid groups: International and multicultural perspectives* (pp.181-198). New York: Hawthorn Press.
- Kently, J.R. (2000). Stress management strategies for women doctoral students. *Nurse Educator*, 25(5), 251-4
- Kivlighan, D., Multon, K., & Brossart. (1996). Helpful impacts in group counseling: Development of a multidimensional rating system. *Journal of Counseling Psychology*, 43(3), 347-55.
- Kjerulff, K., & Wiggins, N.H. (1976). Graduate student styles for coping with stressful

- situations. *Journal of Educational Psychology*, 68(3), 247-254.
- Knox, W. (1970). Obtaining a Ph.D. in psychology. *American Psychologist*, 25, 1026-1032.
- Koko, D. (1980). Stress management techniques for graduate students: Cognitive coping, problem solving, and time management. Paper presented at the annual meeting of Southeastern Psychological Association. Washington, D.C.. March 26-29.
- Kovach, H.R. (2003). Relationships among stress, social support, and burnout in counseling psychology graduate students. *Dissertations Abstracts International*, 63(07B), 0351
- Kraus, H., & Raab, W. (1961). *Hypokinetic disease*. Springfield, IL: Charles C. Thomas.
- Kritz-Silverstein, D., Barrett-Connor, E., and Corbeau, C. (2001). Cross-sectional and prospective study of exercise and depressed mood in the elderly: the Rancho Bernardo Study. *American Journal of Epidemiology*, 153(6), 596-603.
- Kuhns, M.L. (1993). A comparative study between dynamic group psychotherapy and self-help support group treatment among adult children of alcoholics. *Dissertation Abstracts International*, 54(11B), 5604
- Kurtz, L.F. (1990). The self-help movement: Review of the past decade of research. *Social work within groups*, 13 (3), 101-115.
- Kurtz, L.F. (1997). *Self-help and support groups: A handbook for practitioners*. Thousand Oaks, CA: Sage Publications.
- Kurtz, L.F. & Powell, T.J. (1987). Three approaches to understanding self-help groups.

- Social work with groups, 10, 69-80.*
- Lachman, S. (1972). *Psychosomatic disorders: A behavioristic interpretation*. New York :Wiley.
- Ladish, C. (1993). Group treatment for the elderly: A comparison of cognitive-behavioral and supportive approaches. *Dissertation Abstracts International, 54, 12B.*
- LaMott, K. (1974). *Escape from stress*. New York: G.P. Putnam's sons, Publishers.
- Landers, D.M., & Petruzzello, S.J. (1994). Physical activity, fitness, and anxiety. In Bouchard, C., Shepherd, R. & Stevens, J.C. (Eds.) *Physical activity, fitness, and health: International proceeding and consensus statement*. Champaign, IL: Human Kinetics.
- Lavie, C.J., & Milani, R.V. (1997). Benefits of cardiac rehabilitation and exercise training in elderly women. *American Journal of Cardiology, 79, 664-6.*
- Lazarus, R.S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill
- Leavy, R.L. (1983). Social support and psychological disorder: A review. *Journal of Community Psychology, 11, 3-21.*
- Lee, J.M., & Hett, G.G. (1990). Post-divorce adjustment: An assessment of a group intervention. *Canadian Journal of Counselling, 24(3), 199-209.*
- Leiter, M.P., & Durup, M.J. (1996). Work, home, and in-between: A longitudinal study of spillover. *Journal of Applied Behavioral Science, 32(1), 29-47.*
- Leith, L.M. (1994). *Foundations of exercise and mental health*. Morgantown, WV: Fitness Information Technology, Inc.
- Lese, K.P., Mac-Nair-Semands, R.R. (2000). Therapeutic factors inventory: Development

- of a scale. *Group*, 24, 303-17.
- Leszcz, M. (2002). Group therapy for depression. *Journal of Group Psychotherapy*, 52 (3), 451-7
- Leung, J., Arthur, D.G. (2004). Clients and facilitators' experiences of participating in a Hong Kong self-help group for people recovering from mental illness. *International Journal of Mental Health Nursing* 13(4), 232-241.
- Lieberman, M.A. (1990). A group therapist perspective on self-help groups. *International Journal of Group Psychotherapy*, 40(3), 251-278.
- Lieberman, M.A., & Borman, L.D. (1979). *Self-help groups for coping with crisis: Origins, members, processes, and impact*. San Francisco: Jossey-Bass.
- Lin, N., Ensel, W., Simeone, R., & Kuo, W. (1979). Social support, stressful life events, and illness: A model and empirical test. *Journal of Health and Social Behavior*, 20, 108-119.
- Lipowski, Z.J. (1984). What does the word "psychosomatic" really mean? *Psychosomatic Medicine*, 46, 153-171.
- Llewellyn, S.P. & Haslett, A. (1986). Factors perceived as helpful by the members of self-help groups: An exploratory study. *British Journal of Guidance and Counseling*, 14(3), 252-262.
- Long, L., & Cope, C. (1980). Curative factors in a male felony offender group. *Small Group Behavior*, 11, 389-398.
- Long, B.C., & Van Stavel, R. (1995). Effects of exercise training on anxiety: A meta-analysis. *Journal of Applied Sport Psychology*, 7, 167-189.
- Lott, A.J., & Lott, B.E. (1965). Group cohesion as interpersonal attraction: A review of

- relationships with antecedents and consequent variables. *Psychological bulletin*, 64, 259-309
- Lowenberg, P. (1969). Emotional problems of graduate education. *Journal of Higher Education*, 40(8), 610-623.
- Mallinckrodt, B., & Leong, F. (1992). Social support in academic programs and family environments: Sex differences and role conflicts for graduate students. *Journal of Counseling and Development*, 10(2), 66-90.
- Mallinckrodt, B., Leong, F., & Fretz, B. (1985). A stress management program for graduate students. *Journal of College Student Personnel*, 26 (5), 471.
- Mallinckrodt, B., Leong, F., & Kralj, M. (1989). Sex differences in graduate student life-change stress and stress symptoms. *Journal of College Student Development*, 30, 332-338.
- Maltby, J. (2001). The relationship between exercise motives and psychological well-being. *The Journal of Psychology*, 135(6), 651-60.
- Mandger, T.A., & Motta, R.M. (2005). The impact of an exercise program on posttraumatic stress disorder, anxiety, and depression. *International Journal of Emergency Mental Health*, 7(1), 49-57.
- Martiny, V.L. (2004). *A needs assessment of religious graduate student marriages*. *Dissertations Abstracts International*, 64(09A), 0590.
- MacKenzie, K. (1987). Therapeutic factors in group psychotherapy: A contemporary view. *Group*, 11, 26-34.
- McAuley, E.; Blissmer, B.; Marquez, D.X.; Jerome, G.J.; Kramer, A.F.; Katula, J. (2000). Social relations, physical activity, and well-being in older adults.

- Preventive Medicine*, 31(5), 608-17.
- McDonald, D.G., & Hodgdon. (1991). *The psychological effects of aerobic fitness training: Research and theory*. New York: Springer-Verlag.
- McEntee, D., & Halgin, R. (1996). Therapists' attitudes about addressing the role of exercise in psychotherapy. *Journal of Clinical Psychology*, 52, 48-60.
- McLeod, M., & Vonk, B. (1992). A support group for single-parent graduate students and their children. *Journal of College Student Development*, 33, 184-5.
- McNair, D.M., Lorr, N., Droppleman, L.F. (1971). *Manual for the profile of mood states*. San Diego: Education and Industrial Testing Service.
- McNerney, W. (1974). *Stress: Blueprint for health*. Chicago: Blue Cross Association.
- Mechanic, D. (1962). *Students under stress*. Glencoe, Ill: Free Press.
- Meichenbaum, D. (1983). *Stress reduction and prevention*. New York: Plenum Press.
- Melendez, W. A. & Guzman, R.M. (1983). Burn-out: The new academic disease. ASHE-ERIC, *Higher Education Report No. 9*.
- Miller, M., & Rahe, R. (1997). Life changes scaling for the 1990s. *Journal of Psychosomatic Research*, 43, 279-292.
- Miller, W.D., & Irby, B.J. (1999). An inquiry into the exigency of a beginning doctoral cohort in educational leadership. *College Student Journal*, 33(3), 358-63.
- Mojica-Castillo, S. (2003). *The effectiveness of a psychosocial intervention on older Bosnian female refugees in diminishing loneliness*. *Dissertation Abstracts International: Section B: The Sciences & Engineering*, 64(06B), 0419
- Moore, K.A., & Blumenthal, J.A. (1998). Exercise training as an alternative treatment for depression among older adults. *Alternative Therapies*, 4, 48-56.

- Morgan, W.P. (1973). Influence of acute physical activity on state anxiety. In C.E. Mueller (Ed.). *Proceedings, annual meeting of the college physical education association for men.* (p. 78-110). Minneapolis: university of Minnesota.
- Morgan, W.P. (1979). Anxiety reduction following acute physical activity. *Psychiatric Annuals*, 9(3), 36-45.
- Morgan, W.P. (1988). Exercise and mental health. In R.K. Dishman (Ed.). *Exercise adherence: its impact on public health* (pp. 91-121). Champaign, IL: Human Kinetics.
- Morgan, W.P. & O'Connor, P.J. (1989). Psychological effects of exercise and sports. In A.J. Ryan & F.L. Allman (Eds.), *Sports Medicine* (2nd ed., pp. 671-689). New York: NY: Academic Press.
- Morgan, W.P. (1997). Methodological considerations. In W.P. Morgan. (Ed.). *The series in psychology and behavioral medicine* (pp. 98-129). Washington, DC: Taylor and Francis.
- Moses, J. Steptoe, A. , Mathews, A, & Edwards, S. (1989). The effects of exercise training on mental well-being in the normal population: A controlled trial. *Journal of Psychosomatic research*, 33, 47-61.
- **Mullen, C., Whatley, A., & Kealy, W. (1999). Co-mentoring support groups in higher education. ERIC Document HEO31943
- Munir,S.S, & Jackson, D.W. (1997). Social support and anxiety among women graduate students. Social Support, need for support, and anxiety among women graduate students. *Psychological Reports*, 80, 383-6
- Murphy, L. (1984). Occupational stress management: A review and appraisal. *Journal of*

Occupational Psychology, 57, 1-15.

- Nelson, Dell'Oliver, Koch, & Buckler. (2001). Stress, coping, and success among graduate students in clinical psychology. *Psychological Reports*, 88, 759-767.
- North, T., McCullagh, P., & Tran, Z. (1990). Effect of exercise on depression. *Exercise and Sports Science Review*, 18, 379-415.
- O'Connor, P.J., Carda, R.D., Graf, B.K. (1991). Anxiety and running exercise in the presence and absence of interpersonal competition. *International Journal of Sport Medicine*, 12, 423-426.
- Onwuegbuzie, A.J. (1999). Writing apprehension among graduate students: its relationship to self-perceptions.
- Pan, P.J., & Lin, C.W. (2004). Members' perceptions of leader behaviors, group experiences, and therapeutic factors in group counseling. *Small Group Research*, 35(2), 174-94.
- Page, R.M. & Page, T.S. (1994). Adolescent loneliness linked to low physical fitness and physical activity. *Wellness Perspectives*, 10(3), 56-62.
- Page, R.M. & Tucker, L.A. (1994). Psychosocial discomfort and exercise frequency: An epidemiological study of adolescents. *Adolescence*, 29, 183-91.
- Page, R.M. & Hammermeister, J. (1995). Shyness and loneliness: Relationship to the exercise frequency of college students. *Psychological reports*, 76(2), 395.
- Pasnau, R.O., & Bayley, S. (1971). Personality changes in the first year of psychiatry residency training. *American Journal of Psychiatry*, 128, 79-84
- Pate, R., Pratt, M., Blair, S., Haskell, W., Macera, C., & Bouchard, C. (1995). Physical activity and public health: A recommendation from the Centers for Disease

- Control and Prevention and the American College of Sports medicine. *JAMA*, 273, 402-407.
- Pazin, J.S. (2000). The effects of burnout on doctoral counseling students in CACREP accredited universities. *Dissertation Abstracts International*, 61(09A), 1164.
- Peng, H. (2001). Career counseling in undecided college female seniors' state anxiety and career indecision. *Psychological Reports*, 88(3), 996-1004.
- Penny, D. (1997). Friend or foe: the impact of managed care on self-help. *Social Policy*, 27, 48-53.
- Perlman, D., & Peplau, L. (1981). Toward a social psychology of loneliness. In S. Duck & R. Gilmour (Eds.). *Personal relationships 3: Personal relationships in mental disorder* (pp. 31-56). Newbury Park, CA: Sage.
- Perrone, K.M., Smith, C.L., & Carlson, T.E. (2003). Goal setting and attainment in graduate student training groups. *College Student Journal*, 37(3), 456-61.
- Peterson, A.L., & Halstead, S.T. (1998). Group cognitive behavior therapy for depression in a community setting: A clinical replication series. *Behavior Therapy*, 29(1), 3-18.
- Petruzzello, S.J., Landers, D.M., Hatfield, B.D., Kubitz, K.A., & Salazar, W. (1991). A meta-analysis on the anxiety-reducing effects of acute and chronic exercise: Outcomes and mechanisms. *Sports Medicine*, 11, 143-182.
- Pfeffer, C.R., Jiang, H., Kakuma, T., Hwang, J., and Metsch, M. (2002). Group intervention for children bereaved by the suicide of a relative. *Journal of the American Academy of Children & Adolescent Psychiatry*, 41(5), 505-513.
- Phillips, E.D. (1994). *Greek medicine: Philosophy and medicine from Alcmaeon to*

- Alexandrians*. London: Hawthorn Press.
- Pines, A.M. & Aronson, E. (1988). *Career burnout: Causes and cures*. New York: Free Press.
- Pollock, K.M. (2001). Exercise in treating depression: broadening the psychotherapists role. *Journal of Clinical Psychology*, 57(11), 1289-300.
- Polson , M., & Nida, R. (1998). Program and trainee lifestyle stress: A survey of AAMFT student members. *Journal of Marital and Family therapy*, 24(1), 95-112.
- Pomero, E.C. (1995). Effectiveness of a psychoeducational and task-centered group intervention for family members of people with AIDS. *Social Work Research*, 19(3), 142-152
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychosocial Measurement*, 1, 385-401.
- Raglin, J.S., & Morgan, W.P. (1987). Influence of vigorous exercise on mood state. *Behavior Therapist*, 8, 179-183.
- Raglin, J.S., Turner, P.E., & Eksten, F. (1993). State anxiety and blood pressure following 30 minutes of leg ergometry or weight training. *Medicine and Science in Sports and Exercise*, 25, 456-463.
- Rasmussen, G., & Zander, A. (1954). Group Memberships and self-evaluation. *Human Relations*, 7, 239-51.
- Rogers, C.R. (1992). The process of therapy. *Journal of Counseling and Clinical Psychology*, 60, 163-4.
- Rosch, P.J. (1991). Is job stress America's leading adult health problem? A

- commentary. *Business*, 7, 4-7.
- Rossier, J., Bloom, F.E., & Guillemin, R. (1980). Endorphins and stress. In H. Selye (Ed.), *Selye's guide to stress research* (Vol. I, pp. 187-205). New York: VanNostrand Reinhold
- Royak-Schaler, R., & Feldman, R. (1984). Health behaviors of psychotherapists. *Journal of clinical Psychology*, 40(3), 705-710.
- Russell, D.W. (1996). UCLA loneliness scale (version 3): Reliability, Validity, and factor structure. *Journal of Personality Assessment*, 66(1), 20-40.
- Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: A unifying theory. *Clinical Psychology Review*, 21(1), 33-61.
- Salkind, M.R. (1969). Beck Depression Inventory in general practice. *Journal of Royal College of Practitioners*, 18, 267-271
- Sapp, M. (1996). Three treatments for reducing the worry and emotionality components of test anxiety with undergraduate and graduate college students: cognitive-behavioral hypnosis, relaxation therapy, and supportive counseling. *Journal of College Student Development*, 37, 79-87
- Sarason, I., Levine, H., Bashman, R., & Sarason, B. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology*, 44, 127-139.
- Saunders, R., & Balinsky, S. (1993). Assessing the cognitive stress of graduate students. *Measurement & Evaluation in Counseling & Development*, 26(3), 192-215
- Schaefer, C., Coyne, J., Lazarus, R. (1981). The health related functions of social support. *Journal of Behavioral Medicine*, 4, 381-406.

- Schopler, J.H. & Galinsky, M.J. (1995). *Support groups: Current perspectives on theory and practice*. Binghamton, NY: Hawthorn Press.
- Schwartz, G. (1979). The brain as a healthcare system. In C. Stone, F. Cohen, & N. Adler (Eds.), *Health psychology* (pp.549-573). San Francisco: Jossey-Bass.
- Schwenk, T.L. (2002). Exercise can help depression in the elderly. *The Physician and Sportsmedicine*, 30(3), 2-4.
- Scott, G.J. (2002). Facilitating group cohesion among adolescents through challenge course experiences. *Journal of Experiential Education*, 22, 79-89.
- Selye, H. (1956). *The stress of life*. New York: McGraw-Hill Book Company, Inc.
- Selye, H. (1974). *Stress without distress*. New York :Harper and Row.
- Selye, H. (1980). *Selye's guide to stress research (Vol. 1)*. New York: Van Nostrand Reinhold Company, Inc.
- Selye, H. (1983). *Selye's guide to stress research (Vol. 2)*. New York: Van Nostrand Reinhold Company, Inc.
- Shapiro, J., Sank, L., & Shaffer, C. (1982). Cost effectiveness of individual vs. group cognitive behavior therapy for problems of depression and anxiety in an HMO population. *Journal of Clinical Psychology*, 38,674-7.
- Singh, N.A., Clements, K.M, & Fiatarone, M. (2001). The efficacy of exercise as a long-term antidepressant in elderly subjects: A randomized, controlled trial. *Journal of Gerontology: Medical Science*, 56(8), M497-M504.
- Skorikov, V., Vandervoort, D. (2003). Relationship between the underlying constructs of the Beck Depression Inventory and the Center for Epidemiological Studies Depression Scale. *Educational and Psychological Measurement*, 63(2), 319-335.

- Slawson, D. (2005). Aerobic exercise effective for mild to moderate depression. *American Family Physician, 71*(9), 1769-70.
- Slayson, D. (2005). Complementary/Alternative medicine for anxiety. *American Family Physician, 71*(3), 564-5.
- Smallwood, S. (2004). Doctor Dropout. *The Chronicle of Higher Education, 50*(19), 10-12.
- Smith, J.C. & Crabbe, J.B. (2000) Emotion and exercise. *International Journal of Sport Psychology, 31* (2), 156-174.
- Smith, C.E., Fernengel, K., Holcroft, C., Gerald, K., & Marien, L. (1994). Meta-analysis of associations between social support and health outcomes. *Annals of Behavioral Medicine, 16*(4), 352-362.
- Sorenson, D.S. (2003). Healing traumatized provider interactions among women through short-term group therapy. *Archives of Psychiatric Nursing, 17*(6), 259-69.
- Spalding, T.W. (2000). Vagal and cardiac reactivity to psychological stressors in trained and untrained men. *Medicine and Science in Sports and Exercise, 32*(3), 581-91.
- Spielberger, C.D. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Spielberger, C.D., Gorsuch, R.L., Lushene, R.E. (1970). *The state trait anxiety scale*. Palo Alto, CA: Consulting Psychologists Press.
- Spielberger, C.D., Gorsuch, R.L., Lushene, R.E., Vagg, P.R., & Jacobs, G.A. (1983). *State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologist Press, Inc.
- Stamford, B. (1995). The role of exercise in fighting depression, *The Physician and Sportsmedicine, 23*, 79-82.

- Stebnicki, M.A. (2000). Stress and grief reactions among rehabilitation professionals: Dealing effectively with empathy fatigue. *Journal of Rehabilitation, January-March*, 288-299.
- Stecker, T. (2004). Well-being in an academic environment. *Medical Education, 38*(5), 465-478.
- Steer, R., Kumar, G., Ranieri, W., & Beck, A. (1995). Use of the Beck Anxiety Inventory with adolescent psychiatric outpatients. *Psychological Reports, 76*, 459-465.
- Steffen, P.R., Sherwood, A., Gullette, C.D., Georgiades, A., Hinderliter, A. & Blumenthal, J.A. (2001). Effects of exercise and weight loss on blood pressures during daily life. *Medicine and Science in Sports and Exercise, 33*(10), 1635-1640.
- Stephens, T. (1988). Physical activity and mental health in the United States and Canada: Evidence from four population studies. *Preventive Medicine, 17*, 35-47.
- Sternbach, R. (1966). *Principles of psychophysiology*. New York: Academic Press.
- Stewart, M.J. (1990). Expanding theoretical conceptualizations of self-help groups. *Social Science and Medicine, 31*(9), 1057-1066.
- Stich, F.A. (1998). A meta-analysis of physical exercise as a treatment for symptoms of anxiety and depression (Doctoral dissertation, The University of Wisconsin-Madison, 1998). *Dissertation Abstracts international, 59*, 4487.
- Stoudemire, A. (Ed.) (1995). *Psychological factors affecting medical conditions*. Washington, DC: American Psychiatric Press.
- Streeter, S.F. (1984). Changes in characteristics of a self-selected group of graduate psychology students during the course of participation in a support group.

Dissertation Abstracts International, 46(03A), 0972

Sullivan, H. (1953). *The Interpersonal Theory of Psychiatry*. New York: Norton.

Szabo, A. (2003). The acute effects of humor and exercise on mood and anxiety.

Journal of Leisure Research, 35(2), 152-62.

Tabachnick, B., & Fidell, L. (2001). *Using Multivariate Statistics*. Boston: Allyn & Bacon.

Thibaut, J.W., & Kelley, H.H. (1959). *The social psychology of groups*. New York: John Wiley.

Tichy, A.M., & Means, S.I. (1990). Stress, coping methods, and physical activity among community college student nurses. *Community/Junior College Quarterly Research and Practice*, 14(4), 273-83.

Tjia, J.; Givens, J.L., & Shea, J.A. (2005). Factors associated with undertreatment of medical student depression. *Journal of American College Health*, 53(5), 219-24

Tkachuk, G.A., & Martin, G.L. (1999). Exercise therapy for patients with psychiatric disorders: Research and clinical implications. *Professional Psychology: Research & Practice*, 30(3), 275-282.

Tolsdorf, C.C. (1976). Social networks, support, and coping: An exploratory study. *Family Process*, 15, 407-417.

Trozzolino, L. (2003). Effects of a psychoeducational group on mood and glycemic control in adults with diabetes and visual impairments. *Journal of Visual Impairment & Blindness*, 97(4), 230-239.

Turbow, P.Y. (1985). The relationship of exercise to academic achievement and sense of well-being among college students. (Doctoral dissertation, University of

- California, 1985). *Dissertation Abstracts International*, 46, 1538
- Turner, B. (2003). Academic stress and graduate student marital satisfaction: Preliminary testing of a conceptual model. (Doctoral Dissertation, University of Oklahoma, 2003). *Dissertation Abstracts International*, 64, 1510
- Turner, Frankel, & Levine (1983). Social support: conceptualization, measurement, and implications for mental health. *Research in Community and Mental Health*, 3, 67-111.
- Turnispeed, D.L. (1998). Anxiety and burnout in the health care work environment. *Psychological Reports*, 82, 627-642.
- Twenge, J.M. (2001). College students and the web of anxiety. *The Chronicle of Higher Education*, 47(44), 14-18.
- Strachey, J. (1964). *The standard edition of the complete psychological works of Sigmund Freud*. London: Hogarth Press.
- Sullivan, H. (1953). *The Interpersonal Theory of Psychiatry*. New York: Norton.
- United States Department of Health and Human Services. (1996). *Physical activity and health: A report of the surgeon general*. Atlanta, GA: U.S. Department of Health and Human Services.
- Vaux, C.L. (1926). A discussion of physical exercise and recreation. *Occupational Therapy and Rehabilitation*, 5, 329-333.
- Wang, Y., & Li, Y. (2003). The effect of group counseling on improvement of self-confidence of college students. *Chinese Mental Health Journal*, 17(4), 235-237.
- Wanlass, J., Moreno, J.K., Thomson, H.M. (2005). Group therapy for eating disorders: A retrospective case study. *Journal for Specialists in Group Work*, 30(1), 47-66.

- Warman, D.M., Grant, P., Sullivan, K., Caroff, S., and Beck, A.T. (2005). Individual and group cognitive-behavioral therapy for psychotic disorder: A pilot investigation. *Journal of Psychiatric Practice, 11*(1), 27-34
- Wasburn, M.H. (2002). Rebuilding community; A pilot program for decreasing doctoral student attrition. *College and University, 78*(1), 13-16
- Watanabe, E., Takeshimo, N., and Okada, A. (2000). Comparison of water-and land-Based exercise in the reduction of state anxiety among older adults. *Perceptual and Motor Skills, 91*(1), 87-104.
- Weaver, K.S. (2000). Burnout, stress, and social support among doctoral students in psychology. *Dissertations Abstract International, 62*(04B), 0256
- Weinstein, M., & Rossini, E. (1999). Teaching group treatment in doctoral programs for counseling psychology. *Psychological Reports, 85*, 697-700.
- Weiss, R.S. (1974). The provisions of social relationships. In Z. Ribun (Ed.), *Doing unto others* (pp.17-26). Englewood Cliffs, NJ: Prentice-Hall.
- Weuve, J. (2004). Study: Walking improves memory, learning, attention in older women. *A Consumer, 38*(6), 7.
- Wheeler, J., O'Malley, K., Waldo, M., & Murphy, J, (1992). Participants' perceptions of therapeutic factors in groups for incest survivors. *Journal for Socialists in Group Work, 17*(2), 89-95.
- Wilfley, D., & Kuncze, J. (1986). Differential physical and psychological effects of exercise. *Journal of Counseling Psychology, 33*, 337-342.
- Williams, J.M. & Getty, D. (1986). Effects of levels of exercise on psychological mood states. *Perceptual and Motor Skills, 63*, 1099-1105.

- Woolfolk, R., & Richardson, F. (1978). *Stress, sanity, and survival*. New York: Signet, New American Library.
- Yalom, I.D. (1995). *The theory and practice of group psychotherapy* (4th ed.). New York: Basic Books.
- Yalom, I.D. (1985). *The theory and practice of group psychotherapy* (3rd ed.). New York: Basic Books.
- Yeung, R.R. (1996). The acute affects of exercise on mood state. *Journal of Psychosomatic Research*, 40, 123-141.
- Yin, P., & Fan, X. (2000). Assessing the reliability of the Beck Depression Inventory Scores: Reliability generalization across studies. *Educational and Psychological Measurement*, 60(2), 201-223.
- Zalaquett, C.P., & Wood, R.J. Eds.(1998). *Evaluating stress: A book of resources*. Lanham, MD: The Scarecrow Press.
- Zukerman, M., & Lubon, B. (1965). *Manual for the Multiple Affect Adjective Checklist*. San Diego: California Education and Industrial Testing Service.
- Zung, W.K. (1965). A self-rating depression scale. *Archives of General Psychiatry*, 12, 63-70

Appendix A

Informed Consent

By signing below, I am agreeing to participate in a study aimed at helping to reduce the stress levels of graduate students. I understand I will be asked to fill out 5 short questionnaires before and after the treatment intervention.

I understand that by agreeing to participate in this study I will be participating in one of three groups: a support group, an exercise group, or a control group. If I am in the control group, I will have no treatment intervention at this time and will be asked to fill out the questionnaires now, and again in 10 weeks. If I am not in a treatment group and am interested in participating, I will be offered this at the end of the eight-week period.

The support group treatment will consist of ten one and one-half hour meetings over a ten week period. These groups will occur in groups of approximately 6-9 graduate students with two group leaders. I understand that although confidentiality will be expected from all group members it cannot be guaranteed. The purpose of this support group is to allow graduate students a safe, supportive place to express their concerns and stressors.

The exercise treatment will consist of twice weekly 45-minute sessions over a 10 week period. Over this 10 week period I will be asked to exercise for 45 minutes twice a week. The activity I participate in is my decision. However, it is strongly encouraged that I 1) get my doctor's permission before beginning an exercise program and 2) that I either exercise with another person or in a supervised facility such as a local gym or the Student Recreation Center (graduate students enrolled in one or more hours have free access to the Student Recreation Center). Suggested activities include walking, jogging, tennis, aerobic class, or an exercise machine. I understand that I will also be expected to keep a log of the exercise I perform and how long I perform it. The purpose of exercise program is to help graduate students alleviate stress through physical activity.

The helpfulness of the treatment programs will be assessed using the information gathered in the questionnaire packets. The information gathered will be used to complete the requirements for a doctoral degree and may be published. All information gathered in the questionnaires will be kept confidential. Participants will be assigned a random number, and only the researcher will have access to the list that matches the random number to the name. During the study this list will be kept in a locked file cabinet and after the study the list will be destroyed through a shredder. The researcher will also be the only one who has access to the research packets.

The content of the group counseling sessions will also be protected as much as possible, but cannot be guaranteed because of the risk of other group members breaking confidentiality. Participants may risk social embarrassment and other difficulties depending upon what is shared during the group meetings and what is shared outside of the group if confidentiality is broken. Members of the support group may experience increased distress or psychological problems as a result of participating. Disclosure of thoughts or actions pertaining to harm self or other cannot be kept confidential and warrant the involvement of appropriate individuals and must be addressed by the group leader. If a participant is currently receiving services from

a mental health professional, consent from that professional must be obtained before the participant can begin the group counseling.

It is hoped that those who participate in this study will experience less stress, fewer problems coping with graduate school, better relationships with family and friends, and better ways to cope with stress.

By signing this, I agree to the above terms, and also agree to participate in the meeting and fill out the related questionnaires. I do understand that I have the right to withdraw my participation at any time without any negative repercussions. I hereby give my consent for my participation in the project entitled: The Stress of Graduate School: The effects of group counseling and exercise I understand the person responsible for this project is Dr. Loretta Bradley and her telephone number is 742-1997 ext. 263, and that I can call her with any questions or concerns. I also understand that I may contact the Texas Tech University Institutional Review Board for the Protection of Human subjects by calling them at 742-3884 or writing them in care of the Office of Research Services, Texas Tech University, Lubbock Texas, 79409.

Signature of Participant

Date

Appendix B

Demographic Questionnaire

Please answer the following questions by checking which applies to you.

1. **Gender:** Male _____ Female _____
2. **Age range :** 19-23 _____ 24-28 _____ 29-33 _____ 34-38 _____
39-43 _____ 44-48 _____ 49-53 _____ 54-58 _____ 59 and over _____
3. **Ethnic group :** Hispanic _____ African American _____ Anglo/White _____
Asian American _____ Other _____
4. **Martial Status:** Married _____ Divorced _____ Separated _____
Widowed _____ Never Married _____
5. **Educational Level (highest level obtained):** Bachelor's _____ Master's _____
Some graduate school _____ Doctorate _____ Other -please explain: _____
6. **Program currently enrolled in:** _____ **Number of credit hours currently enrolled in:** _____
7. **Number of semesters completed in this program:** _____
9. **Do you commute to attend school?** yes _____ ; no _____. **If yes, how many miles do you commute one-way to attend school?** _____
10. **Are you currently employed?** yes _____ ; no _____. **If yes, how many hours do you work per week?** _____
11. **Do you currently counsel clients?** yes _____ ; no _____. **If yes, how many clients do you see per week?** _____
12. **Are currently taking an antidepressant drug?** _____
13. **Are you currently taking an antianxiety drug?** _____

Appendix C

Beck Depression Inventory

ID# _____

Directions: Read each item carefully and circle the number next to the answer that best reflects how you have been feeling during the past few days. Make sure you circle one answer for each of the twenty-one (21) questions; If more than one answer applies, circle the highest number. Do not leave any questions unanswered.

1. 0 I do not feel sad
 1 I feel sad
 2 I am sad all the time and can't snap out of it
 3 I am so sad or unhappy that I can't stand it

2. 0 I am not particularly discouraged about the future
 1 I feel discouraged about the future
 2 I feel I have nothing to look forward to
 3 I feel the future is hopeless and things cannot improve

3. 0 I do not feel like a failure
 1 I feel I have failed more than the average person
 2 As I look back on my life, all I can see is a lot of failures
 3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to
 1 I don't enjoy things the way I used to
 2 I don't get real satisfaction out of anything anymore
 3 I am dissatisfied or bored with everything

5. 0 I don't feel particularly guilty
 1 I feel guilty a good part of the time
 2 I feel quite guilty most of the time
 3 I feel guilty all of the time

6. 0 I don't feel I am being punished
 1 I feel I may be punished
 2 I expect to be punished
 3 I feel I am being punished

7. 0 I don't feel disappointed in myself
 1 I am disappointed in myself
 2 I am disgusted with myself
 3 I hate myself

8. 0 I don't feel I am any worse than anybody else.
 1 I am critical of myself for my weaknesses or mistakes
 2 I blame myself all the time for my faults
 3 I blame myself for everything bad that happens
9. 0 I don't have any thoughts of killing myself
 1 I have thoughts of killing myself, but I would never carry them out
 2 I would like to kill myself
 3 I would kill myself if I had the chance
10. 0 I don't cry anymore than usual
 1 I cry more now than I used to
 2 I cry all the time now
 3 I used to be able to cry, but now I can't cry even though I want to
11. 0 I am no more irritated by things than I ever am.
 1 I am slightly more irritated now than usual
 2 I am quite annoyed or irritated a good deal of the time
 3 I feel irritated all the time now
12. 0 I have not lost interest in other people
 1 I am less interested in people than I used to be
 2 I have lost most of my interest in other people
 3 I have lost all of my interest in other people
13. 0 I make decisions about as well as I ever could
 1 I put off making decisions more than I used to
 2 I have greater difficulty in making decisions than before
 3 I can't make decisions at all anymore
14. 0 I don't feel that I look any worse than I used to
 1 I am worried that I am looking old or unattractive
 2 I feel that there are permanent changes in my appearance that make me look unattractive
 3 I believe that I look ugly
15. 0 I can work about as well as before
 1 It takes an extra effort to get started at doing something
 2 I have to push myself very hard to do anything
 3 I can't do any work at all
16. 0 I can sleep as well as before
 1 I don't sleep as well as I used to
 2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep
 3 I wake up several hours earlier than I used to and cannot get back to sleep

17. 0 I don't get more tired than usual
1 I get tired more easily than I used to
2 I get tired from doing almost anything
3 I am too tired to do anything
18. 0 My appetite is no worse than usual
1 My appetite is not as good as it used to be
2 My appetite is much worse now
3 I have no appetite at all anymore
19. 0 I haven't lost much weight, if any, lately
1 I have lost more than five pounds
2 I have lost more than ten pounds
3 I have lost more than fifteen pounds
20. 0 I am more concerned about my health than usual
1 I am concerned about aches and pains or upset stomach or constipation
2 I am so concerned with how what I feel that its difficult to think of much else
3 I am completely absorbed in what I feel
21. 0 I have not noticed any recent changes in my interest in sex.
1 I am less interested in sex than I used to be
2 I have much less interest in sex now
3 I have lost interest in sex completely.

Appendix D

Beck Anxiety Inventory

ID# _____

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past month, including today, by circling the number in the corresponding space in the column next to each symptom.

	Not At All Bothered	Mildly but it didn't bother me much.	Moderately - it wasn't pleasant at times	Severely – it bothered me a lot
Numbness or tingling	0	1	2	3
Feeling hot	0	1	2	3
Wobbliness in legs	0	1	2	3
Unable to relax	0	1	2	3
Fear of worst happening	0	1	2	3
Dizzy or lightheaded	0	1	2	3
Heart pounding/racing	0	1	2	3
Unsteady	0	1	2	3
Terrified or afraid	0	1	2	3
Nervous	0	1	2	3
Feeling of choking	0	1	2	3
Hands trembling	0	1	2	3
Shaky / unsteady	0	1	2	3
Fear of losing control	0	1	2	3
Difficulty in breathing	0	1	2	3
Fear of dying	0	1	2	3
Scared	0	1	2	3
Indigestion	0	1	2	3
Faint / lightheaded	0	1	2	3
Face flushed	0	1	2	3
Hot/cold sweats	0	1	2	3
<u>Column Sum</u>				

Appendix E

UCLA Loneliness Scale

ID# _____

Directions: The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by writing a number in the space provided.

NEVER	RARELY	SOMETIMES	ALWAYS
1	2	3	4

1. How often do you feel that you are “in tune” with the people around you? _____
2. How often so you feel you lack companionship? _____
3. How often do you feel that there is no one you can turn to? _____
4. How often do you feel alone? _____
5. How often do you feel part of a group of friends? _____
6. How often do you feel that you have a lot in common with people around you? _____
7. How often do you feel that you are no longer close to anyone? _____
8. How often do you feel that your interests and ideas are not shared by those around you? _____
9. How often do you feel outgoing and friendly? _____
10. How often do you feel close to people? _____
11. How often do you feel left out? _____
12. How often do you feel that your relationships with others are not meaningful? _____
13. How often do you feel that no one really knows you well? _____
14. How often do you feel isolated form others? _____
15. How often do you feel you can find companionship when you want it? _____
16. How often do you feel that there are people around you who really understand you? _____
17. How often do you feel shy? _____
18. How often do you feel that people are around you, but not with you? _____
19. How often do you feel that there are people you can talk to? _____
20. How often do you feel that there are people you can turn to? _____

Appendix F

Perceived Stress Scale

ID# _____

Directions: The questions in this scale ask you about your thoughts and feelings **during** the last month. In each case, you will be asked to indicate **how often** you felt or thought a certain way.

1. In the last month, how often have you been upset because of something that happened unexpectedly?
 never
 almost never
 sometimes
 fairly often
 very often
2. In the last month, how often have you felt that you were unable to control the important things in your life?
 never
 almost never
 sometimes
 fairly often
 very often
3. In the last month how often have you felt nervous and “stressed”?
 never
 almost never
 sometimes
 fairly often
 very often
4. In the last month how often have you felt confident about your ability to handle your personal problems?
 never
 almost never
 sometimes
 fairly often
 very often
5. In the past month, how often have you felt things were going your way?
 never
 almost never
 sometimes
 fairly often
 very often

6. In the last month, how often have you found that you could not cope with all the things you had to do?
- never
 - almost never
 - sometimes
 - fairly often
 - very often
7. In the last month, how often have you been able to control irritations in your life?
- never
 - almost never
 - sometimes
 - fairly often
 - very often
8. In the last month, how often have you felt that you were on top of things?
- never
 - almost never
 - sometimes
 - fairly often
 - very often
9. In the last month, how often have you been angered because things were outside of your control?
- never
 - almost never
 - sometimes
 - fairly often
 - very often
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
- never
 - almost never
 - sometimes
 - fairly often
 - very often

Appendix G

Open-Ended Questions

1. What was most helpful about the treatment?

2. What was least helpful?

3. How could the treatment have been improved?

4. In what ways was the treatment helpful to you?

5. How was your stress level affected by the treatment intervention?

6. Would you recommend that other graduate students take part in exercise / group counseling ?
Why or why not?

7. Any other comments you may have: