

MEASURING THE IMPACT OF A MINDFULNESS-BASED  
STRESS REDUCTION INTERVENTION ON PERCEIVED  
STRESS AND STUDY SKILLS OF SOCIAL WORK  
GRADUATE STUDENTS

A Dissertation

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

In

The School of Social Work

By

Margot H. Hasha  
B. A., Sam Houston State University, 1982  
M. A., University of Southwestern Louisiana, 1985  
M. S. W., Louisiana State University, 1990  
August 2009

**© Copyright 2009**

**Margot H. Hasha**

**All rights reserved**

## ACKNOWLEDGEMENTS

I would like first to thank Dr. Catherine Lemieux for her leadership, encouragement, support, generosity, time, and faith in my ability to accomplish my goal of completing this dissertation. Her focus, patience, and humor sustained me through some difficult times, and for that I am very grateful. I also wish to thank Dr. Gail Sutherland, who from the beginning believed in the benefits of mindfulness meditation and who helped me to deepen my own understanding of and love for Buddhism during these past many years. Dr. Tim Page and Dr. Daphne Cain generously gave their time, attention, and words of encouragement. Also, much appreciation goes to the staff of the LSU School of Social Work, and especially to Denise Chaisson, who always found time to cheerfully and promptly answer all my questions.

To my meditation and Buddhism teachers over the past 20 years--Ben Wren, SJ (deceased), Robert Kennedy, SJ, Roshi, Thich Nhat Hanh, Dr. Jon Kabat-Zinn, and Khentru Lodro Thaye Rinpoche: the gifts of your presence, joy, and wisdom have inspired and encouraged me daily and have truly changed my life. Namaste.

So many other individuals deserve my thanks and appreciation. Throughout this process my "sisters"-- Sharon Broussard, Kathleen Budd, Connie Konikoff, and Monica Daigle-- have made me laugh, let me cry, and have never faltered in their support, encouragement, and belief in my ability to accomplish all of my goals, including this one. I love you all. Dr. George Wooddell, Dr. Rene Pogue, Dr. David Yarbrough, and Dr. Lucy Freeman sat patiently explaining statistics and teaching me SPSS, always lending your expertise and support through the kindest of smiles. You were always generous in answering my sometimes confused and often redundant questions. To all of you, a heartfelt Thank You.

To my dear friend and colleague, Dr. DeAnn Kalich, I offer special thanks and blessings always. You are a gift and inspiration to all who have the good fortune to know you. To Dr. Kathleen Handy, thank you for all the opportunities. To Christina Newgebaver, thank you for daily support, encouragement, and chocolates.

To my step-son, Colin Gould, a heartfelt thanks for all your computer expertise. To my mother, Dolores Hebert, we've come a long way. Thanks especially for all the home-cooked meals. Chinese take-out was getting old! To my beloved granddaughters, Avery and Annika, your sweetness and giggles have spurred me on each day of this process. I love you dearly. My special thanks and love go to my daughter, Renee Pennington, whose determination and persistence have inspired my own efforts, and who remains my greatest teacher.

Lastly, I wish to thank my husband, Philip Gould, for his unwavering love, support, generosity, patience, kindness, and understanding. Your creativity and beautiful work have been an inspiration to me, and your iconic images have bolstered me spiritually in ways that my own words cannot communicate. I am grateful that you were always so welcoming when I impulsively visited you in your studio, sometimes just to see some beautiful image for a moment before I continued on. You are my rock and my dearest friend, and I could not have accomplished this goal without you. I love you. This dissertation is dedicated to you.

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iii
LIST OF TABLES.....	vii
LIST OF GRAPHS.....	viii
ABSTRACT.....	ix
CHAPTER 1. INTRODUCTION.....	1
Purpose of the Study .....	3
Significance of the Study .....	4
Theoretical Significance.....	13
Contributions to Social Science Knowledge.....	28
CHAPTER 2. REVIEW OF THE LITERATURE.....	29
Modern Stress Theory.....	29
Psycho-Physiological, Cognitive, and Behavioral Effects of Stress.....	32
Socio-Demographic Characteristics and College/Graduate Student Stress.....	43
Mindfulness Meditation.....	50
Self-Regulated Learning and Study Skills.....	56
Implications of the Literature Review.....	60
CHAPTER 3. METHODOLOGY.....	63
Research Questions.....	63
Research Design.....	64
Description of Study Variables.....	70
Operational Definitions of Dependent Variables.....	70
Operational Definitions of Independent Variables.....	74
Research Methodology.....	80
Data Collection.....	83
Data Analysis.....	84
Limitations of the Study.....	86
Contributions of the Study.....	89
CHAPTER 4. RESULTS.....	91
Description of Sample Characteristics.....	93
Findings.....	96
CHAPTER 5. DISCUSSION.....	118
Overview.....	118
Demographics.....	119
Component One: MBSR and Stress.....	120
Component Two: Self-Regulated Learning Skills.....	124
Component Three: Cross-Sectional Survey.....	125
Implications for Education, Practice, and Research.....	127
Conclusion.....	129

REFERENCES.....	132
APPENDIX	
A: CONSENT FORM.....	152
B: MBSR AND STUDY SKILLS QUESTIONNNIARE.....	154
C: SURVEY OF NON-PARTICIPANTS IN MBSR STUDY.....	161
D: WEEKLY MEDITATION LOG.....	164
VITA.....	165

## LIST OF TABLES

TABLES	PAGE
1 Comparison of Socio-Demographic Variables Between Subjects in Integrated Study and Survey Subjects.....	97
2 Social Work Graduate Students' Appraised Stressful Situations.....	100
3 Adaptation to Stress Scores.....	101
4 Mean Scores for the Total MSLQ Scale and MSLQ Subscales.....	103
5 Correlation Between PSS, PSM-9, and MSLQ Scores.....	104
6 Reasons Cited for Not Participating in Original MBSR and Study Skills Investigation.....	115
7 Cramer's V Values for Associations Between Stressors and Reasons For Not Participating in Study.....	117

## LIST OF GRAPHS

1	Time-Series Data of Subjects' Daily Meditation Times.....	109
2	Time-Series Data Showing Weekly PSM-9 Scores.....	110
3	Time-Series Data: Subjects' Weekly Mean Meditation Times and Weekly PSM-9 Scores.....	113

## ABSTRACT

This multi-component study incorporated the following: (1) an integrated study which measured the impact of a Mindfulness-Based Stress Reduction intervention (MBSR) on the stressors, appraised stress levels, and adaptation to stress of MSW students enrolled in the Louisiana State University School of Social Work through a pretest posttest group design and which also included a single-system pretest posttest group design to evaluate meditation practice; (2) a pretest posttest group design which examined changes in self-regulated learning skills; and (3) a cross-sectional survey which explored students' self-reported reasons for not participating in the MBSR randomized control group study offered prior to the current study. Sample size for the integrated study at pretest was 12 females. Posttest sample size for the integrated study was 3 females. Sample size for the survey was 56 male and female MSW students. Descriptive univariate statistics were used to summarize data addressing subjects' potential stressors, appraised stressful situations and adaptation to stress. Univariate statistics were used to summarize data collected about subjects' implementation of self-reported self-regulated learning skills. Time-series data for the pretest posttest single-system design were plotted on graphs for visual analysis of Psychological Stress Measure (PSM-9) stress scores and subjects' time spent meditating. A strong association emerged between Perceived Stress Scale (PSS) and PSM-9 scores, indicating that high levels of appraised stress were associated with lower levels of successful adaptation to stress. A negative association emerged between PSS and Motivational Strategies for Learning Questionnaire (MSLQ) scores, indicating that higher stress levels were related to lower self-regulated learning skills. In spite of extreme data, results of the group study implementing a pretest posttest group design suggested increases in meditation time and decreases in stress levels during the intervention phase for two of three subjects. Associations emerged between enrollment in field internship and lack of interest in the study, lack of interest

in participation in the study, and the inability to commit to daily meditation time. Low annual income and having dependent children in the home were associated with students' inability to commit to daily meditation time.

## CHAPTER 1: INTRODUCTION

Adjustment to and success in graduate school requires that students successfully adapt to an increased workload and academic demands while simultaneously coping with reduced time for social and personal outlets, many of which may actually aid in lowering the stress levels associated with the pursuit of a graduate degree. Graduate work challenges the minds, energy, emotions, relationships, and finances of most graduate students (Middleton, 2001; Miller & Irby, 1999). While some stress is a necessary component of learning, too much stress and the inability to cope with it negatively impact the learning process, frustrating students' comprehension and undermining their motivation (Maddus, 1989; Soboda, 1990). In addition, students' maladaptive coping to stressors damages their psychological and physical well-being, leading to anxiety, depression, and physical illnesses, such as upper-respiratory infections, chronic headaches, and insomnia (Calicchia & Graham, 2006; Wallace, Levens, & Singer, 1988).

All graduate students experience the stressors of research combined with classroom work; however, those who are enrolled in programs which require clinical training components, such as social work, experience even higher levels of stress than do students enrolled in traditional graduate programs (Aponte, 1994). In one study, the clinical training period for graduate students was found to be more stressful than professional clinical practice (Tobin & Carson, 1994). However, Fortune (1987) found that more mature graduate students were less vulnerable to the added stressors of clinical training than were younger students. In addition to the pressures of clinical training, many graduate students must also contend with the responsibilities of marriage and family, employment, and financial difficulties while in school (Gold, 2006). International students often struggle with the added stressors of language barriers and cultural differences (Payrozli & Kavanaugh, 2006). Without healthy coping skills, good social support, and appropriate stress reduction behaviors, many graduate students perform poorly academically

and resign from graduate programs out of frustration and feelings of being overwhelmed (Girves & Yemmerus, 1988; Nelson, Dell'Oliver, Koch, & Buckler, 2001).

Stress results when a person-environment interaction leads an individual to perceive a discrepancy, whether real or imagined, between the demands of a situation on the one hand and the individual's social, biological, or psychological resources on the other, thereby endangering that individual's sense of wellbeing (Lazarus & Folkman, 1984). In some circumstances, stress may be viewed as a positive phenomenon, an adaptive response prompting the activation of internal resources to meet challenges and to achieve realistic goals, a condition known as "eustress" (1984). However, when persistent stress is not resolved through adequate coping skills or adaptation, the result may be anxiety, depression, or physical illness, termed "distress" by Hans Selye (1974).

Persistent stress can significantly affect the body's immune system, resulting in vulnerabilities to viral and bacterial infections as well as to stress-related illnesses. While the neurochemistry of the stress response is now fairly well understood, details about how the components of this system interact with one another, in the brain and throughout the body, are not yet fully clear (Plotnikoff, Murgu, Faith, & Wybran, 1991). What is known is that in response to a stressor, the autonomic nervous system provides the rapid response commonly known as "fight-or-flight," engaging the sympathetic nervous system, thereby enacting cardiovascular, respiratory, gastrointestinal, renal, and endocrine changes in the body (Plotnikoff et al., 1991). Research has shown that chronic stress can lead to such illnesses as hypertension, cardiovascular disease (Aldwin & Gilmer, 2004), headaches, hives (Aldwin & Stokols, 1988), chronic fatigue syndrome, rheumatoid arthritis (Garssen & Goodkin, 1999), cancer, colds and upper respiratory infections (Stanton, Collins, & Sworowski, 2001), chronic pain, anxiety, and depression (Turk, 2001; Zautra & Manne, 1992).

## Purpose of the Study

This multi-component study (1) measured the impact of a Mindfulness-Based Stress Reduction intervention (MBSR) on the reported perceived stress levels of MSW students enrolled in the Louisiana State University School of Social Work, (2) examined changes in self-regulated learning skills from pretest to posttest and (3) also described reasons students did not participate in the MBSR randomized controlled experiment pilot study offered prior to the current study. Demographic variables, including gender, age, and ethnicity, as well as psychosocial variables, (i.e., field instruction status, employment status, marital status, dependent children in the household, annual income, and meditation experience) were examined for associations with perceived stress and adaptation to stress, self-regulated learning skills, and non-participation in the pilot study. Among the psychosocial variables, female gender, enrollment in field instruction, employment, dependent children in the home, being married, and low annual income were identified as potential stressors.

This study used a multi-component design incorporating three elements. One component was an integrated study exploring the impact of a mindfulness-based stress reduction intervention on perceived stress and adaptation to stress of MSW graduate students through a pretest posttest group design with an added single-system multiple-baseline design to evaluate meditation practice. The second component of the design was a pretest posttest group design with a second dependent variable—self-regulated learning skills. The third component was a cross-sectional survey exploring students' self-reported reasons for not participating in an MBSR randomized controlled experiment. A sample of subjects was chosen from a population of first and second-year MSW students enrolled in the LSU School of Social Work.

## Significance of the Study

### Scope of the Problem: Stress in the General Population

**APA Survey, 2007:** In September of 2007, the American Psychological Association (APA) commissioned Harris Interactive to conduct its annual nationwide survey examining the condition of stress across the United States (APA, 2007). Between August 30 and September 11, 2007, online surveys were conducted with 1,848 adults aged 18 and older for the purpose of exploring (1) both appropriate and excessive stress levels; (2) circumstances, situations, and life events that cause stress; (3) activities, resources and behaviors that individuals use to cope with stress; and (4) the personal costs of stress. This research measured attitudes and perceptions among the general public and identified leading sources of stress, common behaviors used to manage stress, and the impact of stress on people's lives. Key findings were remarkable, indicating the enormity of the impact of stress on Americans' physical and psychological health. For example, increases in levels of stress over the previous five years were reported by nearly half of respondents. Americans also reported routinely experiencing higher than healthy levels of stress, with 32% claiming they lived with extreme stress. Almost 75% claimed that work and finances were the leading stressors in their lives, with 50% of those surveyed reporting negative effects of stress in both their personal and professional lives (APA, 2007).

Such significant increases in stress levels negatively impacted the physical and psychological health of adults, with 77% reporting physical symptoms during the preceding month, including fatigue (51%), headaches (44%), upset stomach (34%), muscle tension (30%), changes in appetite (23%), changes in sex drive (15%), and dizziness (13%). Seventy-three percent of adults reported experiencing psychological symptoms during the preceding month, including irritability or anger (50%), nervousness (45%), lack of energy (45%), and sadness or

depression (36%). Nearly half of adults surveyed reported lying awake at night because of stress, with an average loss of 21 hours of sleep per month. In addition, 43% reported poor eating habits, including overeating or eating unhealthy foods (APA, 2007).

Stress had a damaging effect on both the personal and professional lives of nearly 50% of American adults (APA, 2007). Nearly one-third experienced stress as a result of attempting to manage both work and family responsibilities, and 35% cited jobs as interfering with personal or family time. Parents of pre-school and school-aged children were more likely than parents of teens to report that work interfered with their personal time, as well as their abilities to fulfill family responsibilities. These same parents also reported that their intimate relationships were a source of stress. They were more likely than parents of teens to argue with a spouse or partner. Twenty-five percent of adults reported that during the previous five years their personal relationships had suffered because of stress, ranging from alienation from a family member or friend to separation or divorce. Fifty-eight percent of married people were more likely to argue with family members when feeling stressed than were either singles or divorced people. However, singles (59%) reported that on their highest stress days their stress levels were in the extreme category (APA, 2007).

In the workplace, stress affected career decisions and resulted in lost productivity. Over half of employees reported that they had considered leaving their jobs or declining a promotion because of stress at work. Fifty-five percent of workers claimed to be less productive at work because of stress. The leading sources of stress at work were low salaries, heavy work load, few opportunities for advancement, long hours, and uncertain job expectations. Forty percent of employees did not use all of their allotted annual vacation time. Along income lines, 24% of adults with a household income of below \$50,000 reported that their stress management skills were poorer than adults with a household income above \$50,000. In addition, lower income

adults were more likely to report physical and psychological symptoms of stress. Americans working in education and health services experienced higher-than-average levels of stress, with 40% of employees in these industries reporting extreme levels of stress during the preceding month. More than half of employees in these industries were concerned about their stress levels (APA, 2007).

Along gender lines, women were more likely to report experiencing extreme stress than were men and were more concerned with their levels of stress. More women than men reported increases in their stress levels over the previous five years. In addition, women considered their stress management skills as poor and were more likely than men to report sleep disturbance, overeating or skipping meals, and using prescription medication as a result of stress (APA, 2007).

Age was a factor in reported levels of stress, with nearly 40% of Americans between the ages of 35 and 54 reporting extreme levels of stress, indicating that stress negatively impacted their relationships with family, children, and spouses or partners. In the areas of workload, finances, and housing costs, this age group also reported significant stress. Seventy-three percent of young people, ages 18 to 34, exhibited the most unhealthy stress management behaviors, such as smoking, losing sleep, and skipping meals (APA, 2007).

Other studies conducted in recent years on the effects of stress in daily life have indicated deficiencies in immune function which, over time, often lead to physical illness. For example, nurses who performed rotating shift work for more than six years during their careers had significantly increased risk of heart disease and heart attack than did nurses who worked daytime shifts (Kawachi et al., 1995). Cohen (1994) exposed volunteers to nose drops containing varieties of cold viruses and found that those who experienced more negative daily life events and who had poor coping skills and negative emotions were more likely to develop colds and

upper respiratory infections than were those who reported fewer stressors. In a study of life stress, stress reactivity, and actual incidence of disease, Cohen et al. (2002) tested lab stress reactivity, documenting which subjects had the most significant cortisol reactions. Over twelve weeks, those who had the most significant cortisol reactions to stress and who encountered the most natural stressors in the form of negative life events contracted the most upper respiratory infections. In a longitudinal study of the psychological and health effects of elderly persons caring for Alzheimer's patients, those individuals with the least amount of social support showed lower levels of cellular immunity and contracted more frequent upper respiratory infections (Kiecolt-Glaser, Malarkey, Cacioppo, & Glaser, 1994). Compared to age-matched controls, caregivers of Alzheimer's patients also showed slower healing of superficial wounds to the skin (Kiecolt-Glaser, Marucha, Malarkey, Mercado, & Glaser, 1995). Stress-related suppression of wound healing was observed in more acute forms of life stress, such as medical students' exam stress (Marucha, Kiecolt-Glaser, & Favagehi, 1998). Medical students also displayed higher levels of psychological distress and elevated blood pressure, catecholamines, and cortisol on days of major exams (Herbert, Moore, de la Riva, & Watts, 1986; Sausen, Lovallo, Pincomb, & Wilson, 1992). Also, medical students with high antibodies to the Epstein-Barr virus and lower T-cell activation reported more illness surrounding exam periods (Glaser et al., 1987).

The APA (2007) survey of stress in the United States clearly pointed to increases in levels of overall stress during the previous five years, with significant sources of stress related to financial strain, work, family responsibilities, intimate relationships, gender, and poor coping skills, all of which contributed to declines in physical and psychological well-being. In addition, Americans working in education and health care services experienced greater levels of stress than other professions, information pertinent to social work students. While the APA survey did not report on stress levels related to college or graduate school education, of Americans within

the 18-34 year-old age group, the group most likely to be enrolled in college or graduate school, 80% reported that their stress negatively impacted their relationships with family, children, spouses, or partners. In addition, 83% among this age group stated that work or workload was stressful, and 80% reported that money and housing costs were sources of stress. This group, as compared to other age groups in the APA study, also was most affected by unhealthy stress management behaviors, such as smoking, losing sleep, and skipping meals, all of which contribute to poor health (APA, 2007).

### Stress Among College and Graduate Students

Several studies have examined stress among college students relative to cardiovascular health (Makrides, Veinot, Richard, McKee, & Gallivan, 1998), increased work load, daily hassles, new responsibilities, changes in eating and sleeping habits (Ross, Neibling, & Heckert, 1999), negative social interactions and health symptoms (Edwards, Hershberger, Russell, & Markert, 2001), test anxiety, self-esteem and self-perception, stress and health, and coping skills (Appelhans & Schmeck, 2002); chronic stress and financial difficulties (Towbes and Cohen, 1995), role strain and perceived role demands (Home, 1997), marital status, ethnicity, achievement pressures (Poyrazli & Kavanaugh 2006), and test anxiety (Tatum, Lundervold, & Ament, 2006). Other studies found that adjustment to a new social environment, managing role strain, maintaining academic standards, attaining autonomy from parents, developing interpersonal relationships, and balancing social life and study pressures all contributed to college students' feelings of overwhelm, often overly taxing their coping mechanisms (Goldman & Wong, 1997; Humphrey & McCarthy, 1998; Lent, Brown, Talleyrand et al., 2002; Newman & Newman, 1995). Studies examining stress among nursing, psychology, and other mental health students have suggested that clinical disciplines which combined classroom work, research, and clinical training created more stress for students than traditional graduate programs

(Dziegielewski, Roest-Marti, & Turnage, 2004; Heaman, 1995; Polson & Nida, 1998; Pottage & Huxley, 1996). While numerous studies have examined stress among college students, this researcher could find only one study evaluating a mind/body intervention to reduce psychological distress and perceived stress in this population (Deckro, Ballinger, Hoyt, Wilcher, Dusek, Myers, Greenberg, Rosenthal, & Benson, 2002).

Research on graduate student stress has examined gender differences among graduate students with respect to marriage, finances, and employment (Gold, 2006; Mallinckrodt & Leong, 1992; Younes & Asay, 1998). An empirical study by Payrazli and Kavanaugh (2006) measured the relationships of marital status, ethnicity, and academic achievement to the stress of adjustment among international graduate students. A qualitative study explored emotional, intellectual, financial, and social stress among doctoral students (Hadjioannou, Shelto, Fu, & Dhanarattiginon, 2007). McAlpine and Norton (2006) discussed increasing debt, overwhelming program requirements, isolation, competing demands of family and employment, and fears about career opportunities as risk factors for high attrition rates among doctoral students. Gold (2006) surveyed graduate students for marital satisfaction and impact of the stressors of graduate education on the family. Spirituality and social support were examined as graduate students' buffers against stress (Calicchia & Graham, 2006).

### Clinical Training as a Stressor

While these studies addressed universal stress concerns for graduate students, they did not focus on the added stressors of clinical training as an aspect of the graduate school curriculum. In fact, very few studies focused on graduate social work students and stress, pointing to a need for further research with this population. Home (1997) studied female social work, nursing, and education students to examine the relationships among, stress, role strain, perceived role demands, and social support for the purpose of aiding social work educators in preventing female

drop-outs. In a study of social work students and the stress of clinical training, Pottage and Huxley (1996) found that older social work students had better coping abilities than did younger students. Finally, stressors were one predictor in a survey of undergraduate and graduate social work students who participated in volunteerism following hurricanes Katrina and Rita (Plummer et al., 2008).

Several studies have addressed trauma and/or secondary trauma among social work students and social work professionals related to 9/11 (Ai, Evans-Campbell, Santangelo, & Cascio, 2006; Pulido, 2007), the Second Intifada (Baum, 2004), human induced trauma, sexual abuse, and cancer (Cunningham, 2004), client suicide (Ting, Sanders, Jacobson, & Power, 2006), sexual violence counseling (Schauben & Frazier, 1995), and secondary trauma as a result of case studies in the classroom (Cunningham, 1995). Dziegielewski et al. (2004) conducted a study with undergraduate social work students to measure changes in participants' responses following one 45-minute seminar teaching techniques for handling stress. Forty-eight students were recruited from three separate course sections and were randomly divided into an experimental group (n = 25) and a control group (n = 23). All participants completed a pretest questionnaire which included socio-demographic data, a stress and burnout questionnaire that was designed by the researchers, and the Stressful Situations Questionnaire (SSQ) developed in 1970 by Hodges and Felling (Fischer & Corcoran, 1994). The control group was excused and received the 45-minute seminar following the conclusion of the study. The 45-minute seminar was divided into four parts: (1) understanding and identifying personality styles and patterns of behavior; (2) learning about stress; (3) looking for signs of stress in self and others; and (4) teaching cognitive restructuring, deep breathing, and relaxation. Following completion of the seminar, the control group was brought back in and all students completed the posttest. Results indicated that significant changes occurred in the experimental group as compared to the control group

regarding the acquisition of the seminar's learning objectives and content as well as overall reduction of self-reported apprehension in stressful situations.

In a qualitative study conducted with 50 undergraduate social work students (37 females and 13 males), Birnbaum (2005) introduced a mindfulness-based training intervention as a component of first year students' basic skills class. The purpose of the study was to increase students' self-observation abilities. Students were separated into two groups, with one group receiving one session of mindfulness meditation, and the second group receiving four mindfulness-meditation sessions three weeks apart. Content analysis was used to extract significant themes from students' written responses about their meditation experiences. Results indicated that students experienced increased levels of self-observation and awareness regarding self-directed personal and professional issues and choices. Birnbaum and Birnbaum (2008) asserted that the application of mindfulness in the field of social work is still in its infancy, with most of the literature simply repeating already accepted definitions of mindfulness and its benefits to clients, such as present-moment awareness, acceptance, and non-judgment. However, social work research has not yet studied the process of achieving mindfulness and how doing so leads to its many positive effects.

#### Scope of the Problem: Study Skills

Good study skills and habits are essential for students' successful academic performance, whether they are applied in grade school, high school, or college. Especially in graduate school, where pressures to perform academically, time constraints, financial considerations, employment, and the multiple roles of student, employee, and family member all converge, good study skills help to maximize study efforts and significantly increase academic achievement (Onwuegbuzie, Slate, & Schwartz, 2001). While much has been written about the learning skills of grade school, high school and college undergraduates, very few studies have addressed the

learning skills of graduate students. This researcher found one study examining the role of learning skills in graduate-level educational research courses, which the authors themselves acknowledged as the first study of its kind (Onwuegbuzie et al., 2001). Students' study skills weaknesses and strengths in a research methodology course were evaluated, with findings indicating weak note-taking and reading skills. Researchers found that the majority of graduate students read research material in a passive manner, with nearly 87% of students reporting that they could read several pages of material without understanding content (Onwuegbuzie et al., 2001). The inability to understand research textbooks was exacerbated by the finding that graduate students were 3.5 times more likely than were undergraduate students to report that they procrastinated about keeping up with weekly reading assignments (Onwuegbuzie, 1999). While one of the major curricular goals of graduate education is to prepare students to be either consumers of research material or producers of research material, many students perceived research methodology courses to be difficult and consequently experienced lower levels of performance and success than in other courses in their programs of study (Onwuegbuzie, 1997, 1998; Ravid & Leon, 1995).

The link between learning skills and academic achievement can be interpreted with respect to theories of anxiety, social cognition and self-regulated learning. The relationship between learning skills and cognitive performance can be explained by Wine's cognitive-attentional-interference theory (Wine, 1980). According to Wine, anxiety shifted attentional focus away from the learning task at hand and toward task-irrelevant thoughts (Wine, 1980). In this way, anxiety interfered with performance by debilitating students' learning skills and coping strategies (Benjamin, McKeachie, Lin, & Holinger, 1981; Onwuegbuzie & Daley, 1996). Highly anxious students typically anticipated that they would perform poorly because they felt less well-prepared (Hunsley, 1987). Such expectations tended to interfere with learning skills through avoidance,

diminished information processing capacity, and attention to material that was irrelevant (Rothblum, Solomon & Murakami, 1986; Tobias, 1985). In a study focusing on the treatment of test anxiety, McKeachie et al. (1985) found that learning skills training was effective in both reducing test anxiety and improving examination performance.

### Theoretical Significance

The theories relevant to this study include Stress Theory, Cognitive-Behavioral Theory, Social Cognition Theory, Ecological Theory, and Transpersonal Theory. What follows is a discussion of each as it pertains to the current study.

#### Stress Theory

**Historical Origins:** The term “stress” has been present in research literature in the physical sciences since the 17th century, when Hooke used it to define “load” as an external force and “stress” as the ratio of internal force created by load to the area over which the force acted (Hinkle, 1977; Lazarus & Folkman, 1984). When these engineering terms were applied to society and to the body and mind of the individual during the latter part of the 19<sup>th</sup> century, the basic concepts of stress and strain were renamed and used differently (Lazarus, 1999). “Stress stimulus” or stressor, were the new terms describing external input, and “stress response” as the output (Lazarus, 1999). By 1932, Walter Cannon (1984), whose research strongly influenced studies in the physiology of emotion, referred to stress as a disturbance of homeostasis under conditions of extreme cold, low blood sugar, lack of oxygen, and other physically stressful circumstances. Cannon (1984) spoke of subjects as being “under stress” and suggested that stress could be measured.

By 1936, “stress” was being used in a technical sense by physician and researcher Hans Selye (1956), who viewed stress as an orchestrated set of bodily defenses against both physical and psychological stimuli, a reaction he termed the “General Adaptation Syndrome.”

Underlying the General Adaptation Syndrome (GAS) was the concept of stereotyped, physical (endocrine) responses to stress that comprised three phases: alarm, adaptation, and exhaustion (McGrady, 2007). Selye (1956) articulated the link between stress and disease, and thought of stress not as an environmental demand, but as a universal set of physiological reactions and processes caused by such a demand, which he called a “stressor.” Selye’s work generated interest in stress research among physiologists, medical researchers, psychologists, and other behavioral scientists and led to an enormous volume of work on hormonal stress secretions, contributing to the further development of stress theory across disciplines (Lazarus & Folkman, 1984; Kabat-Zinn, 1990). It was logical for social scientists to gravitate toward Selye’s work, as early sociologists had already touched upon socio-cultural concepts that would factor significantly in stress literature. For example, sociologists Marx, Weber, and Durkheim wrote extensively about the concept of “alienation,” (Lazarus & Folkman, 1984). When Durkheim wrote of meaningless, normlessness, isolation, powerlessness, and self-estrangement, he was pointing to the role of alienation in future stress literature in the social sciences (Seeman, 1959).

Selye’s research in the biological sciences demonstrated that stress was an active process wherein the body attempted to adapt in order to restore equilibrium. This assertion differed significantly from earlier stress research, which viewed stress as a passive body being acted upon by an environmental strain. In the biological sense, stress provided an analogy to the psychological process which would later be called “coping,” the process by which an individual attempted to manage psychological stress (1984). Thus, stress was a dynamic state pointing toward an ongoing relationship between the individual and the environment.

**Stress and Modern Psychology:** While the term *stress* did not appear in the index of *Psychological Abstracts* until 1944, it was an organizing principle in theories of psychopathology, especially for Freud and later psychodynamically-oriented writers (Lazarus &

Folkman, 1984). Rather than stress, these theorists used the term “anxiety” to describe the conflict-induced state which signaled danger and triggered defense mechanisms and unhealthy types of coping (Lazarus & Folkman). During much of the first half of the 20<sup>th</sup> century, this concept of anxiety influenced psychological research and thought. World War II, the Korean War, and the Vietnam War all mobilized research and the further development of stress theory, as the military increasingly became concerned about the effects of stress on soldiers’ functioning during combat (Grinker & Spiegel, 1945; Bourne, 1969). It became extremely important to stress researchers that individual differences among combat soldiers reflected varying responses to stress and that predictions about performance could not be made simply by reference to external stressful stimuli (Lazarus & Erikson, 1952). This knowledge led to studies of stress-related processes, such as cognitive appraisal and coping, which could account for individual differences in reaction to stimuli (Lazarus & Folkman, 1984).

The military conducted new studies focusing on the effects of stress on adrenal-cortical hormones and combat troops’ performance in hopes that new principles for selecting less vulnerable combat personnel would be developed, along with new methods for producing more effective functioning by soldiers under extreme stress in combat (Lazarus & Folkman, 1984). After the Vietnam War, much research was focused not only on combat stress, but also on growing concerns about the impact of war on civilian morale and functioning, manipulation of military prisoners, post-traumatic stress disorder, and wartime survival (Bourne, 1969; Biderman & Zimmer, 1961; Dimsdale, 1974).

Since the 1960s there has been a change of focus in the stress literature. While it has long been recognized that stress was an inevitable aspect of the human experience, it is now apparent to researchers that it is the process of coping that truly affects the adaptational outcome of the stress response (Lazarus, 1966). Several developments during the past 40 years have contributed

to this understanding. Selye's research and contributions to the literature, which supported the conviction that social and psychological factors were important to health and illness, created a revival of interest in stress and psychosomatic illness (Lazarus & Folkman). Disease was no longer viewed strictly as a product of environmental agents such as viruses or bacteria, and psychophysicologists and medical practitioners accepted that the idea of vulnerability to disease, or "host resistance," was also important (Lazarus & Folkman). Current psychosomatic research is now heavily embedded in stress theory and its interdisciplinary approach, as evidenced by current works in behavioral medicine, the relatively new field of psychoimmunology, and health psychology (Ader, 1980; Norton, 1982; Plotnikoff, Murgu, Faith, & Wybran, 1991; Stone, Cohen, & Adler, 1979; Weiner, 1977). Further evidence of the growing commitment to consideration of psychological factors in health and illness comes from the American Psychological Association's formation of the Division of Health Psychology and from the publications of journals such as *Health Psychology*, *the Journal of Behavioral Medicine*, *the Journal of Psychosomatic Research*, and *Psychosomatic Medicine* (Lazarus & Folkman, 1984).

Another factor in the expansion of stress research and literature during the past several decades was the development of the cognitive-behavior therapy movement, which took into account how individuals perceived adaptational encounters as integral to both psychopathology and successful coping (Ellis, 1962; Ellis & Grieger, 1977). With cognitive-behavioral therapies, there was a reconciliation between behavioral and psychodynamic approaches, which led to the realm of stress and coping, such as Meichenbaum's (1977) cognitive coping interventions, Meichenbaum and Novaco's (1978) use of "stress inoculation," and Beck's (1976) treatment of depression.

A shift in focus and interest in developmental psychology also impacted stress theory. Traditionally, developmental psychology addressed milestones in infancy, childhood, and

adolescence; however, increases in the numbers of aging people stimulated interest in concerns of adulthood and the aging process (Lazarus & Folkman, 1984). With Erikson's contributions to the literature of psychology, there was a shift away from a Freudian focus on early years of life to the understanding that major psychological transformations occurred in young adulthood and later, thereby changing developmental psychology to a field focused on change over the life course (Erikson, 1963). Simultaneously, the establishment of the National Institute on Aging and a shift of research funds toward the study of the problems of aging led to research about the life transitions, social change, empty nest, midlife crises, widowhood, and retirement, emphasizing stress, coping, and adaptation (Lazarus & Folkman).

The emergence of the social ecological focus in behavioral science research also has increased interest in stress and coping. Psychological thought has shifted toward greater interest in the environments in which people live (Lazarus & Folkman, 1984). Environmental psychology, or social ecology, developed through the rise of ethology as a naturalistic science. Social scientists witnessing the impact of ethological studies became aware of their failure to understand the natural habitats of humans, and in so doing, came to recognize that stress partly depended upon the social and physical demands of the environment (Altman & Wohlwill, 1977; Stokols, 1977). In addition, coping depended upon both environmental constraints and environmental resources (Klausner, 1971). With the emergence of the environmental sciences, stress theory and research gained an even more expanded perspective.

**Stress and Appraisal:** Lazarus reviewed research and formulated his theory of psychological stress based upon the subjective approach of "appraisal," or the differential perception of stress (Lazarus, 1966). His theory depended upon the idea that levels of stress and emotion resulted from how an individual evaluated, or appraised, transactions with the environment (1966; Lazarus, Averill, & Opton, 1970; Lazarus & Averill, 1972; Lazarus, Coyne,

& Folkman, 1982). The extent to which individuals were vulnerable to the effects of stress both physically and psychologically depended upon cognitive appraisal and coping (Lazarus, 1991; Lazarus & Folkman, 1984; Lazarus and Lazarus, 1994). Cognitive appraisal was the process of categorizing an encounter, and the various facets of that encounter, with respect to its significance for the individual's well-being (Lazarus & Folkman). Largely a continuous evaluative process during waking life, cognitive appraisal focused on meaning or significance, with broad variations due to aspects of individual experiences that helped to shape an event's significance (Lazarus, 1999; Lazarus & Folkman, 1984). Throughout Lazarus' work he has been concerned about the interdependence of stress and emotion and the need to effectively treat both because of the commonalities in the ways these embodied states of mind were aroused, coped with, and how they affected psychological well-being, functioning, and somatic health (Lazarus).

Lazarus and Folkman (1984) defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). Coping was process oriented, with the individual at times shifting between coping mechanisms, such as defensive strategies and problem-solving strategies. The dynamics of the coping process were not random; rather, they were a function of the continuous appraisals and re-appraisals of the person-environment relationship (Lazarus & Folkman). An example of coping as a process can be seen in the grief work following the death of a loved one. Initially, there may be shock and disbelief, as well as efforts to deny the loss. Later phases might involve anger, temporary disengagement, and depression, eventually followed by acceptance, and attachment to other persons (Bowlby, 1961; Kubler-Ross, 1969).

Most recent among stress theories has been McEwen's Allostasis Theory (McGrady, 2007). Allostasis, or the optimal operation of regulatory systems, connected the central nervous system

with the endocrine and immune systems (McEwan & Wingfield, 2003). The amygdale and hippocampus regions of the brain interpreted their surroundings through past experiences and current psychological states, then signaled the cortex to organize the appropriate response to the stressor (McEwan & Wingfield). Wear and tear on the body as a result of chronic stress and poor recovery led to allostatic load, a condition created through a mismatch between demand and coping (McEwen & Wingfield). Long-term distress occurred when there were conditions of frequent or enduring stress or when the system lost its capacity to return to baseline after the stress was terminated (2003). McEwen and Lasley (2003) outlined several responses to stress that were moderated by lifestyle factors, including sleep quality and quantity, diet, smoking, and alcohol consumption. Individuals' perceived lack of control over stressors tended to increase arousal, leading to insomnia or behaviors that exacerbated the negative stress response (McEwen & Lasley).

Stress Theory, as it currently relates to social work graduate students, explains stress reactivity as the result of a combination of interrelated psychosocial factors, such as graduate school internship training, increased study time, marital status, finances, employment, family roles with children, and coping skills. Students' resources for coping with the multiple stressors of graduate school life depend upon their abilities to cognitively appraise situations, evaluate, and make adaptations according to skill levels and personal meaning. Those with previous negative or traumatic experiences, who have few resources for adaptation, will have a more difficult time managing stress. Stress Theory supports a Mindfulness-Based Stress Reduction protocol as an intervention for social work graduate student stress.

### Cognitive-Behavioral Theory

**Historical Origins:** Alfred Adler, initially an important member of Freud's psychoanalytic movement in Vienna, believed that personality was a unified whole and saw individuals as

motivated primarily by social drives as opposed to sexual drives (Turner, 1996). Adler believed that cognitions, or the person's ideas about self, expectations, and worldview, shaped behavior and were essential to solving problems and functioning well in the world (Adler, 1963). Albert Ellis, during the late 1950s and 1960s, asserted that "dysfunctional emotions" resulted from irrational self-talk cognitions (Turner, 1996). For the client to improve, therapy must aid in the challenging, identifying, and changing of distorted cognitions, a form of psychotherapy which he referred to as Rational-Emotive Therapy (Ellis, 1962). "Reality Therapy," a psychotherapeutic approach developed by William Glasser during the 1960s, asserted that humans were characterized by the two basic needs of (1) giving and receiving love and (2) practicing behaviors which contributed to self-esteem and respect from others (Turner, 1996). Glasser's approach assisted clients in making the choice to change and using thought to identify healthy goals and responsible behaviors (Glasser, 1965). Arnold Lazarus (1981) differed somewhat from previous cognitive therapists with regard to his ideas about the sequence of thinking, feeling, and behavior. Cognitive theorists typically viewed thinking as the catalyst for feeling and behavior, but Lazarus (1981) saw thinking as occasionally a reaction to feeling and behavior. Lazarus further believed that clients had unique sequences of cognition, feeling, and behavior, and assessment to determine this sequence was essential to helping the client to change. Aaron Beck's contribution to cognitive-behavioral theory was in his refining the cognitive treatment process in a systematic way with various psychiatric patients (Turner, 1996). Beck demonstrated through extensive research that cognitive therapy was effective in the treatment of depression, anxiety disorders, and personality disorders (Beck, 1976; 1988; 1995). In recent years, Beck's research has focused on treating the depression and anxiety associated with chronic pain (Winterowd, Beck, & Gruener, 2003).

A significant shift occurred in cognitive-behavioral theory with the work of David Meichenbaum, who combined elements of cognitive-behavioral modification, cognitive restructuring, self-instruction, and relaxation to treat anxiety, fear, anger, and pain (Meichenbaum, 1977; Meichenbaum & Cameron, 1973). Cognitive restructuring referred to a variety of therapeutic approaches used to modify clients' thinking and the assumptions and attitudes underlying their cognitions. The therapist attempted to become familiar with the client's thought content, style of thinking, feelings and behaviors for the purpose of understanding their interrelationships with the goal of helping the client to identify the dysfunctional thought processes which led to an inaccurate world view and to behavioral difficulties (Meichenbaum). Meichenbaum's (1973) Stress Inoculation Therapy consisted of the three phases of education, rehearsal, and application. Clients were taught to use relaxation skills to enable them to reduce arousal (anxiety or anger, for example) and cognitive controls for the purpose of controlling attentional processes, thoughts, images, and feelings (Meichenbaum).

Early behavior therapy targeted "first order" change, avoiding unconscious conflicts, and focusing instead upon clinical issues in a direct, straightforward, and didactic way (Hayes, Follette, & Linehan, 2004). With the advent of cognitive methods, cognitive-behavioral therapy addressed not only behavioral analysis and stimulus response associationism, but also included clients' thoughts, feelings, ideas, and suppositions for "second order" change that would detect, correct, test, and dispute irrational thoughts and pathological cognitive schemas (Hayes et al., 2004).

**New Developments:** The new cognitive-behavioral therapies, or "third force" change therapies, have adopted more contextualistic assumptions, adding more experiential and indirect change strategies in addition to direct strategies, and considerably broadening the focus of change (Hayes et al., 2004). One recent and highly effective form of cognitive-behavioral

therapy, called Dialectical Behavior Therapy, was developed by Marsha Linehan during the early 1990s. DBT was specifically developed to treat patients with Borderline Personality Disorder, a group historically difficult to treat and to keep in therapy (Linehan, 1993a). DBT was based upon a bio-psychosocial theory of borderline personality disorder. Clients frequently reported a history of childhood sexual abuse and/or an invalidating environment, in which the child's personal communications were not accepted as an accurate indication of her true feelings (Linehan, 1993a). As a result, patients with BPD often expressed suicidal ideations and acted out in self-injurious ways. The core elements of DBT included (1) a biosocial theory of disorder that emphasized transactions between biological disposition and learning; (2) a developmental framework of stages of treatment; (3) a hierarchical prioritizing of treatment targets within each stage of treatment; (4) profiling of functions that treatment must serve with the treatment modes to fulfill those functions; and (5) acceptance, change, and dialectical strategies (Linehan, 1989). The primary modes of treatment in DBT were: individual therapy, group skills training, telephone contact with the therapist, and therapist consultation (Linehan, 1993b). The group skills training component taught core mindfulness skills, interpersonal effectiveness skills, emotional modulation skills, and distress tolerance skills (Linehan, 1993b). Linehan's

Dialectical Behavior Therapy has been extensively researched, and in three independent laboratories was found to be more effective with borderline personality disorder than in active control conditions (Hayes, Follette, & Linehan, 2004). DBT has been found to be effective in the treatment of women with substance abuse or dependence (Linehan et al., 1999), for women with binge-eating disorder (Telch, Agras, & Linehan, 2001), for depressed elders (Lynch, Morse, Mendelson, & Robins, 2003), and for suicidal adolescents (Rathus & Miller, 2002).

Acceptance and Commitment Therapy (ACT) represented another "third force" cognitive-behavioral therapy (Hayes, Strosahl, & Wilson, 1999). Based on Relational Frame Theory, a

basic research program on how the human mind works, ACT targeted in the individual a fundamental change in perspective through shifting the way in which the individual dealt with experience (Hayes, 2005; Hayes, Barnes-Holmes, and Roche, 2001). The techniques practiced in ACT fell into three broad categories: mindfulness, acceptance, and values-based living (Hayes, 2005). Mindfulness referred to learning to become more aware of one's thoughts, emotions, and physical sensations; acceptance distinguished between pain and suffering and challenged the individual to live in the moment, and values-based living taught the individual to focus on what was most meaningful, vital, and engaging about life (Hayes).

### Social Cognition Theory and Self-Regulated Learning

Targeting students' learning skills for this study can be supported with Albert Bandura's (1977, 1986) theory of social cognition. Self-efficacy theory, a subset of cognition theory, asserted that self-efficacy was a pivotal mechanism for human behavior. Because of individuals' cognitive capacity for self-referent thought, they were able to evaluate their skills and to report their confidence levels for performance of given tasks (Bandura, 1997). Individuals' beliefs about their performance abilities influenced their actions, and self-efficacy theory predicted that one's belief system influenced behavior choices, effort invested, persistence, and task success (Bandura). Self-efficacy researchers have emphasized authentic mastery experiences as the most important source of self-efficacy and have shown a consistent relationship between self-efficacy and performance (Bandura, 1986). At the college level, students' self-efficacy has predicted subsequent academic grades (Silver, Smith, & Greene, 1999).

Self-regulated learning represents the integration and use of cognitive, metacognitive, motivational, perceptual, and environmental components to successfully complete academic tasks (Lindner & Harris, 1993). At the college level, self-regulated learning appears to be an important aspect of academic performance. A statistically significant relationship between self-

regulated learning and overall academic achievement has been documented at the college level in several studies (Lindner & Harris; Paterson, 1996). That self-regulated learners were more likely to have better learning skills than their counterparts suggests that self-regulated learning skills were important predictors of academic success (Onwuegbuzie et al., 2001). Social Cognition Theory supports a brief self-regulated learning skills protocol as an intervention for improving graduate social work students' learning skills.

### Ecological Theory and Graduate Social Work Student Stressors

Germain (1973) introduced an ecological metaphor as a practice perspective for social casework during the early 1970s. Prior to Germain's work, most direct practice with clients had not looked beyond the individual's internal processes and the family's interpersonal processes. Ecology, the biological science that studies organism-environment relations, offered concepts that were less abstract than those of systems theories and more compatible with common human experience (Germain). The Life Model was first presented in 1976 and focused on individuals striving to improve their level of fit with their environments over the life course (Gitterman & Germain; 1976). When people had positive feelings about their personal capabilities and the ability to feel hopeful about their needs being met in a responsive environment, they were able to sustain a condition of adaptedness (Gitterman & Germain). However, when perceived environmental and personal limitations were fueled and sustained by oppression, such as racism, sexism, ageism, or homophobia, consequences ensued, ranging from heroic adaptation to impaired functioning, and to individual and collective disintegration (Germain, 1984). Social ecology viewed people and their environments holistically and asserted that neither can be properly understood except within the context of its relationship to the other. These inter-relationships were characterized by continuous reciprocal exchanges, or transactions, through which people and environments influenced, shaped, and sometimes changed each other

(Germain). Germain and Gitterman's (1996) Revised Life Model attempted to respond to the dramatic social changes of the 1980s and 1990s, such as the impact of AIDS, increased homelessness, increased drug abuse, chronic mental illness, child abuse, and violence (Gitterman & Germain). Saleeby (2001) viewed adaptation and stress as intrinsic components of ecological theory. Adaptation to Saleeby referred to all decisions and related actions that were meant to achieve personal change or environmental change in the service of promoting better transactions between person and environment (Saleeby). Therefore, ecological theory was also about the nature of stressors, internal stress responses, and attempts to respond to the challenges of a given stressor (Saleeby).

The concepts of Social Ecological Theory include the following: person-environment fit, adaptations, life stressors, stress, coping measures, relatedness, competence, self-esteem, self-direction, life course, individual time, historical time, and social time (Germain & Bloom, 1999). The "life model" of social work practice departed from approaches based on clinical processes directed toward the remedial treatment of personal deficits (Germain & Bloom), and instead it was patterned on life processes directed toward (1) people's strengths, their innate drive toward health, and their continued growth and realization of potential; (2) as-needed modification of environments to sustain and promote well-being; and (3) raising the level of the person-environment fit for individuals, families, groups, and communities (Germain & Bloom). Social Ecological Theory supports a Mindfulness-Based Stress Reduction protocol as an intervention to improve social work graduate students' adaptations to stress.

### Transpersonal Theory and MBSR

Transpersonal Theory evolved out of the humanistic, experiential, and existential theories developed after World War II (Turner, 1996). Abraham Maslow, Carl Rogers, and Rollo May formed the new construct of the human potential movement whose philosophy suggested that

individuals did not have to be sick in order to get better, and undergoing the therapeutic process could be for the purpose of growth rather than for cure (Turner). The human potential movement began a shift away from mainstream Western psychology toward the exploration of contemplative practices and psychological traditions of the East, primarily through Buddhism. Maslow (1971a; 1971b) asserted that the value-life of human nature was biologically rooted and that in addition to basic needs of food and shelter, humans possessed “being values,” such as truth, goodness, beauty, wholeness, justice, playfulness, and meaning. Maslow believed that spiritual illness resulted from a lack of these “being values” and took the form of alienation, meaninglessness, helplessness, boredom, and depression (Maslow, 1971a; 1971b). Built on the theories of Erich Fromm, William James, Carl Jung, and the influences of Eastern philosophy, transpersonal theory expanded and delineated three groups of healthy people: self-actualizers, transcendents, and transcending self-actualizers. Other theorists at the forefront of transpersonal theory include Stan Grof (1985); Grof and Grof (1989), Charles Tart, (1975; 1986), and Ken Wilber (1977; 1981); and Wilber, Engler, and Brown (1986).

Recent developments in transpersonal psychology have brought together traditional Western psychologies of psychoanalysis and cognitive-behavior together with Buddhist philosophy and Vipassana (Mindfulness) meditation practices (Epstein, 2001; Germer, Siegel, & Fulton, 2005; Goleman, 2003; Magid, 2002; Safran, 2003; Watson, Batchelor, & Claxton, 2000). Jon Kabat-Zinn’s Mindfulness-Based Stress Reduction Program developed at the University of Massachusetts Medical School in 1979 combined cognitive-behavioral techniques with mindfulness meditation practices to reduce stress and to treat anxiety and depression associated with chronic pain (Kabat-Zinn). Subsequent research by Kabat-Zinn and his associates has examined the effects of MBSR on anxiety disorders, skin disorders, alterations in brain and immune function, and relapse prevention for major depression (Davidson, Kabat-Zinn,

Schumacher et al., 2003; Kabat-Zinn, Massion, Kristeller et al., 1992; Miller, Fletcher, & Kabat-Zinn, 1995; Kabat-Zinn, Wheeler, Light et al., 1998). Other researchers have studied the effects of mindfulness-based cognitive therapy on relapse prevention for major depression as well (Teasdale, Segal, Williams et al., 2000; Williams, Teasdale, Segal, & Soulsby, 2000).

Marsha Linehan's DBT incorporated mindfulness techniques learned through her own studies of Zen, along with cognitive-behavioral techniques to treat borderline personality disorder (Linehan, 1993a; 1993b). Stephen C. Hayes' Acceptance and Commitment Therapy (ACT) was based upon mindfulness meditation and Relational Frame Theory (RFT) (Hayes, Barnes-Holmes, & Roche, 2001; Hayes, 2005). Acceptance and Commitment Therapy utilized the tenets of mindfulness in conjunction with cognitive-behavioral skills to enable clients to focus on present-moment experience and to learn commitment and values-based living in order to intervene on the cognitive traps that created suffering in the form of anxiety and depression (Hayes et al., 2001; Hayes, 2005).

Mindfulness-based cognitive-behavioral interventions have combined the empirically-based cognitive-behavioral therapies with Buddhist-based meditation techniques to create a new approach which has been helpful in treating numerous psychological conditions. At the 2008 6<sup>th</sup> annual conference for clinicians, researchers, and educators, entitled Integrating Mindfulness-Based Interventions into Medicine, Health Care, and the Larger Society, researchers presented papers on Dialectical-Behavior Therapy, eating disorders, creativity, treatment for adolescent psychiatric outpatients, MBSR in the workplace, combat veterans with PTSD, and teambuilding, among others. A Mindfulness-Based Stress Reduction intervention, supported by Transpersonal Theory, is appropriate for teaching social work graduate students mindfulness-based meditation techniques to better cope with appraised stressful situations and to enhance adaptation to stress.

## Contributions to Social Science Knowledge

There has been a paucity of literature on the topic of social work students and stress (Dziegielewski et al., 2004). Examining social work graduate student stressors, perceived stress, and adaptation to stress will contribute to the knowledge base of social work education literature. However, because of this multi-component design and the small sample size, this study can only contribute an incremental amount to the knowledge base. Results of this study will shed light on whether graduate social work students would participate in a mindfulness-based stress reduction intervention and whether such an intervention would be feasible for this population, given their levels of stress, time constraints, and responsibilities. The current study was the first of its kind to address social work graduate students' perceived stress and adaptation to stress using a Mindfulness-Based Stress Reduction (MBSR) intervention.

The next chapter (Chapter 2) presents a review of the literature relevant to the historical, empirical, and contextual scope of this research study. The literature review describes previous research examining stress and its psycho-physiological, cognitive, and behavioral effects; research on college and graduate student stress; and research relevant to social work students and stress. Literature relevant to mindfulness meditation, including historical references, population of meditation practitioners, empirical studies, and influences upon the development of contemporary psychology is also explored. Finally, literature relevant to self-regulated learning skills among college students is examined.

## CHAPTER 2: REVIEW OF THE LITERATURE

This chapter presents a review of the literature relevant to the historical, empirical, and contextual scope of this research study. This was a multi-component study measuring the impact of a Mindfulness-Based Stress Reduction intervention (MBSR) on reported perceived stress and adaptation to stress of MSW students enrolled in the Louisiana State University School of Social Work. In addition, this study also examined changes in self-regulated learning skills from pretest to posttest among MSW students. Finally, this study explored reasons that MSW students chose not to participate in the original MBSR and learning skills pretest posttest control group research project.

To provide the foundation for this multi-component study, this literature review describes past research examining stress and its psycho-physiological, cognitive, and behavioral effects with emphasis on CRF, the Stress Response Triad, and HPA; research on college and graduate student stress; and research relevant to social work students and stress. Additionally, literature relevant to mindfulness meditation, including historical references, population of meditation practitioners, empirical studies, and influences on the development of contemporary psychology were explored. Finally, literature relevant to self-regulated learning among college and graduate students was examined. The chapter will continue with a conceptual framework supporting the current study and concludes with a discussion of the implications of the literature review, encapsulating what is known from previous studies as well as delineating the gaps in the current body of knowledge.

### Modern Stress Theory

#### History of Modern Stress Theory

The physiologist Walter Cannon, originator of our modern biomedical concept of stress, viewed stress as a disturbance of physiological homeostasis originating from external threats,

causing a mobilization of the body's resources in an effort to grapple with those threats, a condition he coined the *fight-or-flight response* (Woolfolk, Lehrer, & Allen, 2007). Locating the response in the limbic system of the brain, Cannon asserted that while modern humans no longer lived in a world where physical threats to survival were a constant danger, we still maintained our ancient reptilian response system (Woolfolk et al.). Following Cannon, Hans Selye promoted the concept of stress within biology and medicine and brought the term "stress" to the attention of the general public (Selye, 1976; Woolfolk et al.). Expanding upon Cannon's research, Selye described three stages of the stress response: the alarm stage, the adaptive-resistance stage, and the exhaustion stage (Selye). The alarm stage, equivalent to the fight-or-flight response, was an adrenomedullary response that prepared the individual to react to a perceived threat (Woolfolk et al.). During the adaptive-resistance stage, once the stressor or threat was no longer present, the body returned to homeostasis, a state prior to arousal. The exhaustion stage Selye also referred to as "burnout," a condition resulting from the protracted and excessive metabolic demands of the alarm stage (Woolfolk et al.; Selye).

As a result of World War II, the Korean War, and the Vietnam War, the military's concerns about the effects of combat stress on soldiers' functioning mobilized military-supported research and expanded the development of stress theory (Grinker & Spiegel, 1945; Lazarus & Folkman, 1984). Military researchers recognized the psychological component involved in battle fatigue, and studies addressing combat-induced emotional disorders advanced thinking about stress (Lazarus, 1999). These studies led to knowledge about stress-related processes, such as cognitive appraisal and coping, two essential elements of the adaptational outcome of stress, as well as to the conviction that social and psychological factors were important to health and illness (Lazarus & Folkman).

During the last 50 years, it became increasingly evident that stress was a part of life for all people, specifically for two reasons: (1) modern war made the civilian population as necessary to the war effort as the military, as civilians were instrumental as support personnel; and (2) people became aware that stress was a factor in daily life, in the workplace, at home, in school, within families, between friends, and as both cause of and result of illness, (Lazarus, 1999). Prior to the time when the term “stress” filtered down to the public at large as a means for describing the struggle to adapt to life, scholars and social scientists had addressed the subject matter using divergent but overlapping terms, such as conflict, frustration, trauma, anomie, alienation, anxiety, depression, and emotional distress (Lazarus). By the 1960s, however, stress became the dominant term for uniting these concepts and for identifying the causes and emotional consequences of individuals’ attempts to manage the pressures of life (Lazarus). In recent research conducted to further understand the stress response, scientists found that stress activated certain physiological mechanisms that functioned to maintain stability of the organism through changes in both internal and external environments (Woolfolk et al.). The term *allostasis* was used to characterize the functioning of the cardiovascular system as it adjusted to myriad levels of physiological activity (Sterling & Eyer, 1988).

The concept of psychosocial stress became increasingly widespread in both scientific and popular usage in the United States as well as around the world (Woolfolk et al.). Today stress is viewed by the majority of laypeople as the most significant risk factor in the etiology of coronary heart disease (French, Senior, Weinman, & Marteau, 2001) and cancer (Maskarinec, Gotay, Tatsumura, Shumay, & Kakai, 2001). In spite of the vast body of contemporary clinical wisdom and empirical data concerning the modification of stress responses in

individuals, researchers and clinicians have become fairly certain that at least some issues related to stress management could be understood only at historical, social, and cultural levels (Woolfolk et al.).

Diseases such as coronary heart disease, hypertension, cancer, degenerative diseases, and psychological distress appeared to result from the effects of the toxins, eating habits, activity patterns, and stressors of industrialized society lifestyles (Woolfolk et al.). Such diseases were quite rare among primitive peoples, yet they became the most significant causes of death and disability in contemporary Western society (Woolfolk et al.). This is not to say that our own ancestors, as well as people in developing countries today, did not and do not have extreme difficulties from the effects of wars, famine, disease and dangers from the elements. The difference between our ancestors' responses to stress and our own appears to be that the socio-cultural environment of the contemporary world engendered a relentless tension in people's lives that was chronic, complex, and multi-layered in comparison to less complicated societies (Woolfolk et al.). Industrialization and modernization almost universally became regarded as beneficial for their enhancement of personal freedom, material gain, and personal choices concerning careers, places to live, friends, and values. Yet the cost was high, as individuals became more socially isolated, with extended families disappearing and society organized more through people's achieved status rather than through their ascribed status (Woolfolk et al.).

#### Psycho-physiological, Cognitive, and Behavioral Effects of Stress

The American Psychological Association's most recent survey on stress in America outlined the state of stress across the country through measuring online survey participants' attitudes and perceptions about stress, identifying leading sources of stress, and outlining behaviors commonly utilized to manage the impact of stress on daily life (APA, 2007). As

summarized in Chapter 1, the results of this survey were startling, clearly illuminating the negative impact of stress on the physical, emotional, and psycho-social lives of 21<sup>st</sup> century Americans. What follows is a review of the literature outlining the impact of stress on the psycho-physiological, cognitive, and behavioral functioning of individuals with emphasis on CRF, the Stress Response Triad, and HPA.

### Psycho-physiological Effects of Stress

Research has shown that genetics and the environment interact to influence responses to stress (McGrady, 2007). The brain is hardwired to perceive experiences and to identify them as positive, negative, or neutral; yet, individuals exposed to the same stressful experiences have reacted differently, with reactions ranging from successful adaptation to stressors to the development of long-term emotional problems and physical illness (McGrady). Research has found that individuals with short allele in the promoter region of the serotonin transporter gene were at higher risk for depressive disorders, especially after stressful episodes (McGrady). An allele is one of two or more alternative forms of a gene, occupying the same position locus on paired chromosomes and controlling the same inherited characteristic (Lovallo, 2005). Research has shown that adults born with this gene structure who have been abused as children were also at significantly higher risk for adult clinical depression when exposed to stress (Caspi, Sugden, Moffitt, Taylor, Craig, Harrington et al., 2003).

Particular stressful situations have been more likely to occur during specific developmental periods in the individual's life. For example, maladaptive reactions to stress have been identified in infants, depending upon whether or not the mothers' pregnancies were full term (McGrady). Mastery of childhood developmental tasks has been directly influenced by parental guidance and support, and children whose early life experiences lacked the nurturing quality of healthy parent-child relationships produced structural deviations from normal brain development, making them

more vulnerable to stress reactivity (McGrady). Scientists and medical researchers have asserted that the age at which traumatic events occurred in an individual's life strongly influenced brain development; the younger the individual, the more likely that negative events caused permanent damage to the brain (Perry & Pollard, 1998). Morris, Blount, Brown, and Campbell (2001) found that parents' psychological states may have influenced symptoms in their children; for example, when parents were depressed or anxious their children had more episodes of syncope (fainting). By adolescence, patterns of behavior and emotional reactivity are established, becoming fully developed during adulthood. Embarrassment and humiliation can feel devastating to adolescents and can make such a powerful impression that a neural network permanently can be altered outside of conscious awareness, with memories of the humiliating incident replayed concurrently with the physiological responses to those memories (McGrady). Later, in adult life, the individual would overreact to a slight criticism, often with little or no comprehension about the emotional, behavioral, and physiological responses that were being experienced (McGrady). Sapolsky (2003) demonstrated that changes in thinking, emotion, and psycho-physiological responses to stress constantly occurred throughout the lifespan, these changes causing continuous modifications in the brain. Positive, healthy modifications in the brain contributed to more efficient regulation through expansion of neural networks; conversely, chronic negative stress and the release of stress hormones limited the growth of new neurons and interfered with the balance among physiological systems, a condition referred to as *dysregulation* (McEwen, 2003).

#### CRF, the Stress-Response Triad, and HPA

Neurons in the hypothalamus secrete corticotrophin-releasing factor (CRF), a neurohormone that stimulates the release of cortisol from the adrenal cortex, which is located along the perimeter of the adrenal glands immediately above the kidneys (McGrady, 2007). These neurons

are more sensitive in individuals with histories of trauma; consequently, researchers have found that responses to current-day stress caused higher levels of CRF to be released. In combination with an individual's genetic predisposition, these higher levels of CRF significantly increased the risk of anxiety and depression (McGrady). Based upon animal studies and brain scans of survivors of trauma, researchers have proven that stress-related neuronal damage is real, noting changes in neurotransmitter concentration, such as depressed levels of serotonin and decreases in the volume of the hippocampus, a brain structure located inside the medial temporal lobe of the cerebral cortex in the forebrain (Bremner, 1999). These changes in neurotransmitter concentration levels have led to increases in depressed mood and heightened anxiety (Bremner; Keicolt-Glaser, McGuire, Robles, & Glaser, 2002).

Another psycho-physiological system involved and observed by researchers among responses to stress existed in the linkages between brain, endocrine, and immune systems and formed the collective stress response triad (Cacioppo, 1994). This stress response pattern reacted to acute stimuli across a range of severity and then recovered following the stimulus, thus allowing the readiness of the organism for the next stress response (McGrady). During acute stress response, the sympathetic nervous system and adrenal hormones were activated; within a few seconds norepinephrine was released from nerve endings, binding to postsynaptic receptors, and epinephrine left the adrenal medulla to circulate in the blood (McGrady). Cardiovascular reactions—increased blood pressure and heart rate—in addition to tense muscles, faster respiration, alertness, and decreased gastrointestinal activity, were among the adaptive responses to short-term stressors (Cacioppo). Additionally, the adrenal cortex released glucocorticoids, such as cortisol, in order to increase metabolic rate (Miller, Cohen, & Ritchey, 2002). Efficiency and plasticity, or the ability of the organism to modify responses to repeated stimuli, represented the hallmarks of the feedback system of the stress

response triad (Bjorntorp, Holm, & Rosmond, 2000). The stress response triad also was modified by diverse factors, including those that were positive (such as physical exercise and social support), as well as some that were negative (such as substance abuse and isolation) (McGrady).

Under conditions of repeated onslaught of stressors and slowed recovery time, normal feedback loops became dysregulated, and the hypothalamic-pituitary-adrenal (HPA) axis evolved into a hypersensitive system (McGrady). The HPA axis is a three-component biological system composed of both the hypothalamus and pituitary regions of the brain and adrenal glands (located above the kidneys), which functions as a complex set of direct influences and feedback interactions among these organs (McGrady). The HPA axis is a major component of the neuroendocrine system and controls reactions to stress and regulates body processes, including digestion, the immune system, mood and emotions, sexuality, and energy storage and expenditure. Whereas the plasticity and efficiency of the stress response triad were able to solve short-term stress problems, the chronic mobilization of stress neurotransmitters and hormones created increased risk for physical problems, such as insulin resistance and inflammatory disease (Bjorntop, Holm, & Rosmond). Research has shown that abnormal cortisol responses programmed early in life have sped the process of the development of a metabolic syndrome, leading to the development of obesity and hyperglycemic symptoms at an early age (Bjorntop, Holm, & Rosmond).

### Cognitive and Behavioral Effects of Stress

Most individuals have experienced stressful situations as both time-consuming and mentally exhausting, as cognitive energy is committed to thinking about the stressor and its effects on oneself and others (McGrady). These individuals have perceived challenges from the environment within the context of their own awareness of personal efficacy almost

constantly and have focused their attention and directing their behaviors adaptively (McGrady). An individual's ability to ascertain the demands of the environment, select the stimulus that requires attention, and apply skills based upon personal capabilities, determines the appropriateness and effectiveness of the behavioral and emotional response (McGrady). Self-care behaviors often become compromised when behavioral and emotional responses have been inappropriate or inadequate to the stressor. Individuals have become sleep deprived, forgotten to take medication properly, skipped meals or eaten unhealthy food, failed to exercise, or engaged in self-destructive behaviors during periods of long-term stress (Rubin & Peyrot, 2001). Such self-destructive behaviors have included excess alcohol consumption, smoking, and over-consumption of refined carbohydrates as individuals attempted to improve or stabilize mood (Rubin & Peyrot).

Stress modifies both short- and long-term memory. The perception by the individual that stressful situations are neutral, positive, or threatening affects both short- and long-term memory, with incidents of forgetfulness increasing even during mild short-term stress (McGrady). Some stressful memories have seemed etched in the brain, as they were replayed repeatedly over time and with some modifications. For example, individuals suffering from posttraumatic stress disorder (PTSD) unconsciously modified their memories for years following stressful events, with these memories remaining connected to their psychophysiological systems, continually causing physical as well as emotional distress (Arnsten, 1998).

Posttraumatic stress disorder has exemplified two broad categories of responses to traumatic stress: hyperarousal and dissociation (Sadock & Sadock, 2003). Normal psychophysiological reactions to acute and chronic stress were modified after traumatic stress, as the recreation and re-experiencing of the original traumatic event challenged the system (Sadock

& Sadock). Over time, the individual became increasingly sensitive to situations reminiscent of the initial traumatizing stressor, as repeated activation of the HPA pathways resulted in exaggerated stress responses even to mild stressors (Perry & Pollard, 1998). Researchers have found that hyperarousal responses are more commonly observed in adolescents and men, in contrast to the dissociative responses more often seen in younger children and women (Perry, 2002). Dissociative responses numbed the pain experience temporarily, but symptoms frequently became somatized as chronic headaches, back pain, and gastrointestinal distress (Bremner & Narayan, 1998). PTSD has impacted individuals in ways similar to rapid aging, affecting physiology, mood, and behavior and decreasing the capacity for learning (Bremner & Narayan).

#### Relational Approach, Appraisal, and Coping with Stress

According to Lazarus (1999), reactions to stress cannot be fully predicted without reference to personality traits and processes that account for the individual differences in the responses to stressful stimuli. It is the psychological *meaning* constructed by an individual about what has occurred environmentally that is critical to the emotional and physiological arousal of stress reactions (Lazarus). Lazarus referred to the *proximal-distal* dimension as the ordering of stressful events according to the individual's perception of the events' personal relevance or psychological closeness. The proximal cause of a stress reaction then referred to the personal significance of the circumstance, while the distal elements referred to large social categories, such as class and gender. Distal variables did not convey the same personal significance or meaning for every individual within the social category, although there may have been an increased probability of shared meanings among group members. Therefore, to understand individuals' reactions to stress, there must have been some comprehension of the proximal-distal dimension of their reactions (Lazarus).

Lazarus' *relational approach* to understanding the impact of stress on the individual considered not only the environmental conditions present but also the psycho-social factors which made that individual vulnerable to those conditions (Lazarus). Lazarus acknowledged that this relational approach between the individual and the environment only partially addressed individual differences in stress reactivity; a more complete approach included his concept of appraisal, as well as the subjectivity of the individual's experience, both internal and external (Lazarus). This more comprehensive approach to stress reactivity took into account not only stressful person-environment relationships, but also examined the balance of forces between stressful demands and the individual's psychological resources for dealing with those demands. If the individual's resources were approximately equal to or exceeded the demands, then the situation was one of non-stress. However, when the individual struggled with demands that could not easily be met, then stress became a powerful force, resulting in anxiety, a stress emotion. Anxiety was also likely to increase when the individual lacked self-efficacy (Lazarus; Bandura, 1997). If the ratio of demands to resources became too great for the individual's coping capacity, the situation moved from one of high stress to trauma, such as has occurred with PTSD. At this point the individual's adaptive resources became inadequate to cope with the demands to which he or she was exposed, and feelings of panic, hopelessness, and depression resulted (Lazarus).

In assessing psychological stress (as opposed to environmental stress only), a new complication was added, having to do with the individual's appraisal of psychological noxiousness, i.e., the perception of harm, threat, or challenge (Lazarus, 1991; 1999). Since these were subjective concepts, or cognitions, it was clear that an individual's mind was involved in evaluating both the significance of what was occurring and the methods to be chosen for coping with the circumstance. When the person-environment relationship was

combined with the subjective process of appraising, there was a relational meaning focused on the personal significance of that relationship (Lazarus).

Among the processes of appraisal, coping, and relational meaning, appraisal was at the heart of psychological stress and the emotions generated (Lazarus). Lazarus (1999) described four substantive variables that influenced psychological stress and emotion: demands, constraints, opportunities, and culture, all of which influenced individual reactions through the process of appraisal. Demands consisted of implicit or explicit pressures from the social environment, requiring that the individual behave in certain ways in order to manifest socially correct attitudes. Conforming to the social conventions of job, marriage, family, success, integrity, etc., some of which were internalized, all were considered demands. Constraints differed from demands in that constraints defined what individuals should not do under threat of punishment. Lazarus (1999) asserted that rules about anger and aggression in our society tended to vary with social class and ethnicity; however, within those constructs there were consequences for behavior beyond certain prescribed limits. Opportunity arose from fortuitous timing or from the wisdom to recognize opportunities and to use the correct action at the right time. Finally, the role of cultural factors in the appraisal of stress and the emotions generated impacted the relational aspect of stress. Strong cultural determinants such as shame, guilt, embarrassment, and pride (Tangney & Fischer, 1995) and individualism and collectivism (Kitayama, Markus, & Matsumoto, 1995) were a few of the cultural factors important to the appraisal process (Lazarus).

Lazarus (1999) asserted that three kinds of person variables were most important in shaping appraisal: goals and goal hierarchies, beliefs about self and the world, and personal resources which an individual brought into transactions with the environment. Motivational traits were crucial in stress and emotions. What individuals valued most and least, and the

probabilities and costs of attempts to actualize those values, determined the choice of goals that an individual set in a given transaction as well as the emotions that were aroused by the outcome. Beliefs about self and the world pertained to ideas about self and our place in the environment. According to Lazarus (1999), these beliefs shaped our expectations about what might occur in an encounter, what we hoped for and fear, and what our anticipatory and outcome emotions were likely to be. Personal resources relied upon included intelligence, social skills, education, money, support from family or friends, physical attractiveness, health, energy, etc. We were born with some, and we achieved others. Whatever their origins, they greatly influenced the chances of adaptational success (Lazarus).

The inter-relationship between the nervous and immune systems, while complex, has been critical to comprehending maladaptive responses to acute and chronic stress and the benefits of various stress management therapies (McGrady). The suppression of immune responses is adaptive during stress reactivity; however, once the stressor is resolved, long-term activation of the sympathetic nervous system, release of stress hormones, and immune suppression become maladaptive and counterproductive to the individual's emotional and physical health (Thayer & Lane, 2000). Negative emotions, such as depressed mood, anxiety, and chronic worry have the capacity to up-regulate or down-regulate the release of pro-inflammatory cytokines, markers of chronic inflammation, a result of excessive levels of stress (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002). Stress also has affected individuals' responses to immunization, with the stressors found to be most relevant in this context being high degrees of negative affect and chronic personal problems (Cole, Kemeny, Weitzman, Schoen, & Anton, 1999). Psychological factors, such as the tendency to view situations as negative, along with mood disorders and anxiety disorders, also have impacted individuals' perceptions of physical pain (Flor, 2001). Flor (2001) found that patients with

chronic pain reported more physical pain during voluntary muscle tension, focused more acutely on physical signals, and performed poorly on discrimination tasks.

The etiology of cardiovascular disease is complex, comprising physical, genetic, and psychosocial factors that include excessive stress reactivity, reduced heart rate variability, unhealthy behaviors (smoking and excess consumption of alcohol), depression and anxiety (McGrady). There is increased risk for mortality in depressed patients, partially explained by both autonomic dysregulation and compromised health maintenance behaviors (Stein et al., 2000). Depressed patients lack the motivation for exercise, healthy eating, and social interaction. According to a review of 10 studies highlighting the link between coronary disease and depression, while there were more than 200 risk factors for heart disease, depression acted as an independent risk factor (Schins, Honig, Crijns, Baur, & Hamulyak, 2003). The increased cardiac morbidity and mortality in depressed patients was accounted for by increased serotonin platelet activity which magnified the risk for thromboembolic events (Schins, et al.).

Depressive illness has been characterized by an abnormally functioning HPA axis, high cortisol levels, and a disruption of normal endocrine rhythms (Raison & Miller, 2003). In depressed patients, the physical symptoms of poor sleep patterns and loss of appetite were controlled by the HPA axis and neuronal serotonin (Morin, Rodrigue, & Ivers, 2003). While sleep problems predicted depression, the lack of deep restorative sleep seemed to magnify sensory experience, especially pain, such as occurred with fibromyalgia and chronic pain patients (Morin, et al.). Sleep-deprived persons overreacted to minor stressors and tended to perceive their lives as more stressful than those who had restorative sleep (Morin, et al.). Bankier, Aigner, and Bach (2001) found that individuals who lacked words to describe their

feelings (alexithymia), often began to communicate distress through somatization into gastric problems and migraine headaches.

Anxiety has overlapped with mood disorders as manifested in agitation, sleep disturbances, fatigue, restlessness, and irritability (Roy-Byrne, 1997). When strategies for coping with stress were exhausted, individuals experienced hopelessness and depression, while the ability of the HPA axis to respond through normal feedback mechanisms was altered (Olf, 1999). Thayer and Lane (2000) proposed that anxiety reactions resulted from faulty disinhibition associated with defensive responses and sustained alertness. Neutral stimuli were perceived by the individual as stressful, and defense mechanisms failed to identify safety zones and nonthreatening situations or people (Thayer & Lane). Clinical anxiety and sustained apprehension were the emotional manifestations of neuronal hypersensitivity (Barlow, 1988). While the normally-functioning person exhibited reactivity, flexibility, and resiliency in response to stressors, the individual with reduced autonomic flexibility was at risk for chronic anxiety (Friedman & Thayer, 1998).

### Socio-Demographic Characteristics and College/Graduate Student Stress

#### College Student Stressors

Stress can result from either discrete life events (a point-in-time) or from ongoing stressful processes which can lead to chronic stress (Towbes and Cohen, 1996). College students, because they often are undergoing tremendous transitions as they enter college life, tended to report several chronic stressors, which Towbes and Cohen (1996) have identified as the major causes of psychological distress among college students. Conceptualizing chronic stress as the accumulation of ongoing strains across several life domains (e.g., academic performance, peer relations, family relations, romantic relationships, lifestyle, and physical appearance and health), Towbes and Cohen (1998) concluded that students were particularly

prone to chronic stress. Kiviniemi, Snyder, and Omoto (2002) asserted that college students experienced considerable amounts of stress as a result of the diverse roles they must fill. Young college students are still forming individual identities, a challenge that includes separation from parents, internalization of morality, formulation of gender identity, and choosing a career (Newman & Newman, 1995). According to Selye (1956), chronic stress impaired many of the processes upon which the acquisition, manipulation and consolidation of knowledge depend, suggesting that students who were experiencing chronic stress may have impaired learning skills. The dynamic relationship between person and environment in stress perception and reaction was especially magnified for college students as they attempted to cope with the process of continuous evaluation through academic pressures, relations with faculty members and peers, pressures of time management, eating and sleeping habits, and loneliness (Ross, Niebling, & Heckert, 1999). Ross et al.'s survey of 100 college students to discover the major sources of their chronic stress revealed that 88% of reported interpersonal stresses were attributed to daily hassles (Ross et al.). However, intrapersonal sources of stress were most common, including changes in sleeping habits, vacations/breaks, changes in eating habits, new responsibilities, increased work load, and financial difficulties (Ross et al.). In another study examining college student stress, negative social exchange and health symptoms, negative social exchange significantly predicted poor health (Edwards, Hershberger, Russell & Markert, 2001).

In analyzing the effects of several health behaviors and health-related variables on grade point averages of a random sample of 200 college students living in on-campus housing, researchers found that among all the variables considered (including exercise, eating, sleep habits, mood states, perceived stress, time management, social support, number of hours

working, gender, and age), sleep habits and wake-up times accounted for the largest amount of variance in grade point averages (Trockel, Barnes, & Egget, 2000).

Stress affected college students differently from the ways in which the general population might be affected (Goldman & Wong, 1997; Humphrey & McCarthy, 1998). Factors specifically related to college student life were thought to increase students' stress levels, including the transitional nature of college life, interpersonal relationship problems, adaptation to academic pressures, students' coping skills, and levels of social support (Lent et al., 2002; Ross et al.).

#### Students Enrolled in Helping Profession Curricula and Stress

Some attention has been directed toward stress among students and professionals entering the helping professions, such as nursing, psychology, and family therapy (Dorff, 1998; Godbey & Courage, 1994; Polson & Nida, 1998). Several studies from nursing literature have addressed the issue of student stress and methods for reducing anxiety levels (Godbey & Courage; Heaman, 1995; Kushnir, Malkinson, & Ribak, 1998). Studies in the nursing literature addressing the effectiveness of stress management workshops for students included such stress reduction modalities as cognitive-behavioral therapy, biofeedback, systematic desensitization, guided imagery, and psychoeducation (Heaman; Kushnir et al.). Heaman (1995) conducted a 5-week stress management program for 40 third-year nursing students. Consisting of two components, the program addressed (1) didactic information on stress and coping from physiological, psychological, and cognitive perspectives and (2) instruction in a relaxation technique called the Quieting Response. In a 6-month follow-up study, students were still using the Quieting Response to reduce anxiety in their clinical settings and during classroom testing (Heaman). Godbey and Courage (1994) conducted a quasi-experimental control group design with nursing students using pretest, posttest, and follow-up measures.

The experimental group received 6 weeks of individual counseling and teaching about stress management, with each participant identifying stress responses that interfered with academic performance. Godbey and Courage (1994) reported that their multi-dimensional individualized stress-management and counseling program reduced the emotional distress of nursing students.

In a 2-hour Burnout Prevention seminar developed for graduate psychology students, Roembke (1995) found that education about burnout could help to prevent burnout. Consisting of two parts, the seminar offered (1) a presentation on recognizing and identifying factors related to burnout and (2) a discussion of multiple intervention strategies for preventing burnout. Polson and Nida (1998), in their survey of student members of the American Association for Marriage and Family Therapy, examined students' perceptions of a marriage and family therapy training program and graduate student lifestyle stressors. They found that graduate programs that combined classroom work and research (a thesis or dissertation), along with a clinical training component (such as is found in disciplines like social work, psychology, and family therapy) created more potential stress than did traditional graduate programs (Polson & Nida). Aponte (1994) asserted that graduate education involving the development of a knowledge base as well as clinical skills transformed the student into a therapist through rigorous clinical training.

### Multiple Roles and Graduate Student Stress

While many college students experienced numerous persistent stressors as they attempted to make the transition into college life and new levels of independence, graduate students faced their own unique adjustment challenges pertaining to multiple role strains, pressures of academic achievement, financial difficulties, marital and family relationships, and concerns about future career opportunities (Home, 1997; Mallinckrodt & Leong, 1992; Poyrazli &

Kavanaugh, 2006). What follows is an examination of the literature relevant to the socio-demographic variables associated with graduate students' perceived stressors, adaptation to stress and self-regulated learning skills, including gender, age, ethnicity, enrollment in field internship, employment, marital status, dependent children, low income, and meditation experience.

Home (1997) conducted a survey of 443 college women enrolled in 17 Canadian universities who were studying social work, nursing, or education to examine relationships between stress, role strain, perceived role demands, and perceived support. All subjects carried family and job responsibilities in addition to their studies. Students with higher perceived role demands experienced more stress and role strain (Home). In addition, those with lower incomes reported more stress, while those with more support from friends and family reported less stress. In a study of graduate students residing in campus graduate housing, students completed survey packets as part of a larger epidemiological study of graduate student mental health and campus service utilization (Mallinckrodt & Leong). Students were surveyed to assess social support in their academic programs and in their family environments, recent stressful life events, and depression and anxiety as psychological symptoms of stress (Mallinckrodt & Leong). Female graduate students reported significantly more stress, more symptoms of stress, and significantly less support from their families and academic departments than did males (Mallinckrodt & Leong). Results indicated greater role strain for women, possibly from less support for their numerous roles.

While high academic demands and difficult family situations seem to increase strain among female graduate students, strong support was found to mitigate the effects of stress and role conflict (Dyk, 1987; Krahn, 1993). Younes and Asay (1998) conducted a qualitative study of eight female graduate students in order to provide insight into how these students

negotiated their multiple roles, specifically addressing the significance of the graduate degree, roles negotiated during the graduate degree program, feelings and thoughts that resulted from the negotiation process, implications of the negotiation process on self-perception, and recommendations for higher-education institutions to design programs responsive to the needs of female graduate students. Students identified various roles they negotiated as they pursued their graduate degrees, specifying the roles of wife, student, employee, mother, daughter, volunteer, friend, advisor/sponsor, daughter-in-law, sister, entrepreneur, school board member, private music teacher, Sunday school teacher, grandmother, and supervisor (Younes & Asay). Younes and Asay (1998) concluded that the stress of female graduate students' multiple roles in school was a result of striving to integrate two polarized worlds: the commitment obligations towards their families concurrent with their attempts to meet their educational needs and career aspirations.

A few studies have examined the experiences of international students with regard to stressors associated with graduate education. Factors such as social support (Hayes & Lin, 1994), host language proficiency (Poyrazli, Kavanaugh, Baker, & Al-Timimi, 2004), and acculturation and acculturative stress (Poyrazli et al., 2004) have been conducted. Poyrazli and Kavanaugh (2006) sought to empirically assess the relation of marital status, ethnicity, and academic achievement relative to the adjustment strains experienced by international graduate students. Correlational and multiple regression analyses indicated that married international students experienced lower levels of social adjustment strain than did single students, and that Asian students experienced more overall adjustment strain than did European students, and lower levels of proficiency in English predicted more overall adjustment strain (Poyrazli & Kavanaugh). Coon and Kimmelmeier (2001) asserted that the

majority of adjustment differences among international students were related to basic divergences between collectivist cultural orientation and individual cultural orientation.

### Social Work Graduate Student Stress

While some studies of graduate students entering the helping professions have addressed students' stress factors, very few studies have been conducted examining stress among social work students (Dziegielewski, et al.). Tobin and Carson (1994) conducted a study of social work students and found that they displayed high levels of psychological distress. While Tobin and Carson (1994) identified five separate categories of stress in the scientific social work literature, including theoretical perspectives, studies on the stresses of working with specific client groups, studies examining burnout, empirical studies, and studies on coping and stress management, they found that social work students were almost never mentioned in the literature. Pottage and Huxley (1996) indicated that social work students found the internship training period potentially more stressful than their subsequent professional careers. These latter authors concluded that because of the high level of negative stressors reported by social work students, and in order to address stress and reduce social worker burnout, social workers must be aware of methods for handling stressful situations (Pottage & Huxley). Fortune (1987), in a study of graduate social work students, found that older, non-traditional students adapted better to the stressors of the internship component of the graduate program than did younger students. This latter age difference is consistent with the American Psychological Association's (APA) 2007 stress survey, which indicated that Americans between the ages of 18 and 34 exhibited the highest levels of unhealthy stress management behavior. In a classical pretest-posttest control group design to measure changes in participants' responses following a 45-minute seminar provided to social work undergraduate students to demonstrate techniques for better handling stressful situations, Dziegielewski et al.

(2004) found that when compared to the control group, students who participated in the seminar reported significantly lower levels of stress and apprehension. These latter authors also found that social work students were genuinely interested in learning about stress and burnout and viewed these issues as important topics to be integrated into the social work curriculum.

Two recent uncontrolled studies of mindfulness meditation with social work students showed positive results. Birnbaum's (2005) qualitative study with 50 undergraduate social work students showed that four mindfulness-meditation sessions administered three weeks apart as part of an introductory skills class increased students' self-observation skills. Because this study was conducted with an actual class, there was no attrition. A second qualitative study by Birnbaum and Birnbaum (2008) sought to enhance undergraduate social work students' self-awareness, self-trust, social consciousness, compassion, spirituality, and acceptance of self using mindfulness meditation, intuitive writing, and group sharing. Results indicated that students experienced improvements across all areas examined and, in addition, students asserted that these enhanced skills would likely strengthen their future work with clients.

### Mindfulness Meditation

The term *mindfulness* is an English translation of the Pali word *sati* (Germer, Siegel, & Fulton, 2005). Pali was the language of Theravada Buddhism 2,500 years ago, and the Way of Mindfulness, or *Satipatthana*, was at the heart of the Buddha's teachings on meditation (Nyanaponika Thera, 1996). Right Mindfulness, as taught by the Buddha in his Discourse on the Foundations of Mindfulness (Satipatthana Sutta), provides the simplest, most direct, and most thorough and effective method for training and developing the mind for its daily tasks and problems as well as for the mind's deliverance from greed, hatred, and delusion

(Nyanaponika Thera). In the compound Pali term “sati-patthana,” sati originally meant “memory” or “remembrance.” However, sati mostly refers to the “present,” and as a general psychological term it carries the meaning of “attention” or “awareness.” (Nyanaponika Thera). The second part of the compound term, “patthana” means “placing near one’s mind,” or keeping present and remaining aware (Nyanaponika Thera).

The word “mindfulness” can be used to describe a theoretical construct (mindfulness), the practice of cultivating mindfulness (mindfulness meditation), or a psychological process (being mindful) (Germer et al., 2005). A basic definition of mindfulness is “moment-by-moment awareness” (Kabat-Zinn, 1990). Other definitions include “keeping one’s consciousness alive to the present reality” (Hanh, 1976, p. 11); “the clear and single-minded awareness of what actually happens to us and in us at the successive moments of perception” (Nyanaponika Thera, p. 5); attentional control (Teasdale, Segal, & Williams, 1995); “keeping one’s complete attention to the experience on a moment-to-moment basis” (Marlatt & Kristeller, 1999, p. 68); and from a more Western psychological perspective, a cognitive process that employs creation of new categories, openness to new information, and awareness of more than one perspective (Langer, 1989).

### Brief History of Mindfulness in Psychotherapy

A relationship between psychoanalysis and Buddhist psychology has existed for some 80 years. Freud, writing to a friend in 1930, admitted that Eastern philosophy was alien to him and “perhaps beyond the limits of his nature” (cited in Epstein, 1995, p. 2). In *Civilization and Its Discontents*, Freud (1961) described the “oceanic feeling” in meditation as an essentially regressive experience. Carl Jung was more complimentary and wrote a commentary on the *Tibetan Book of the Dead* in 1939; he maintained a lifelong curiosity about Eastern psychology. Both Erich Fromm and Karen Horney dialogued with Zen scholar,

D. T. Suzuki (Fromm, Suzuki, & DeMartino, 1960; Horney, 1945). In 1995, Mark Epstein wrote *Thoughts Without a Thinker*, generating new interest in Buddhist psychology among psychodynamic clinicians.

Many practicing psychotherapists adopted Eastern philosophy and meditation as a way of improving their own lives before embarking upon their own professional careers (Germer et al.). Some, such as former Harvard psychologist Ram Dass, began meditating during the 1960s. Ram Dass's book, *Be Here Now* (1971), was a mixture of Hindu and Buddhist ideas and sold over 1 million copies in the West (Germer et al.). As Buddhist philosophy spread in the West, so did the practice of Yoga, essentially mindfulness in movement (Boccio, 2004).

Today, mindfulness meditation is most commonly associated in the West with the contributions of Americans who entered monastic training in Asia, particularly in the Thai Theravadan tradition, among these most notably psychologist Jack Kornfield (1993) and Sharon Salzberg (1999), who were central in founding the Insight Meditation Society in 1976. Burmese meditation traditions have influenced Brown and Engler's work (1984) and are reflected in the 10-day retreat programs of S. N. Goenka (Hart, 1987). Mindfulness elements are also represented in the Tibetan meditation, first introduced in the United States in the early 1970s by Chogyam Trungpa Rinpoche, who founded Shambhala Training and the Naropa Institute in Boulder, Colorado, which was dedicated to teaching Tibetan and Buddhist studies and psychology (Kristeller, 2007). Interest in Tibetan meditation practices has grown rapidly during the past decade due to the influence of the Dalai Lama and through efforts by psychologists investigating the impact of traditional Tibetan practices on emotional and physical self-regulation (Davidson et al., 2003; Goleman, 2003). Thich Nhat Hanh (1975), another influential Asian teacher and Vietnamese Buddhist monk, has resided in France for 40 years since being expelled from Vietnam for anti-war protests. His lineage has been

influenced by both Theravadan and Chinese Zen (Ch'an) Buddhism. His writings have broadened mindfulness approaches, and he has been particularly associated with using loving kindness meditation (Hanh, 1997) and contemplative walking meditation (Hanh, 1991) as central practices. Over 80 years old now, Thich Nhat Hanh still travels widely throughout the United States and around the world, offering lectures and meditation retreats to thousands of individuals each year. This researcher experienced an 8-Day Mindfulness Meditation retreat with Thich Nhat Hanh in 1996.

During the 1970s, studies on meditation flourished, and cardiologist Herbert Benson published his famous book, *The Relaxation Response* (1975), discussing the use of meditation to treat heart disease. In 1977, the American Psychiatric Association called for an examination of the clinical effectiveness of meditation, with the majority of early studies focused on concentration meditation, such as Transcendental Meditation (TM) and Benson's program (Germer et al.).

More recently, the majority of studies have switched their focus to mindfulness meditation (Smith, 2004). Jon Kabat-Zinn established the Center for Mindfulness in 1979 at the University of Massachusetts Medical School (1990). Its purpose was the treatment of chronic conditions for which physicians could offer no further help, such as chronic pain and the effects of stress associated with other physical and psychological conditions (Kabat-Zinn). Since 1979, over 15,000 patients have completed Kabat-Zinn's Mindfulness-Based Stress Reduction program (MBSR), and countless more have participated in over 250 MBSR programs in hospitals and clinics around the world (Davidson & Kabat-Zinn, 2004).

Davidson et al. (2003) performed a randomized, controlled study on the effects on brain and immune function of an 8-week MBSR clinical training program applied in a work environment with healthy employees. Significant increases were seen in antibody titers to

influenza vaccine among subjects in the MBSR group as compared to the wait-list control group. In addition, significant increases in left-sided anterior activation of the brain, associated with positive effect, were found as compared with wait-list controls (Davidson et al.) In a study of 37 patients with psoriasis about to undergo ultraviolet phototherapy (UVB) or photochemotherapy (PUVA), subjects were randomly assigned to an experimental group which received a taped version of the MBSR intervention to listen to while undergoing light therapy, or a control group, which received light therapy alone (Kabat-Zinn et al., 1998). Results indicated that subjects receiving MBSR and light therapy reached the clearing point for their psoriasis more rapidly than subjects in the control group. Numerous studies have tested the effectiveness of MBSR for patients with anxiety disorders and depression. Kabat-Zinn et al. (1992) conducted a study to determine the effectiveness of MBSR in the reduction of symptoms of 22 patients who met DSM-III-R criteria for generalized anxiety disorder or panic disorder with or without agoraphobia. Results indicated significant reductions in anxiety and depression scores for 20 of the subjects, results that were maintained at 3-month follow-up. The number of subjects experiencing panic symptoms was also substantially reduced (Kabat-Zinn et al.). Two-hundred twenty-five consecutive subjects who completed the Stress Reduction and Relaxation Program at the University of Massachusetts Medical Center in the four years between the Fall of 1979 and the Spring of 1983 were included in a follow-up study (Kabat-Zinn et al., 1987). Ninety chronic pain patients were trained in MBSR in the Stress Reduction and Relaxation Program, a clinical service of the Division of Preventative and Behavioral Medicine at the University of Massachusetts Medical Center (Kabat-Zinn, Lipworth, & Burney, 1985). Patients were physician-referred for chronic pain and other stress-related medical problems not associated with chronic pain. Statistically significant reductions were observed in measures of present-moment pain, negative body image, inhibition of activity by pain, symptoms, mood disturbance, anxiety,

and depression. In addition, pain-related drug utilization decreased and activity levels and feelings of self-esteem increased, with improvement levels independent of gender, source of referral, and type of pain (Kabat-Zinn, et al.). At 15-month follow-up, improvements were maintained for all measures except present-moment pain (Kabat-Zinn, et al.).

### Mindfulness-Oriented Psychotherapy

There are several ways to integrate mindfulness into therapeutic work, none of which is mutually exclusive (Germer et al., 2005). A therapist may (1) personally practice mindfulness meditation to cultivate a more mindful presence in psychotherapy; (2) use a theoretical frame of reference informed by insights derived from mindfulness meditation practice, recent psychological literature on mindfulness, or Buddhist psychology (mindfulness-informed psychotherapy); or (3) teach patients how to practice mindfulness (mindfulness-based psychotherapy) (Germer et al.). The meditating therapist can relate mindfully to patients within any theoretical frame of reference, including psychodynamic, cognitive-behavioral, family systems, transpersonal, or narrative psychotherapy. Mindfulness-informed psychotherapy has borrowed ideas from both Buddhist and Western psychology, as well as from direct practical experience of the practitioner. Numerous works have conceptually integrated Buddhist psychology and Western psychology in this way, including the works of Epstein (1995; 1998), Goleman (2003), Magid (2002), Safran (2003), and Welwood (2000). The integration of mindfulness into cognitive-behavioral therapy has led to new mindfulness exercises and multicomponent treatment protocols, which teach patients specific mindfulness skills, such as breath awareness, mindful eating, and other ways of regulating attention (Germer et al., 2005). Today, the four leading approaches of cognitive-behavioral therapies which include mindfulness practices are (1) dialectical behavior therapy (DBT) (Linehan, 1993a, 1993b), which has become the preferred treatment for borderline personality disorder

and for affect regulation in general; (2) mindfulness-based stress reduction (MBSR) (Kabat-Zinn, 1990); (3) mindfulness-based cognitive therapy (MBCT) (Segal, Williams, & Teasdale, 2002); and (4) acceptance and commitment therapy (ACT) (Hayes, Strosahl, et al.).

The convergence of mindfulness and brain science has been a particularly fertile and exciting area of research. James Austin's *Zen and the Brain* (1998) boosted interest in studies of the brain scans of meditators. With the expanded use of functional magnetic resonance imaging (fMRI), scientists have correlated the first-person reports of experimental subjects with objective images (Germer et al., 2005). Jeffrey Schwartz (Schwartz & Begley, 2002) and Richard Davidson (2003) have explored how mindfulness practice may change brain function. Ordinary people trained to meditate for eight weeks showed left prefrontal activation while they were at rest and in response to an emotional challenge (Davidson et al.). Schwartz (1996) found changes in the brain from mindfulness-based cognitive therapy of obsessive-compulsive disorder that were similar to those from psychoactive medication. This kind of research, along with studies in neuroplasticity, have suggested that we may be able to change the brain itself through mindfulness practice, and that individuals may have the opportunity to better control behavior by increasing mindful awareness of brain activity (Germer et al.).

### Self-Regulated Learning Skills

#### Development of Studies in Self-Regulated Learning

Until the past two decades, there has been very little investigation into the ways in which students become masters of their own learning, otherwise known as *self-regulated learning* (Zimmerman & Schunk, 1989). Recently, however, researchers have begun to identify some of the key processes by which students acquire academic knowledge, and this self-regulated learning perspective on students' academic achievement has had implications for the way

educators should interact with students, as well as the ways schools should be organized (Zimmerman, 1990). The self-regulated learning perspective has shifted the focus of educational analyses from students' learning abilities as "fixed" entities to their personally initiated processes and responses designed to improve their ability and their environments for learning (Zimmerman).

Researchers have found that self-regulated learners approach educational tasks with confidence, diligence, and resourcefulness, proactively seeking out information when needed and taking whatever steps necessary to master their tasks (Zimmerman, 1990; Zimmerman & Martinez-Pons, 1986). These learners viewed knowledge acquisition as a systematic and controllable process, and they readily accepted responsibility for their achievement outcomes (Zimmerman & Martinez-Pons). Zimmerman (1986) asserted a common conceptualization of self-regulated learners as metacognitively, motivationally, and behaviorally active participants in their own learning. Through the implementation of metacognition, self-regulated learners planned, set goals, organized, and self-evaluated at various points during the learning process, all of which enabled these learners to be self-aware and decisive in their approaches to learning (Corno, 1986; Pressley, Borkowski, & Schneider, 1987). Motivational processes included high self-efficacy, self-attributions, and intrinsic task interest, leading to persistence during learning (Schunk, 1986; Zimmerman, 1985). Behaviorally, self-regulated learners selected, structured, and created environments that optimized learning (Zimmerman & Martinez-Pons). These students tended to seek out advice, information, and sites where they were most likely to learn (Rohrkemper, 1989).

### Students' Implementation of Self-Regulated Learning Skills

Most definitions of self-regulated learning identify a feature known as a "self-oriented feedback" loop, which entails a cyclic process by which students monitor the effectiveness of

their learning methods and respond to this feedback in various ways, ranging from covert alterations in self-perception to overt changes in behavior such as the alteration of a learning strategy (Zimmerman, 1989). Social cognitive theorists, such as Bandura (1989) viewed this control loop in terms of both negative feedback (i.e., seeking to reduce differences between one's goals and observed outcomes) and positive feedback (i.e., seeking to raise one's goals based upon observed outcomes). Virtually all researchers have assumed that self-regulation depends on continuing feedback of learning effectiveness (Zimmerman, 1990).

Studies of self-regulated learning have examined both how and why students choose to use particular strategies or responses, efforts which require preparation time, vigilance, and effort (Zimmerman, 1990). One important aspect of theories of self-regulated learning has been that student learning and motivation are treated as interdependent processes that cannot be fully understood apart from one another (Zimmerman). Schunk (1989) asserted that students' perceptions of self-efficacy were both a motive to learn and a subsequent outcome of attempts to learn. Students self-initiated activities designed to promote self-observation, self-evaluation, and self-improvement such as practice sessions, specialized training, and competitive events (Zimmerman & Martinez-Pons). Students' heightened motivation was evident in their continuing tendency to set higher learning goals for themselves as they achieved earlier goals, a quality called self-motivation (Bandura). Therefore, self-regulated learning involved proactive efforts to seek out and profit from learning experiences.

#### Psycho-Social Factors Influencing Students' Use of Self-Regulated Learning Skills

According to Justice and Dornan (2001), approximately 36% of college students today are age 25 or older and are often referred to as "non-traditional." This increased enrollment of adults in college has stimulated research comparing traditional- and nontraditional-age students (Kasworm, 1990). Recent research began to focus on how the learning process

differed for non-traditional students (Smith & Pourchot, 1998). Despite responsibilities not usually experienced by younger students, such as family and career demands, researchers found that older students' academic performance was comparable to or higher than that of their younger peers (Graham & Donaldson, 1996; Richardson & King, 1998). Other research has shown that older students experienced the college classroom environment differently from younger students (Donaldson & Graham, 1999). For example, non-traditional students had different motivations from those of traditional-age students for attending college, such as a critical life event or a reassessment of goals and priorities (Ross, 1988). Older students were more likely to attend college for intrinsic reasons, such as self-esteem or cognitive interest, as opposed to younger students who more often cited external motivations, such as social relations or parental expectations as their reasons for attending college (Ross). Older students have been influenced by prior academic and life-world experiences, so that the metacognitive knowledge and abilities of older students differed from those of traditional-age students (Donaldson & Graham, 1999). Richardson (1995) found that older students were more likely to express a deeper, more comprehension-focused approach to learning, whereas younger students tended to adopt a more surface-level, assessment-focused approach. Therefore, older students would be expected to use learning strategies aimed at comprehension, while younger students might employ strategies aimed at rote recall (Richardson).

Gender differences existed in the motivational and cognitive variables related to academic success (Zimmerman, 2000). Much early research on nontraditional students has either focused on women (Pitts, 1992) or included both men and women without addressing possible gender effects (Kasworm, 1990; Wolfgang & Dowling, 1981). However, Nunn (1994) found main effects for both age and gender in locus of control, anxiety, and achievement orientation. Older students and women had a more external locus of control and

were more achievement oriented than were younger students and men. Younger students and women were more anxious in learning situations (Nunn). Unfortunately, Nunn (1994) did not examine the relationship of these younger students and men to achievement. Justice and Dornan (2001) investigated aspects of metacognition and motivation that distinguished the learning process of adults in higher education (24-64 years) from those of traditional-age students (18-23 years). Male and female students completed self-report measures of study skills, motivation, and memory ability. Nontraditional-age students reported more frequent use of two higher level cognitive study strategies: hyperprocessing and generation of constructive information, both requiring assessment of cognitive tasks and active selection of a processing strategy (Justice and Dornan). Both of these strategies were consistent with a comprehension-focused approach to learning in which adults sought to understand course material (Richardson & King, 1998). Justice and Dornan's study (2001) found no significant differences in course performance due to age or gender.

#### Implications of the Literature Review

Several discrete areas of research were examined for purposes of identifying conceptually- and empirically-relevant correlates of social work graduate students' stressors, appraised stress, adaptation to stress, and self-regulated learning skills. The literature suggested that academic pressures, clinical training components as part of the graduate curriculum, marital and family responsibilities, financial concerns, increased workload, employment, time management, and multiple role strains for women all contributed to graduate student stress. In their conceptualization of chronic stress as the accumulation of ongoing strains across various life domains, Towbes and Cohen (1998) concluded that college students were particularly prone to stress. Aponte (1994) and Tobin and Carson (1994) found that graduate students who have the added component of clinical training as part of their

curricula experienced more stress than did graduates in traditional graduate programs. Younger graduate students experienced more stress related to clinical training than did older graduate students (Fortune, 1987). The added pressures of managing numerous and diverse roles while in graduate school, such as the roles required by marriage, family, outside employment, finances, and career choices predicted increased stress for students (Gold, 2006; Omoto, 2002). Adapting to and coping with multiple roles was difficult for most graduate students; however, more women than men experienced increased stress while attempting to balance obligations to marriage and family with efforts to meet their own educational goals and career aspirations (Dyk, 1987; Krahn, 1993). According to Lazarus (1999), the individual's appraisal of and coping with the demands of the environment determined the effectiveness of both behavioral and emotional responses. Graduate students who did not have well-developed coping skills, adequate social support, and healthy stress-reduction behaviors tended to perform poorly academically and considered resigning from graduate programs in frustration (Girves & Yemmerus, 1988; Nelson, Dell'Oliver, Koch, & Buckler, 2001). Anxiety was shown to increase when self-efficacy was low (Bandura, 1997; Lazarus, 1999). Students with poor appraisal and coping skills demonstrated poor self-care behaviors, such as sleep deprivation, poor eating habits, little or no exercise, and increases in self-destructive behaviors, such as excessive alcohol consumption, smoking, and drug use (Rubin & Payrot, 2001).

While the literature provided insights into the kinds of stressors common to graduate students in general, and to graduate students in disciplines requiring clinical training, such as social work, nursing, or psychology, there were gaps in the literature regarding interventions for addressing the particular stress-related challenges faced by social work graduate students. With the exception of Dziegielewski et al.'s (2004) study of the effects of a

stress/apprehension reduction seminar for undergraduate social work students, and Birnbaum (2005) and Birnbaum and Birnbaum's (2008) qualitative studies examining mindfulness meditation with undergraduate social work students. No other studies are known to have implemented stress-reduction interventions specifically with social work graduate students. Yet, undergraduate social work students expressed interest in learning more about stress and burnout and viewed these issues as important enough to integrate into the social work curriculum (Dziegielewski, et al).

The current study was undertaken to address the gaps in the literature through identifying social work graduate students' appraised stress, adaptation to stress, and self-regulated learning skills and to test the effects of the MBSR and study skills interventions for the reduction of stress and improvement of self-regulated study skills.

## CHAPTER 3: METHODOLOGY

This chapter provides a description of the research methodology employed in this study. First, all research questions are outlined. Second, issues around research design are addressed, including operational definitions of the study variables. Third, the research methodology is presented with attention to sample characteristics, protection of human subjects, data collection methods, instrumentation, and measurement reliability. Chapter 3 concludes with a description of the data analyses.

### Research Questions

This multi-component study measured the impact of a Mindfulness-Based Stress Reduction intervention (MBSR) on the appraised stress levels and adaptation to stress of MSW students enrolled in the Louisiana State University School of Social Work. This study also examined changes in self-regulated learning skills from pretest to posttest. A third component described students' reasons for not participating in the MBSR randomized controlled experiment offered prior to the current study. Data about students' demographic characteristics, including gender and ethnicity, and psychosocial variables (i.e., enrollment in field internship, employment, being married, dependent children in the household, and low annual income) were also collected. Among the psychosocial variables, female gender, enrollment in field internship, employment, dependent children in the household, being married, and low annual income were identified as potential stressors. This study examined and answered the following research questions:

#### Integrated Study: Mindfulness-Based Stress Reduction and Self-Regulated Learning Skills

1. What are the most prevalent potential stressors identified by social work graduate students?
2. What are appraised stressful situations among social work graduate students?

3. To what extent do social work graduate students self-report adaptation to stress?
4. To what extent do social work graduate students employ self-regulated learning?
5. What are the interrelationships among social work graduate students' self-regulated learning skills, appraised stressful situations, and adaptation to stress?
6. Do social work graduate students demonstrate an increase in self-regulated learning skills from pretest to posttest following a brief self-regulated learning skills intervention and the MBSR intervention?
7. To what extent do social work graduate students implement meditation techniques?
8. What is the impact of MBSR on social work graduate students' appraisals of stressful situations and adaptation to stress?

#### Survey of Reasons for Students' Non-Participation in Original MBSR Study

9. What are the reasons cited by students for not participating in the original MBSR randomized controlled experiment?
10. Is there an association between reasons for not participating in the original study and students' self-reported stressors?

#### Research Design

This was a multi-component study incorporating three designs. One component was an integrated study that explored the impact of a mindfulness-based stress reduction intervention on appraised stress and adaptation to stress of MSW graduate students through a pretest posttest group design with time-series posttest data to evaluate meditation practice. The second component of this multi-component design was a pretest posttest group design with a third dependent variable—self-regulated learning skills. The third component was a cross-sectional survey that explored students' self-reported reasons for not participating in an MBSR randomized controlled experiment.

A study prior to this current study originally proposed a pretest-posttest control group design to measure the effectiveness of a mindfulness-based stress reduction intervention. The recruitment process for the planned pilot study began in April and May of 2008. MSW and Ph.D. students were informed (1) through mass e-mails, (2) flyers distributed throughout the School of Social Work, and (3) sign-up sheets requesting names and e-mail addresses. As an additional method for reaching all MSW students, this researcher attended student orientation sessions in August, prior to the beginning of the fall semester, to describe the study to the MSW student body and faculty. In August of 2008, a natural disaster, Hurricane Gustav, occurred, thus postponing the original study. After Hurricane Gustav, the prospective pool of volunteers was too small to evaluate the original MBSR intervention using an experimental group design. Thus, it was determined that a pretest posttest group design using posttest time-series data would be employed.

#### Current Multi-Component Study: Integrated Design

The current study incorporated several components to assess students' meditation practice, appraised stress, adaptation to stress, and self-regulated learning skills. The impact of the MBSR intervention on students' appraised stress and adaptation to stress was assessed with an integrated design composed of a pre-experimental group design (i.e., a one-group pretest posttest design) (Rubin & Babbie, 2001), as well as a pretest posttest group design using time-series data (Nugent, Sieppert, & Hudson, 2001). Designs using time-series data have been useful in determining how individual client(s) proceed during treatment (Nugent et al., 2001).

A convenience sample of 12 subjects was recruited from a population of 180 first and second-year MSW students enrolled in the Louisiana State School of Social Work. The obtained sample was less than half the expected size, but because of time limitations for completion of the research project, it was determined that the research project would go

forward. The procedure was as follows: Half (6) were assigned randomly to Group #1 and half to Group #2. Pretest data, which consisted of the questionnaire that included the socio-demographic information, the PSS, the PSM-9 and the MSLQ, were collected at from all participants. Following collection of questionnaires, the researcher administered the self-regulated learning skills intervention, which consisted of handouts on self-regulated learning and a power-point presentation. Upon completion of the self-regulated learning skills intervention, the researcher conducted the MBSR training session. Group #1 began the 4-week MBSR self-administered intervention one week following pretest on October 24, 2008, and Group #2 began the MBSR self-administered intervention two weeks following pretest on October 31, 2008. Thus, for the current study, 6 subjects in Group #1 began self-administering the MBSR intervention one week after instruction, and 6 subjects from Group #2 began the intervention two weeks after instruction. At pretest, subjects completed the Perceived Stress Scale (PSS) (Cohen et al., 1983), a 10-item instrument which assessed appraised stress during the previous 4 weeks, and the Psychological Stress Measure (PSM-9) (Lemyre & Tessier, 2003), a 9-item instrument that evaluated adaptation to stress during the previous 5 days. In addition, a written questionnaire consisting of 13 items that gathered pertinent demographic and psychosocial data was completed by all subjects at pretest. Psychosocial data were used to measure students' stressors. Time-series data measuring students' meditation and adaptation to stress were recorded on a weekly basis for the duration of the MBSR intervention. Two subjects from Group #1 and four subjects from Group #2 practiced meditation and completed the meditation logs. Students recorded time spent meditating on a daily basis using a pre-dated log prepared by the researcher (See Appendix D) and completed the PSM-9 on a weekly basis, submitting both to the researcher on a weekly basis throughout the duration of the study. At the conclusion of the 4-week MBSR

intervention period, e-mails were sent out to all participants to remind them to complete and submit the posttest measure consisting of the PSS, PSM-9, and MSLQ. One subject from Group #1 and two subjects from Group #2 submitted posttest data.

### Group Design to Assess Study Skills

Following completion of the PSS, PSM-9, and written questionnaire gathering demographic and psychosocial data at pretest, all subjects received the brief self-regulated learning skills intervention administered by the researcher. Handouts containing outlines of the skills training intervention presentation were distributed to all subjects. A power-point presentation outlining three important aspects of self-regulated learning—motivation, cognitive strategies, and metacognitive strategies—was presented. Main topics covered by the power point presentation were: (1) planning and goal setting for semester and classes, (2) listening and note-taking skills, (3) reading and studying texts and research journals for optimum understanding, (4) studying for comprehension and for exam preparation, and (5) test-taking success. Topic #1 of the presentation, Planning and Goal Setting, included suggestions for establishing structured schedules to include class time, work time, internship schedules, sleep and study time, and relaxation time. In addition, this section included methods for setting goals for completion of library research and schedules for completion of rough drafts, rewrites, and submission of final papers. Topic #2 of the self-regulated learning skills presentation, Listening and Note-taking Skills, included suggestions for increasing students' comprehension of lecture content using the Cornell Note-taking Plan (Record, Reduce, Recite, Reflect, Review). Topic #3, entitled Reading and Studying Texts and Research Journals for Optimum Understanding, included strategies for best accessing important information from professional journals. Strategies included the following in order: read the abstract and introduction for purpose of the study; read the discussion section, which indicates the importance of the study and which

highlights significant details; read results to determine whether data support knowledge claims, review and study the methods section to ascertain whether appropriate statistics were utilized to generate data; and finally, read some of the references. Topic #4 covered studying for comprehension and for exam preparation and included 8 questions for students to ask themselves to check for understanding of material. Examples of the questions were: “what are the distinguishing characteristics of this material,” “what conclusions can I draw from this material,” and “what, if anything, confuses me about this material.” Topic #4 also included suggestions for creating effective study guides. Topic #5 covered test-taking success and included strategies for improving test scores, such as confidence builders and memory triggers. Following the self-regulated learning skills intervention, students were referred to Louisiana State University’s Center for Academic Success (CAS) and the Centers for Excellence in Learning and Teaching (CELT) for further information on improving study strategies, achieving academic success, and developing learning skills.

Pretest data to assess self-regulated learning skills were measured with questionnaire items that contained a 22-item modified version of the Motivated Strategies for Learning Questionnaire (MSLQ) (Duncan & McKeachie, 2005). The MSLQ used for this study was composed of three subscales, each measuring a different aspect of self-regulated learning. The motivation subscale asked students to define their goals and value beliefs about learning in graduate school. The cognitive subscale asked about students’ processes of engagement about learning, such as rehearsal of information and organization of information. The meta-cognitive subscale asked about students’ efforts to control and regulate their cognitions about what they learned. All 12 subjects completed the MSLQ at pretest. Three of the original 12 subjects (N = 3) completed the posttest MSLQ measure following the 4-week MBSR self-administered intervention. These data were collected along with posttest measures of the PSS and PSM-9.

### Survey of Students Who Did Not Participate in the Original Study

The third component of the research design was a cross-sectional, self-administered, anonymous survey of students who chose not to participate in the MBSR and self-regulated learning skills research study. According to Rubin and Babbie (2001), self-administered surveys are appropriate for collecting information about sensitive issues. Survey research enables investigators to collect data about the characteristics of a population of interest.

Because sample size for the current integrated study was much lower than expected, based upon the number of volunteers who originally had signed up, an anonymous survey was administered to collect data about students' reasons for not participating in the original experimental study. The sample for the self-administered anonymous survey to discern students' reasons for not participating in the original MBSR study consisted of 56 MSW male and female students enrolled in required core courses at the Louisiana State University School of Social Work during the fall of 2008. Faculty teaching these classes distributed surveys to students who then completed them on their own time and deposited them in a drop box provided for this purpose and located in the graduate student lounge. The survey instrument included 23 items in 2 sections. Ten items identified reasons for not participating in the original MBSR and self-regulated study skills research project. Participants simply checked off all items that applied to their circumstances. Examples of items included: "I was not interested in the study skills intervention," "I did not want to participate in a research study," and "I could not commit 10 minutes per day, 5 days per week to meditation." In addition to these 10 items, the instrument contained the same 13 items measuring socio-demographic data and collecting information about meditation included in the pretest instrument for the MBSR and self-regulated learning skills components. According to Rubin and Babbie (2001), the advantages of anonymous self-administered surveys include effectiveness in dealing with sensitive issues,

in describing the characteristics of a population, and in enabling researchers to analyze multiple variables simultaneously.

### Description of Study Variables

This study sought to examine the self-reported appraised stressful situations, adaptation to stress, and self-regulated learning skills of social work MSW students. The purpose of this study was to determine the impact of MBSR on students' appraised stressful situations, adaptation to stress, and to examine changes in self-regulated learning skills over time. Finally, this study surveyed students' reasons for not participating in the original MBSR and self-regulated learning skills investigation.

The dependent variables in this multi-component study included subjects' appraised stressful situations, adaptation to stress, and self-regulated learning skills. Independent variables in this study included a brief self-regulated learning skills intervention and the four-week MBSR meditation intervention. Demographic and psychosocial variables included age, gender, ethnicity, marital status, field internship, volunteer hours, employment, annual income, dependent children in the home, and meditation experience.

### Operational Definitions of Dependent Variables

#### Appraised Stressful Situations

Appraised stressful situations are those situations having to do with individuals' perceptions of harm, threat, or challenge (Lazarus, 1999). When determining what constitutes a stressor, it is necessary that each individual's motivations, ways of defining relationships, and evaluations of environmental factors—what Lazarus (1999) terms “appraisal,” be considered. Appraisal is the process of evaluating harm, threat, or challenge, and the process of appraisal must account for the differences among distinctive negative emotions (e.g., fright, anger, anxiety, guilt shame, envy) and positive emotions (e.g., joy, pride, love, relief,

compassion) (Lazarus, 1991). An individual perceives, or appraises, a situation as stressful if what occurs (stressor) threatens or defeats an important goal, commitment, intention, or expectation (Lazarus).

The dependent variable, appraised stressful situations, was defined as those situations which were subjectively appraised by social work graduate students to be a threat, harm, or challenge to their goals, commitments, expectations, or intentions (Lazarus, 1991). In the current study, appraised stressful situations were measured with the PSS, a 10-item instrument designed to measure the degree to which situations in an individual's life are appraised as stressful (Cohen et al., 1983). The PSS assesses global perceptions of stress. Examples of items include: "In the last month, how often have you been upset because of something that happened unexpectedly," "In the last month, how often have you felt that things were going your way," and "In the last month, how often have you been angered because of things that were outside of your control." Five response options are provided in the PSS as follow: 0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often.

The PSS has good internal consistency, with an alpha of .78 (Cohen et al., 1983). The PSS has established good construct validity, with scores moderately related to responses on other measures of appraised stress as well as to measures of potential sources of stress as assessed by stress event frequency (Cohen et al., 1983).

### Adaptation to Stress

Adaptation to stress in the literature refers to the idea that psychosocial coping is in part a match between the capacities of an individual and the demands of a particular situation (Aldwin, 2007). Humans modify their responses to stress based upon both environmental exigencies and personal preferences. How well one adapts, or copes, is partly a matter of goodness of fit between the demands of the environment and individual resources (Aldwin).

Adaptational behaviors are learned, which has implications not only for the development of psychological problems, but also for the development of interventions to remedy these problems (Aldwin).

Adaptation to stress was defined as the environmental and personal factors that impact individuals' goals and goal hierarchies, beliefs about self and the world, and personal resources that are affected by social demands, constraints, opportunities, and culture (Lazarus & Folkman, 1984). In the current study, adaptation to stress was measured with the Psychological Stress Measure (PSM-9) (Lemyre & Tessier, 2003), a 9-item instrument that evaluates adaptation to stressors during the previous 5 days. Developed in 1990, the original 49-item PSM was used to assess psychological stress in primary care and population health research. The measure used in this study was the abridged 9-item version developed by Lemyre and Tessier, which uses an 8-point Likert scale to measure responses, ranging from 1=not at all to 8=extremely. Examples of items include: "I feel rushed; I do not have enough time," "I feel preoccupied, tormented, and worried," and "I feel a great weight on my shoulders." The PSM-9 has the same psychometric qualities of reliability, validity, and internal consistency (.89) as the 49-item version of the PSM (Lemyre & Tessier). Higher scores indicate greater difficulty adapting to stressors.

### Self-Regulated Learning Skills

Self-regulated learning skills are defined in the literature as "actions and processes directed at acquisition of information or skills that involve agency, purpose, and instrumentality perceptions by learners (Zimmerman, 1990, p. 5). According to Zimmerman (1986), a common conceptualization of students as self-regulated learners has been that they are metacognitively, motivationally, and behaviorally active participants in their own knowledge acquisition. Metacognitive processes involve planning, goal setting, self-monitoring, organizing, and self-evaluating throughout the learning process (Zimmerman,

1990). Motivation for these students involves high degrees of self-efficacy, self-attributions, and intrinsic task interest (Schunk, 1986; Zimmerman). In the current study, self-regulated learning skills were measured with the modified version of the Motivated Strategies for Learning Questionnaire (MSLQ), a 22-item instrument that measured subjects' self-regulated learning skills across the categories of motivation, cognitive strategy use, and metacognitive strategy use (Duncan & McKeachie; Pintrich & DeGroot). The MSLQ utilizes a 7-point Likert scale to measure students' self-regulated learning skills according to motivation, cognitive strategy use and metacognitive strategy use (Duncan & McKeachie; Pintrich & DeGroot, 1990). Originally consisting of 81 items, the MSLQ was formally developed by Duncan and McKeachie in 1986 from studies of college student learning (Duncan & McKeachie). The authors of the MSLQ specified procedures for modifying the original MSLQ for relevance to population.

Items in the motivation category included statements such as, "Compared with other students in this program, I expect to do well," and "I'm certain I can understand the ideas presented." Items in the cognitive and metacognitive sections of the questionnaire included statements such as, "When I study for an exam, I try to put together the information from classes and from texts," "When studying, I recopy my notes to help me remember material," and "When work is difficult, I stay with it until I am finished" (Duncan & McKeachie, 1986). There are seven response options on the MSLQ ranging as follows: 1 = not at all true of me, 2 = rarely true of me, 3 = sometimes true of me, 4 = true half the time, 5 = usually true of me, 6 = often true of me, and 7 = very true of me.

The MSLQ, either in its entirety or its subscales, has been used frequently to address the nature of motivation and use of self-regulated learning strategies across content areas, such as statistics and chemistry, and with target populations, such as African American

undergraduates and female nursing students (Duncan & McKeachie). In addition, the MSLQ has been used to understand the individual differences that exist in self-regulated learning skills and for evaluating the effects of courses on students (Duncan & McKeachie). At posttest, 3 subjects completed the 22-item modified version of the MSLQ.

### Operational Definitions of Independent Variables

#### Mindfulness-Based Stress Reduction (MBSR) Intervention

Participants received a modified form of the Mindfulness-Based Stress Reduction Program (MBSR). The MBSR was developed by Jon Kabat-Zinn (1990) through the Center for Mindfulness in Medicine, Health Care, and Society at the University of Massachusetts Medical School. This program originated in 1979 as a stress-reduction program for medical patients referred by physicians. Since that time, numerous studies have been published citing the effectiveness of MBSR in the treatment of various psychological and physical conditions. For example, Kabat-Zinn, Lipworth, Burney, and Sellers (1986) conducted a four-year follow-up study of MBSR as it was used in the self-regulation of chronic pain. Miller, Fletcher, and Kabat-Zinn (1997) published findings of their three-year follow-up with clinical implications for MBSR as an intervention for the treatment of anxiety disorders. In an article exploring the integration of mindfulness approaches with existing cognitive-behavioral approaches, Roemer and Orsillo (2002) proposed the expansion of treatment for generalized anxiety disorder. A randomized, wait-list controlled clinical study was conducted with cancer patients to evaluate the effectiveness of MBSR on the reduction of symptoms of stress (Specia, Carlson, Goodey, & Angen, 2000).

The researcher for the current study received training for MBSR in 2003 under the direction of Dr. Kabat-Zinn and Dr. Saki Santorelli and was qualified as a Level I provider of the MBSR program. Minimum qualifications for Level I providers of MBSR included the

following: a Master's degree in social sciences, health sciences, education, or related field; evidence of three years of consistent mindfulness meditation practice; participation in two cloistered, silent, teacher-led mindfulness meditation retreats of 5-10 days duration each; three years of experience in Hatha yoga and/or body-centered awareness disciplines; two years of experience teaching stress reduction and yoga or body-centered disciplines in a group setting; and completion of one 5 or 7-day residential Professional Training Program in MBSR led by Dr. Kabat-Zinn or Dr. Santorelli (Santorelli & Kabat-Zinn, 2003).

The MBSR instruction that was used in this study was administered to the subjects at pretest and consisted of a 25-minute intervention, which included oral instruction on focus and breathing, as well as two 10-minute meditation practices. Subjects were instructed as follows: "Sit up straight so that your breath can travel down to your diaphragm. Gently close your eyes and begin breathing at a normal rate. If comfortable for you, breathe in and out through your nose, focusing your attention to the tip of your nose and to the experience of feeling the breath as it flows in and out. (Pause) As you breathe comfortably, continue to notice the physical sensation of the air as it flows in and out through your nostrils. (Pause) As you continue to focus on your breath, you may begin to notice random thoughts arising in your mind. This is normal. (Pause) The mind produces thoughts constantly, doing what the mind does. Simply notice the thoughts and gently bring your awareness back to the breath. (Pause) You may begin to notice thoughts coming almost constantly now. The mind is doing what comes naturally. There are no good thoughts or bad thoughts. There is no need for judgment. (Pause) Simply be aware of the thoughts but gently re-focus onto your breath. Continue this as often as necessary. (Pause) You may begin to become aware of being sleepy. If so, adjust your posture and bring your focus back to the breath. Again, this is normal as you begin to meditate. You are not yet accustomed to focusing on the present

moment. (Pause) Gently bring your awareness to the experience of the breath. (Pause) As you focus on your breathing, you may begin to become aware of your physical and emotional sensations, such as whether you are experiencing any anxiety, or whether you feel any muscular pain, hunger pangs, and so forth. Again, as with your random thoughts, simply notice these sensations, and bring your awareness back to the breath. (Pause) Consciously allow your body to relax and your mind to be alert to the experience of the breath.” After 10 minutes, quietly instruct participants to open their eyes.

It is appropriate to repeat the above instructions with strategic pauses several times during the instruction period. The purpose of mindfulness meditation is to teach subjects that it is possible to learn to control what the mind does and thereby control thoughts which engender fear or negativity. Subjects are gently reminded throughout the instruction and practice periods to return their focus to the breath. At the conclusion of the instruction and practice session, subjects in the current study were given a CD to take with them with the same instructions and meditation practices to do at home, 10 minutes per day, 5 days per week for 4 weeks. In addition, subjects were provided with four weekly logs in which to record whether or not the meditation intervention was practiced each day and for what duration (See Appendix D). These logs were turned in to the researcher each week through placing them in a drop box in the School of Social Work’s student lounge, which the researcher collected. All subjects were asked to complete the PSM-9 at the end of each week’s meditation, which the researcher also collected from the drop box provided.

#### Self-Regulated Learning Skills Intervention

Participants received the self-regulated learning skills intervention consisting of a 30-minute oral presentation which was administered by the researcher. Researchers studying self-regulated learners have described them as motivationally, cognitively, and

metacognitively active participants in their own learning (Zimmerman, 1986). The self-regulated learning skills intervention used in this study addressed all three of these areas and was presented in three sections.

Section One of the self-regulated learning skills intervention on motivation strategies asked subjects to define their goals and values about what they were learning in graduate school and also explored subjects' beliefs about self-efficacy. Motivation was linked to three different components of self-regulated learning: expectancy, value, and affect (Pintrich & McGroot). Expectancy includes subjects' beliefs about their ability to perform the learning task; value involves subjects' goals about the importance and interest of the task; and affect includes subjects' emotional reactions to the task (1990). Subjects were presented with four cognitive skills in this section, which included: (1) listing goals about the material to be learned (2) defining value beliefs about what is to be learned; (3) defining beliefs about self-efficacy in graduate school; and (4) determining how behaviorally to achieve learning goals. Each of these skills was presented via didactic instruction by the researcher. A discussion between the researcher and group participants provided the opportunity for any needed clarification of points.

Section Two of the self-regulated learning skills intervention covered cognitive strategies, and the researcher presented four cognitive learning skills. Cognitive strategies such as rehearsal and organization were found to encourage active cognitive engagement in learning and to result in higher levels of achievement (Pintrich & McGroot). The skills included in this section were: (1) paraphrasing, (2) summarizing, (3) outlining techniques, and (4) organization of tasks and materials. Each of these skills was presented through instruction by the researcher and discussion with the group participants.

Section Three of the self-regulated learning skills intervention covered metacognitive strategies, and one skill was presented. Metacognitive strategies are those that help students to control and regulate their own cognitions about the process of learning (Duncan & McKeachie). The skill included in the metacognitive section was monitoring comprehension. The researcher instructed group participants in the comprehension monitoring method. Participants were taught how to ask self-generated questions about material being studied and the extent to which it was understood.

#### Demographic and Psychosocial Characteristics

Age was measured with one item on the written questionnaire and was based upon self-report of the subject's age at last birthday. The variable age was maintained in the dataset as interval-level data.

Gender was operationally defined as a discrete categorical variable that includes male or female and was identified by each subject's self-report with one item on the written questionnaire. The variable gender was recorded in the dataset as nominal-level data.

Ethnicity was categorized on the written questionnaire as African-American, Hispanic, Non-Hispanic White, Asian-Pacific Islanders, Native-American, Multi-Racial, or Other. Ethnicity was collected with one item and was recorded in the dataset as nominal-level data.

Marital status was categorized in the questionnaire with six response options, including single-never married, single with significant partner, married, married and separated, divorced, and widowed. The marital status variable was recorded in the dataset as nominal-level data.

Two items on the questionnaire addressed meditation practices. Training in meditation referred to whether the participant had received any type of training in meditation prior to the intervention. Response options were "yes" or "no." The variable was recorded in the dataset

as nominal-level data. The second item provided a blank space for recording the average number of hours of meditation practiced by the subject for the month prior to the intervention.

Employment referred to work for wages outside the field internship. Response options for employment were “yes” (employed) or “no” (not employed). The employment variable was recorded in the dataset as nominal-level data. If the respondent indicated employment, a subsequent item on the questionnaire categorized four response options as 10 or fewer hours per week, 11-20 hours per week, 21-30 hours per week, and 31 or more hours per week. Weekly hours employed were recorded in the dataset as nominal-level data.

Enrollment in field instruction referred to whether or not the subject was enrolled in field internship at the time of the study. Response options for field instruction were “yes” (currently enrolled) or “no” (not currently enrolled). The field instruction variable was recorded in the dataset as nominal-level data.

Children under the age of 18 living in the household was collected with one item on the questionnaire and included response options of 0, 1, 2, 3, 4, or 5/more. This variable was recorded in the dataset as interval-level data.

Household income was collected with one item on the questionnaire and was categorized as below \$20,000, \$20,000-\$34,999, \$35,000-\$49,999, or \$50,000 or more. This variable was recorded in the dataset as nominal-level data.

### Prevalent Potential Stressors

Based on the literature, a number of demographic and psychosocial characteristics were further defined as potential stressors. These included female gender, being married, being enrolled in field internship, being employed, having a low income (less than \$20,000 annually), and having dependent children in the home.

Being married was defined as a potential stressor as a subject currently living as a legally married person with a partner in the home. Divorced, single, and widowed were characterized as not married.

Enrollment in field internship was characterized as enrolled during the 2007-2008 academic calendar year (during the time of the study).

Low annual income referred to an annual household income less than \$20,000.

Employment referred to working for wages in addition to attending graduate school.

Children in the home referred to having dependent children under the age of 18 living in the home.

The above listed variables were recorded as nominal-level data (yes/no).

## Research Methodology

### Subjects

Subjects for the MBSR and self-regulated learning skills component at pretest consisted of a convenience sample of 12 female MSW students from the LSU School of Social Work who voluntarily agreed to participate in the study. Subjects were assigned randomly to either Group #1 or Group #2, with Group #1 beginning the self-administered MBSR intervention one week following pretest and Group #2 beginning the self-administered MBSR intervention two weeks following pretest.

For the anonymous cross-sectional survey, subjects consisted of 56 students who chose not to participate in the MBSR and self-regulated learning skills project. While all subjects in the latter component were graduate students in the LSU Social Work program, it was expected that there would be some variability in terms of demographic and psychosocial characteristics.

## Recruitment Procedure

The researcher was responsible for recruiting subjects for this multi-component study with the assistance of select faculty members who made announcements and provided sign-up sheets during class times. E-mails were sent to participants by the researcher. Subjects were informed about the research project in advance through announcements during class times and by flyers placed throughout the School of Social Work. Using sign-up sheets distributed during classes, the researcher compiled the list of subject names and e-mail addresses and informed all prospective subjects of the date, time, and place for the pretest and MBSR and self-regulated learning skills instructional sessions offered to first- and second-year students. As subjects turned in completed pretest questionnaires, numbers were placed at the top right corner of the cover sheet. Once all questionnaires were turned in, participants were randomly assigned to 1 of 2 groups, and the randomization procedure was implemented using the random numbers table in Rubin and Babbie (2001). Subjects were informed immediately about whether they would be in Group #1 (which began the 4-week MBSR self-administered intervention one week after pretest) or Group #2 (which began the 4-week MBSR intervention two weeks after pretest). At this point all subjects received the MBSR instructional intervention. Because foundation and advanced students met on different class days, two pretest and instructional sessions were held on different days to collect pretest data and administer the MBSR and self-regulated learning skills interventions. However, the randomization process and instructional procedures were identical for both foundation- and advanced-year subjects. The overall sample of 12 who received both the self-regulated learning skills intervention and training in MBSR at pretest consisted of 9 foundation and 3 advanced students.

Respondents for the anonymous cross-sectional survey examining reasons for non-participation were recruited through announcements made by faculty during core classes for foundation- and advanced-year students. Surveys were distributed to students at the time of these announcements. The instrument included instructions asking students to complete and deposit surveys in a drop box provided in the graduate student lounge. The researcher collected all surveys from the drop box and compiled all data. Demographic characteristics of survey participants were compared with those of all enrolled MSW students to assess for representativeness.

### Protection of Human Subjects

The integrated study examining MBSR and self-regulated learning skills was confidential. The last six digits of subjects' social security numbers were collected to link pretest and posttest results. Only the researcher had access to pretest and posttest results.

Risks to subjects were minimal. The brief self-regulated learning skills intervention was administered to all participants by the researcher through an oral presentation. With regard to the modified MBSR, no negative effects have been reported in the extensive research literature, and the practice is not dangerous. MBSR is only contraindicated for actively psychotic individuals. (This study was approved by the Louisiana State University Institutional Review Board on January 25, 2008, and approval was continued on December 2, 2008).

The MBSR and self-regulated learning skills questionnaire administered to study subjects at pretest consisted of three sections. Section One consisted of the 10-item PSS, which asked respondents to answer questions about the degree to which life situations were appraised as stressful during the previous month, and the 9-item PSM-9, which asked respondents to answer questions about their adaptation to daily life stressors during the previous 5 days.

Because these instruments measured stress, it was possible that subjects might become more keenly aware of information about stress in their lives as they responded to the questionnaire. However, the researcher's professional expertise and long-term experience treating such issues would have allowed her to appropriately address and resolve subjects' concerns about this information had said concerns arisen. Section Two of the questionnaire consisted of the 22-item modified MSLQ composed of 3 subscales. Section Three of the questionnaire contained 13 items pertaining to demographic and psychosocial data. Of these 13 items, 6 were identified from the literature as potential stressors: female gender, enrollment in field internship, being married, employment, low annual income, and having dependent children living in the home. Posttest data were collected at the conclusion of the 4-week self-administered MBSR intervention from participants in Group #1 and Group #2. Data at posttest were collected with the PSS, PSM-9, and MSLQ from 3 participants in the study. The same measures were used at pretest.

The cross-sectional survey of students who did not participate in the original study was anonymous. No identifying information was collected. The cross-sectional survey was exempted from LSU Institutional Review Board oversight in the fall of 2008.

#### Data Collection

##### MBSR and Self-Regulated Learning Skills Data

The researcher was responsible for collecting all pretest and posttest data in order to ensure accuracy and consistency. The instrument administered to 12 subjects at pretest consisted of 10 items measuring appraised levels of stress (PSS), 9 items measuring adaptation to daily life stressors (PSM-9), 22 items measuring self-regulated learning skills (MSLQ), and 13 items collecting socio-demographic data. One item on the questionnaire collected the last six digits of subjects' social security number. At posttest, the researcher re-

administered the questionnaire, excluding socio-demographic data, to six remaining subjects through e-mail.

#### Pretest posttest Group Design with Posttest Time-Series Data

The researcher was responsible for collecting all time-series data, which were submitted on a weekly basis throughout the 4-week self-administered meditation intervention from subjects in Groups #1 and #2. Each week, the researcher e-mailed the PSM-9 and a standardized log for recording days of the week, times of the day, and total minutes spent meditating (See Appendix D). Space was provided on the stress measure and the meditation logs for subjects to record the last six digits of the social security number for identification and matching purposes. Subjects completed the PSM-9 and meditation logs and deposited them in a drop-box provided in the graduate student lounge. Frequent reminders were e-mailed by the researcher to encourage follow-through on the completion of the weekly stress measure and the meditation logs.

#### Anonymous Survey Data

The researcher was responsible for collecting all completed surveys from the drop-box provided in the graduate student lounge. Surveys were reviewed for accuracy and thoroughness. Representativeness was assessed by comparing demographic characteristics of survey respondents with those of the MSW student population.

#### Data Analysis

All data were collected, entered, and processed by the researcher to ensure accuracy and consistency. Data were processed using SPSS statistical software and through visual analysis. Descriptive statistics were used to summarize data, and inferential statistics were used to determine the likelihood of generalizing obtained findings to a larger population (Rubin &

Babbie, 2001). Time-series data were graphed for visual analysis and for assessment of change within the intervention phases (Nugent et al., 2001).

Rubin and Babbie (2001) have recommended univariate analysis for descriptions of statistical data in which there is a single variable. Bivariate analyses have been recommended for subgroup comparisons in which two variables are involved and a description of the relationships between the variables is warranted (Rubin & Babbie, 2001). What follows is a discussion of the individual research questions that were explored in the current study and the statistical analyses used in summarizing and generalizing the data.

Descriptive statistics were used to determine social work graduate students' most prevalent potential stressors (Question #1). Univariate statistics were used to summarize data collected with Questions #2 and #3, which addressed self-reported appraised stressful situations and social work graduate students' adaptation to stress, respectively. Univariate statistics were used to summarize data collected with Question #4, which asked about subjects' employment of self-regulated learning skills. Bivariate analyses were utilized to determine whether there were associations among students' appraised stressful situations, adaptation to stress, and self-regulated learning skills (Question #5). Descriptive statistics were used to examine students' self-regulated learning skills at pretest and posttest (Question #6). Descriptive statistics were used to assess the extent to which social work graduate students implemented meditation techniques (Question #7). In order to answer Question #8, which addressed the impact of MBSR on subjects' adaptation to stress, posttest time-series data were plotted for visual analysis of PSM-9 scores and time spent meditating. Time-series data were collected on a weekly basis throughout the 4-week meditation intervention from 2 subjects in Group #1 and 4 subjects in Group #2. Visual inspection is the most commonly used method for analysis of time-series and single-system data (Nugent et al., 2001).

Parametric tests, such as t-test, cannot be used for data analysis with time-series data because not all assumptions of parametric statistics can be met (e.g., sampling distribution of variables in normal, and that comparison groups have been selected randomly and are independent of one another) (Rubin & Babbie). Basic descriptive statistics were used to summarize time-series data within the intervention phases for Group #1 and Group #2. Time-series data are not independent, meaning that each data point is related to the previous data point.

In terms of the anonymous survey, descriptive statistics were used to summarize data about the most prevalent reasons cited by social work graduate students for not participating in the original MBSR and self-regulated learning skills study offered previously (Question #9). Cramer's V, a non-parametric test appropriate to nominal-level data, was utilized to determine whether there were associations between students' reasons for not participating in the original study and students' stressors (Question #10) (Rubin & Babbie, 2001).

#### Limitations of the Study

Limitations of the current multi-component study should be noted. Numerous limitations were related to broad issues around design, sampling, measurement, and attrition. These limitations are discussed as they pertain to each component.

#### Intervention Study: Pretest Posttest Design Using Time-Series Data

Single-system designs have been used in social work research primarily to evaluate practice. Simple time-series designs are feasible for single-system designs because they do not require a control group (Rubin & Babbie, 2001). While no particular number of measurements is required for simple time-series designs, more data points are better for assessing change either during baseline or intervention phases (Rubin & Babbie). Since the late 1970s, social work researchers and educators have emphasized use of these designs for several purposes, namely, the integration of research and practice, to increase production of

practice-oriented research, and to advance the empirical base of social work practice (Rubin & Babbie). Single-system designs have been used in exploratory studies that use smaller sample sizes for gaining insights and generating hypotheses which can be later tested in more controlled studies with larger probability samples (Nugent et al., 2001; Rubin & Babbie). However, single-system designs are low on external validity, and researchers cannot generalize to larger populations from the small sample sizes used in studies incorporating these designs (Rubin & Babbie). The key to building knowledge in single-system research is systematic replication across settings and subjects. The pretest posttest control group design originally planned for the Fall of 2008 was a much more rigorous design for building knowledge about MBSR and self-regulated learning skills interventions.

#### One-Group Pretest Posttest Design

Numerous limitations exist with the one-group pretest posttest design due to the lack of a control group. A pre-experimental design does not control for any threats to internal validity. The use of this design, along with the small sample size, precluded drawing any causal inferences. Therefore, it cannot be determined whether the self-regulated learning skills intervention impacted subjects self-regulated learning skills.

#### Sampling and Attrition

A notable limitation of the intervention study was the low response rate and small sample size. A convenience sample of 12 female MSW students participated at pretest; however, only 6 of the original 12 completed the MBSR 4-week meditation intervention, and only 3 of these 6 completed the posttest measures, serious attrition for an already small sample size of 12 at pretest. The small sample size, the use of a non-probability sample from only one university, and the relative homogeneity of the sample with regard to gender and ethnicity do not permit generalization of the results beyond the study. Also, the small sample size

precluded the use of inferential statistics to assess changes in self-regulated learning skills and adaptation to stress from pretest to posttest. The attrition in the intervention phase prevented the researcher from aggregating the data across subjects in each group.

### Measurement

Some problems with measurement may also exist in the current study due to the use of self-report data. Rubin and Babbie (2001) assert that although self-report instruments can be administered and scored uniformly, subjects might lose interest in completing them over time, resulting in missing data. There is also the risk of participants providing responses to make favorable impressions.

Other measurement issues are specific to the instruments used. The PSS, which measures appraised stress during the previous 30 days (Cohen et al., 1983), and the PSM-9, which measures adaptations to stress during the previous 5 days (Lemyre & Tessier, 2003), are standardized scales with established reliability and validity. However, the Cronbach's alpha obtained for the PSS for this study was low (.58), indicating that the PSS may not be reliable for this population. Future research should incorporate pretesting with a comparable subgroup. The 13-item measure of students' socio-demographic information was developed by the researcher based upon existing research; however, a standardized measure of graduate student stressors would have yielded more reliable data.

### Anonymous Survey

The third component of the study consisted of a cross-sectional survey which attempted to describe students' reasons for not participating in the MBSR randomized controlled experiment offered prior to the current study. According to Rubin and Babbie (2001), self-reports of recalled past actions or of hypothetical action can compromise measurement reliability and validity. In the current study respondents may not have given serious thought

to their reasons for not participating in the experimental study until actually completing the survey. Another limitation is related to representativeness, similar to the intervention study. Cross-sectional studies conducted with representative samples can have good external validity; however, the use of a convenience sample and the small sample size (N=56) prohibits generalization to a more diverse population of social work students.

A power analysis indicated that a sample of 80 subjects was needed for the selected bivariate test (Cohen, 1988). Because the sample of survey respondents was 56 for this study, the results of statistical analysis must be interpreted with caution.

Similar to the intervention study, limitations exist with regard to measurement. The use of self-report data increases the risk of bias if subjects respond to survey questions in order to convey a desirable impression (Rubin & Babbie, 2001). The survey instrument developed by the researcher, including the checklist of students' reasons for not participating in the MBSR and self-regulated learning skills investigation, does not have established reliability. Finally, although the survey yielded useful results about these students' reasons for not participating, the findings do not substantively augment the results of the integrated study, which was the main focus of the current research.

#### Contributions of the Study

The limitations of the current study are varied and numerous. Thus, only modest contributions to the knowledge base can be ascertained. This study opens the door for discussion about whether or not stress and meditation practice are feasible for social work graduate students, given the time constraints of their busy schedules. The low response rate and attrition strongly suggest that this small group of social work students was unable to learn about meditation, practice meditation, or both, possibly because of lack of time. The stress management intervention offered by Dziegielewski et al. (2004) was implemented during

classroom time, as was Birnbaum's (2005) mindfulness-meditation sessions with 50 undergraduate social work students. While Dziegielewski et al.'s study yielded notable results for the benefits of a stress reduction seminar administered to undergraduate social work students and Birnbaum's study yielded practical results an association between students' self-observation skills and mindfulness meditation, neither study asked students to use personal time for the studies.

In spite of the small survey sample size of 56 students, findings suggest that those students who were enrolled in field internship were unable to commit to daily meditation practice, were not interested in the study, and did not want to participate in the study. It is possible that the demands associated with field internship made meditation an unattractive activity, despite the fact that meditation might help to decrease their stress levels. Thus, if social work graduate students are reluctant to add meditation to their schedules, even for purposes of stress reduction, then replication of this study as it was implemented with this population is inadvisable. In a similar vein, the low response rate and attrition regarding the self-regulated learning skills intervention suggests that replication with graduate students may be unwarranted. In sum, the limitations of the current study far outweigh the contributions to the knowledge base. Nevertheless, the study represents an initial attempt to build knowledge about the viability of a meditation intervention to reduce social work graduate students' stress.

## CHAPTER 4: RESULTS

This multi-component study was designed to measure the impact of a Mindfulness-Based Stress Reduction intervention (MBSR) on the appraised stressful situations and adaptation to stress of MSW students enrolled in the Louisiana State University School of Social Work. In addition, this study examined changes in self-regulated learning skills from pretest to posttest and described students' reasons for not participating in the original MBSR randomized controlled experiment pilot study offered prior to the current study. The demographic variable, female gender, and psychosocial variables (i.e., enrollment in field instruction, employment, being married, dependent children in the household, and low annual income) were defined as potential stressors per the literature and were examined to assess associations with survey responses describing students' reasons for not participating in the original MBSR study.

This chapter presents the results of analyses conducted for the present study. All data were processed using SPSS statistical software and through visual analysis. The results of analyses were organized in order of the research questions presented in Chapter 3, which correspond to the three components of the study. One component was an integrated study exploring the impact of a mindfulness-based stress reduction intervention on the appraised stressful situations and adaptation to stress of MSW graduate students through a pretest posttest group design, along with an additional single-system design with time-series data evaluating meditation practice. The second component was a pretest posttest group design with the third dependent variable, self-regulated learning skills. A cross-sectional survey, which explored students' self-reported reasons for not participating in the original MBSR randomized controlled experiment, represented the third component of the study.

Initially, the entire sample is described. Pretest data were used to answer Questions #1 through #5 and #7. Posttest data were used to answer Questions #6. Time-series data were used to answer Question #8. Data collected from non-participation surveys were used to answer Questions #9 and #10. Next, the results of univariate analyses describe subjects' most prevalent stressors, perceived stressful situations, and adaptation to stress (Questions #1, #2, and #3). Univariate statistics were used to summarize data about the extent to which subjects employed self-regulated learning skills (Questions #4). Bivariate analyses were used to determine the interrelationships among social work graduate students' appraised stressful situations, adaptation to stress, and self-regulated learning skills (Question #5). Descriptive statistics were used to determine whether social work graduate students demonstrated an increase in self-regulated learning skills from pretest to posttest following a brief self-regulated learning skills intervention and the MBSR intervention (Question #6). Univariate statistics were used to summarize data about social work graduate students' use of meditation techniques (Question #7). Time-series data for the multiple-baseline single-system design were plotted for visual analysis of subjects' time spent meditating. Time-series meditation data from students in Group #1 (N = 2) who began the intervention 7 days after pretest were plotted with data from participants in Group #2 (N = 4) who began the intervention 14 days after pretest (Question #8). Time-series meditation data for the multiple-baseline single-system design were plotted on individual graphs for each subject who completed weekly PSM-9 measures (N = 3) to determine whether the MBSR intervention was associated with changes in subjects' adaptation to stress. Univariate statistics were used to describe students' reasons for not participating in the original pilot study (Question # 9). Cramer's V was used to describe associations between students' reasons for not participating in the original MBSR and self-regulated learning skills study and students' socio-

demographic characteristics (Question #10). An alpha level of .05 was used to determine significance for all bivariate results.

#### Description of Sample Characteristics

The sample for the integrated study exploring the impact of MBSR and the self-regulated learning skills intervention on subjects' perceived stress, adaptation to stress, and self-regulated learning skills was originally composed of 12 female MSW students from a total population of 180 MSW students enrolled in the Louisiana State University School of Social Work during the 2007-2008 academic year. Of the original 12 female students who volunteered, 6 were lost through attrition and 6 completed the meditation intervention and submitted weekly logs of their time spent meditating. Of the 6 who completed the meditation portion of the study, 3 completed the posttest.

The sample for the non-participation survey consisted of 56 male and female students enrolled in the Louisiana State University School of Social work during the 2007-2008 academic year.

Among the total population of 180 MSW students enrolled in the Louisiana State University of Social Work, the majority (87%) was female, with most students (81%) enrolled full-time and the remaining students (19%) enrolled part-time. About three-fourths (73%) of students were enrolled in field placement. Nearly three-fourths (72%) of the total population of MSW students were Non-Hispanic white, less than one-fourth (22%) African-American, and the remaining 5% were Asian-American, Hispanic, Native American or Other.

#### Sample Demographics: MBSR and Self-Regulated Learning Skills Investigation

Of the 12 female subjects who participated at pretest and received the study skills intervention and training in MBSR, 11 (92%) reported ethnicity as Non-Hispanic White and 1 (8%) as African American. Ages of the 12 participants ranged from 22 to 52, with over half

(n=7; 58%) between the ages of 22 and 29. Among the remaining participants 2 (17%) were 30 years old, 2 (17%) were between the ages of 42 and 49, and 1 participant (8%) was 52.

The mean age of subjects was 31 (SD 10.63).

Eight subjects (67%) were employed, with half (n=4; 50%) of those employed working 11-20 hours per week; one-fourth (n=2; 25%) working 21-30 hours per week; and one fourth (n=2; 25%) working fewer than 10 hours per week (See Table 1). Less than half (n=5; 42.5%) volunteered an average of 7.6 hours per month. All 12 subjects were enrolled in field education.

In terms of marital status, 3 subjects (25%) were single, 2 subjects (16.6%) were single with a significant partner, 5 subjects (41.6%) were married, 1 subject was divorced, and 1 subject was widowed. Two subjects (16.6%) reported having children living in the home, one subject with one child, and the second subject with two children. The most frequently reported annual household income was below \$35,999 (n=9; 75%). Twenty-five percent of subjects had an annual household income of \$35,000 and above.

#### Sample Demographics: Cross-Sectional Survey

The sample for the cross-sectional survey exploring students' self-reported reasons for not participating in the original MBSR randomized controlled experiment was composed of 56 male and female students, which is approximately one-third (31%) of the 180 MSW students enrolled in the Louisiana State University School of Social Work during the 2007-2008 academic year. Of these 56 survey respondents, 8 (14.3%) were male, 47 (83.9%) were female, and one did not indicate gender.

Ages of respondents ranged from 21 to 55, with the most frequently recorded age (n=11; 19.6%) being 23. Forty-one respondents (71.5%) were ages 21 to 29. Nine respondents

(16.2%) were ages 30 to 39, and 6 respondents (11%) ranged in age from 40 to 55. The mean age for respondents was 28 (SD = 9.14).

Slightly over three-fourths of students responding to the non-participant survey (n=43; 77%) were Non-Hispanic whites, eight (14.3%) were African Americans, and four (7.1%) were Multi-racial. One respondent did not indicate ethnicity. Among respondents 35 (62.5%) were employed, with the remaining 20 (35.7%) unemployed. One respondent did not indicate employment status. Of those respondents who were employed, most (n=11; 20.4%) worked between 11 and 20 hours per week, nine (16.1%) worked 31 or more hours per week; eight (14.8%) worked fewer than 10 hours per week; and seven (12.5%) worked 21 to 30 hours per week.

Marital status was reported by 55 of 56 respondents. Twenty-six (46.4%) were single, never married; followed by 21.4% (n=12) who were single with a significant partner; 19.6% (n=11) who were married; 7.1% (n=4) who were divorced; and 3.6% (n=2) who were widowed. Eighty-one percent of respondents (n=45) indicated there were no minor children in the home, five (9 %) had one child; four (7.1%) had 2 children; and one (1.8%) had 4 children. One respondent did not indicate whether or not children resided in the home (See Table 1).

The largest proportion of respondents (n=22; 40%) reported an annual household income of below \$20,000, fifteen (27%) reported an annual income of more than \$50,000; eleven (20%) had an income of \$20,000 to \$34,999; and six (11%) had an annual income of \$20,000 to \$34,999. Two respondents did not indicate annual household income.

Table 1 compares the socio-demographic variables of participants in the MBSR and self-regulated learning skills component to those of the participants who completed the cross-sectional survey component. All participants in the integrated study were female, and most

respondents in the non-participation survey were female (84%). Over 90% of subjects in the integrated study were white, as compared with over 75% of survey participants. Nearly 60% of subjects were 30 years old or younger, as compared to nearly 75% of those who completed the survey. Roughly similar proportions of integrated study participants (58.3%) and survey participants (62.5%) were employed.

As seen in Table 1, a large percentage of subjects in both studies had an annual household income of \$20,000 or less. In terms of marital status, nearly 60% of integrated study participants were unmarried, as compared with nearly 80% of survey participants. Similar proportions had no children in the home, with 75% of integrated study participants and 80.4% of survey participants falling into this category. Approximately 90% of survey participants were enrolled in field education as compared with 100% of integrated study subjects. The two groups were most similar in the areas of employment (within 5% difference) no children in the home (within 5% difference). As indicated in Table 1, students were most dissimilar with regard to marital status, with over three-fourths (78.6%) of survey participants and just over half (58.4%) of integrated study participants unmarried.

### Findings

Questions #1 through #5 and #7 were answered with pretest data. Questions #6 was answered with posttest data, Question #8 was answered with time-series data, and Questions #9 and #10 were answered with survey data.

**Question #1:** What are the most prevalent potential stressors identified by social work graduate students?

Graduate social work students' potential stressors were measured with the 13-item researcher-developed questionnaire for collecting socio-demographic information. For the purposes of the current study, graduate social work students' potential stressors identified

Table 1

Comparison of Socio-Demographics: Subjects in the Integrated Study at Pretest (N = 12) and Survey Subjects (N = 56)

Characteristic	% Survey Participants	% Integrated Study Participants
<b>Sex</b>		
Male	14.3%	0
Female	83.9%	100%
<b>Ethnicity</b>		
White	76.8%	91.7%
Non-White	21.4%	8.3%
<b>Age</b>		
Below 30	73.2%	58.3%
30 and above	25%	41.7%
<b>Employed</b>		
No	35.7%	41.7%
Yes	62.5%	58.3%
<b>Annual Household Income</b>		
Below \$20,000	40%	33.3%
\$20,000 and above	60%	66.6%
<b>Marital Status</b>		
Unmarried	78.6%	58.4%

Married	19.6%	41.6%
Children at home		
No	80.4%	75%
Yes	18.2%	25%
Field Internship		
No	11.1%	0
Yes	88.9%	100%

---

from the literature included female gender, employment, enrollment in field education, being married, having dependent children in the home, and low annual income (below \$20,000). All of the 12 subjects were female, and all were enrolled in field internship. Over half (58.3%; N=7) were employed, 41.7% (N=5) were married, 33% (N=4) had incomes below \$20,000. Only three respondents (16.6%) had children in the home. Thus female gender, enrollment in field internship, and employment were the most frequently reported potential stressors.

**Question #2:** What are appraised stressful situations among social work graduate students?

The instrument used to measure appraised stressful situations among social work graduate students was the 10-item Perceived Stress Scale (PSS), which assesses the degree to which situations in one's life are appraised as psychologically stressful during the previous month (Cohen et al., 1983). Response options for the PSS range from 1 (never) to 5 (very often). Total scale scores for the PSS range from 10 to 50, with higher scores indicating higher levels of appraised stress. Cronbach's alpha was computed to assess the internal

consistency of the PSS with the study population. An alpha of .53 was found, indicating questionable reliability of the PSS for this sample (Nugent et al., 2001). The mean total scale score was 23.50 (SD = 4.54), indicating moderate levels of appraised stress. Table 2 shows the mean scores for each individual item of the PSS. Students ranked “feeling not confident to handle” personal problems (mean score of 3.08) and how often did you feel “nervous and stressed” during the last month (mean score of 2.91) as their most prevalent appraised stressful situations. However, Table 2 also shows that students often cited that during the previous month they felt that circumstances were “going your way” (mean score of 2.91), indicating that while students experienced moderate levels of appraised stress, they also experienced moderate levels of ability to handle appraised stress.

**Question #3:** To what extent do social work graduate students self-report adaptation to stress?

The instrument used to measure social work graduate students’ adaptation to stress was the 9-item Psychological Stress Measure (PSM-9), which measures stress as it occurs in the process of adaptation to life circumstances during the previous 5 days (Lemyre & Tessier, 2003). Response options range from 1 (not at all) to 8 (extremely). The scale scores range from 9 to 72, with higher scores indicating more stress. Cronbach’s alpha was computed to assess internal consistency of the PSM-9 with the study sample. An alpha of .70 was obtained, indicating adequate reliability of the PSM-9 for this sample (Nugent et al., 2001).

Table 3 shows the mean scores for each individual item of the PSM-9. Total PSM-9 scores for subjects ranged from 26 to 57. The mean score was 42.50 (SD = 8.87), indicating moderate adaptations to stress. Respondents most frequently reported responses to adaptation to stress during the previous 5 days were that they were “feeling rushed,” “feeling stressed,” and “feeling calm.”

Table 2

Social Work Graduate Students' Appraised Stressful Situations (N = 12) (PSS)

Item	Mean Score (Range = 1 to 5)	SD
Not confident to handle	3.08	.996
Nervous and stressed	2.91	.996
Going your way	2.91	.900
In control	2.75	.965
Control irritations	2.42	.515
Angered	2.17	1.11
Could not overcome	2.08	1.24
Could not cope	2.00	1.04
Upset	1.67	1.07
Not control important things	1.50	1.31

Table 3

Adaptation to Stress Scores Reported by Social Work Graduate Students: PSM-9 Individual

Item Mean Scores (N = 12)

Item	Mean Score (Range = 1 to 8)	SD
Feel rushed	5.75	1.76
Feel stressed	5.75	2.00
Feel calm	5.33	1.37
Have physical aches and pains	5.17	2.37
Feel weight on shoulders	4.67	1.87
Feel worried	4.41	2.37
Feel energetic and keen	4.17	1.47
Can't control reactions and moods	3.75	1.66
Feel confused and muddled	3.50	1.57

**Question #4:** To what extent do social work graduate students employ self-regulated learning skills?

The MSLQ was used to measure the extent to which students employed self-regulated learning skills. A 22-item modified version of the original 81-item MSLQ was administered (Duncan & McKeachie, 2005). Items were scored on a 7-point Likert-type scale, with responses ranging from 1 (not at all true of me) to 7 (very true of me). Higher scores represent higher levels of self-regulated learning. Total scores for the modified version of the MSLQ ranged from 22 to 154. The modified version of the MSLQ contained three subscales, each of which measured a different area of learning: cognitive strategies of self-efficacy (4 items), motivation (11 items), and meta-cognition (7 items).

Cronbach's alpha was computed to determine the internal consistency of the modified version of the MSLQ. An alpha of .91 was obtained, indicating good reliability of the total MSLQ scale for this sample. Cronbach's alpha was computed to determine internal consistency of each of the subscales. An alpha of .86 was obtained for the cognitive strategies of self-efficacy scale, indicating good reliability for this sample. The motivation subscale yielded an alpha of .88, indicating good reliability, and an alpha of .53 was obtained for the metacognitive scale, indicating questionable reliability of this subscale for this sample (Rubin & Babbie, 2001) (See Table 4).

Respondents' total MSLQ scores ranged from 98 to 154, with a mean score of 125.54 (SD = 21.12), indicating high levels of self-regulated learning and low levels of variability among subjects' responses. Scores for the 4-item cognitive/self-efficacy subscale range from 4 to 28. Respondents' scores for the cognitive/self-efficacy subscale ranged from 16 to 28 with a mean score of 22.75 (SD = 3.77), indicating moderately high levels of self-regulated learning. Scores for the 11-item motivation subscale range from 11 to 77. Respondents' scores for the

Table 4

Mean Scores for the Total MSLQ scale, and the Cognitive/Self-Efficacy, Motivation, and Meta-Cognitive Subscales of the MSLQ (N = 12); Scores ranged from 98 - 154

	Mean	SD
22-item MSLQ	125.5	21.12
Subscales		
Cognitive/Self-Efficacy	22.75	3.76
Motivation	60.36	12.16
Meta-Cognitive	36.66	4.72

motivation subscale ranged from 44 to 77 with a mean score of 60.36 (SD = 12.17), indicating moderately high levels of self-regulated learning. Scores for the 7-item meta-cognitive subscale range from 7 to 49. Respondents' scores for the meta-cognitive subscale ranged from 30 to 45, with a mean score of 36.7 (SD = 4.71) (See Table 4).

**Question #5:** What are the interrelationships among social work graduate students' self-regulated learning skills, appraised stressful situations, and adaptation to stress?

A correlation matrix containing major variables of interest was constructed, including MSLQ, PSS, and PSM-9 scores. Pearson's *r* was computed to determine whether there were significant associations among graduate students' self-regulated learning skills, self-reported appraised stressful situations, and adaptation to stress. As seen in Table 5, a strong

Table 5

Correlations: PSS, PSM-9, and MSLQ Scores N = 12

	Total PSS	Total PSM-9	Total MSLQ
Total PSS	1	.728**	-.004
Total PSM-9	.728**	1	-.337
Total MSLQ	-.004	-.337	1

\*\* p < .01

association emerged between the PSS and PSM-9 scores, indicating that high levels of appraised stressful situations were associated with high levels of adaptation to stress. While not significant, negative associations among PSS and MSLQ scores emerged, indicating that higher levels of appraised stressful situations were associated with lower levels of self-regulated learning.

**Question #6:** Do social work graduate students demonstrate an increase in self-regulated learning skills from pretest to posttest following a brief study skills intervention and the MBSR intervention?

Due to insufficient sample size, dependent t-tests were not conducted to assess changes in self-regulated learning skills from pretest to posttest. However, among the three participants who completed both the pretest and the posttest, only a modest decrease in MSLQ subscale scores emerged. The mean score for the total MSLQ at pretest with 12 subjects was 125.54 (SD = 21.12), and the mean score for the total MSLQ at posttest with three subjects was 125.25 (SD = 19.60). The pretest mean score for the cognitive/self-efficacy subscale was 22.75 (SD = 3/77), with a mean posttest score of 24.00 (SD = 2.94). The motivation subscale revealed a pretest mean score of 60.36 (SD = 12.17) and a posttest mean score of 62.75 (SD = 11.08). A pretest mean score of 36.66 (SD = 4.71) emerged on the meta-cognitive subscale, with a posttest mean score of 38.50 (SD = 6.80).

**Question #7:** To what extent do social work graduate students implement meditation techniques?

Pretest survey data describing socio-demographic variables among the 12 subjects in the integrated study revealed that most (n = 9; 75%) had no previous meditation training. One-fourth (n=3; 25%) reported previous experience with some form of meditation. Among these three subjects, one reported practicing meditation one hour per month, one reported practicing

16 hours per month (an average of 30 minutes per day), and one reported 20 hours per month (an average of 40 minutes per day).

**Question #8:** What is the impact of MBSR on social work graduate students' adaptation to stress?

A pretest posttest design with time-series data was used to assess the impact of MBSR on 6 graduate students' adaptation to stress. The procedure was as follows: All 12 participants attended the MBSR and self-regulated study skills intervention session, and all completed the pretest instrument as described in Chapter 3. Following the MBSR and study skills intervention, subjects were randomly assigned to either Group #1 (n = 6) or to Group #2 (n = 6). Subjects in Group #1 were instructed to begin the MBSR intervention (10 minutes of meditation per day, 5 days per week for 4 weeks), 7 days following pretest. However, both Subjects #1 and #2 did not begin the MBSR intervention until Day 9 (as seen in Graph #1). Subjects in Group #2 were instructed to begin the MBSR intervention 14 days following pretest. Subjects #3, #4, and #6 began the MBSR intervention 14 days following pretest, and Subject #5 began the MBSR intervention 17 days following pretest (as seen in Graph #1). Six subjects completed the 4-week MBSR intervention: Subjects One and Two from Group #1 and Subjects Three, Four, Five, and Six from Group #2. Time-series data indicating graduate students' actual daily time spent meditating were plotted on Graph #1 for visual inspection. Once the intervention phase begins, 0 points on graphs indicate days when subjects reported not meditating.

As seen in Graph #1, the pretest measure for Subject One was 45 minutes per day, and the pretest measure for Subject Two was 0 minutes per day, with a mean pretest meditation time of 22.5 minutes per day (mean not shown on graph). For Group #2, the pretest measure

for Subject Three was 35 minutes per day and for Subjects Four, Five, and Six the pretest measure was 0, with a mean of 8.75 minutes (mean not shown on graph).

In examining the one-month intervention period for Group #1, the amount of time spent meditating by Subject One ranged from 6 minutes on Day #29 to 35 minutes on Day #26. The mean meditation time for Subject One over the 28-day intervention was 20.75 minutes. As seen in Graph #1, the amount of time meditating by Subject Two ranged from 10 minutes on Day #12 to 30 minutes on Days #18, 24, 32, and 34 during the intervention phase. The mean meditation time for Subject Two in Group #1 was 13.05 minutes.

In examining the intervention period for Group #2 (Graph #1), the amount of time spent meditating by Subject Three ranged from 20 minutes on Day #14 to 25 minutes on Day #31. As seen in Graph #1, the amount of time spent meditating by Subject Four ranged from 10 minutes on day #14 of the intervention phase to 10 minutes on Day #42 of the intervention phase. The amount of time spent meditating by Subject Five was 10 minutes per day beginning on Day #14, with no difference reported in meditation times during the intervention phase. The average daily meditation time for Subject Five was 10 minutes per day during the one-month intervention period. The amount of time spent meditating for Subject Six beginning on Day #14 was 10 minutes per day, with no difference in meditation time reported during the intervention phase. The average daily meditation time for Subject Six for the one-month intervention period was 10 minutes (See Graph #1).

Graph #1 shows that meditation time decreased for Subject One and increased for Subject Two in Group #1 following the intervention which both began on Day #9. Subject One reported a pretest meditation time of 45 minutes prior to the intervention phase. Subject Two reported no previous meditation at pretest. Graph #1 shows that meditation time decreased

for Subject Three and increased for Subjects Four, Five, and Six during the intervention phase which began on Day #14. Subject Three reported a pretest meditation time of 35 minutes.

Groups #1 and #2 both contained extreme scores, subjects whose reported daily meditation times exceeded the intervention phase meditation time of 10 minutes per day, 5 days per week. Without the extreme scores in each group, the daily meditation over the 4-week intervention phase would have shown a marked increase in meditation time following pretest to the beginning of the intervention phase. Time series intervention data indicating graduate students' weekly PSM-9 scores were plotted on Graph #2 for visual inspection. In Group #1, only Subject One completed weekly PSM-9 measures. The pretest PSM-9 score for Subject One was 40, indicating a moderately high self-reported negative adaptation to stress. Weekly scores ranged from 20 at Week #2 to 35 at the end of Week #3, 28 at the end of Week #4, and 27 at the end of Week #5. The mean score for Subject #1 during the intervention phase was 27, a decrease of 13 points from the pretest score of 40 (indicating a reduction of 32.5% in negative adaptation to stress).

Time series data indicating graduate students' weekly PSM-9 scores for Group #2 were also plotted on Graph #2 for visual inspection. Only Subjects Three and Four completed the weekly PSM-9 measures. The pretest PSM-9 scores for Subjects #3 and #4 were 48 and 42 respectively, indicating moderately high levels of negative adaptation to stress for these two subjects. Group #2 subjects began the intervention phase 14 days after pretest; therefore, no data are recorded for Week #2. The weekly PSM-9 scores during the intervention period ranged from 38 at Week #3 to 28 at the end of Week #4 to 30 at the end of Week #5 to 29 at the end of Week #6 for Subject #3. Subject #3 showed decreases in weekly PSM-9 scores throughout the four-week intervention phase as compared to the pretest score, although scores during Week #4 were higher than during Week #3. The weekly PSM-9 scores for Subject #4

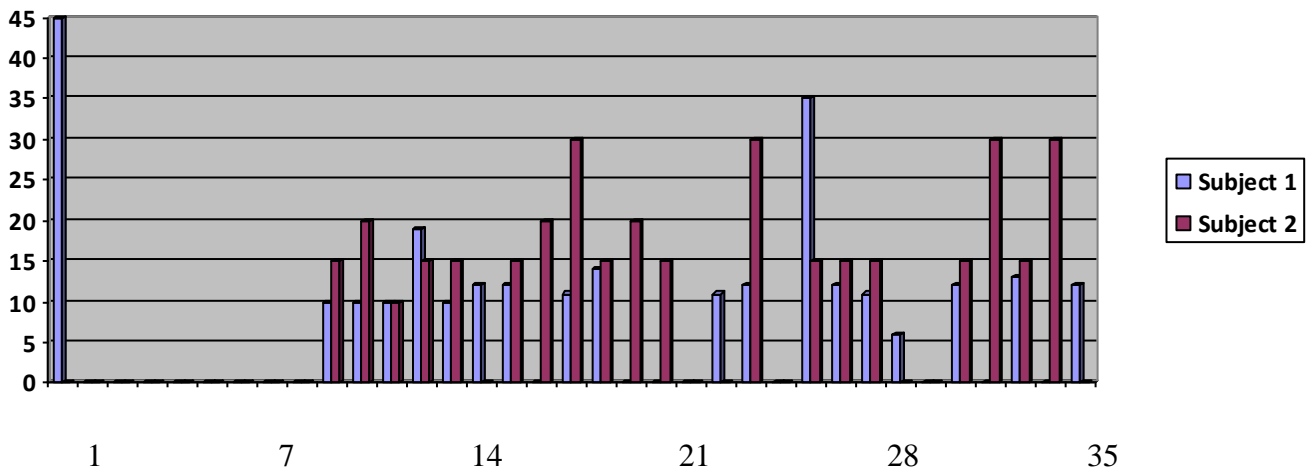
Graph #1  
 Time-Series Data Showing Group #1 and Group #2 Subjects' Daily Meditation Times Over 4-Week MBSR

Intervention: Group #1

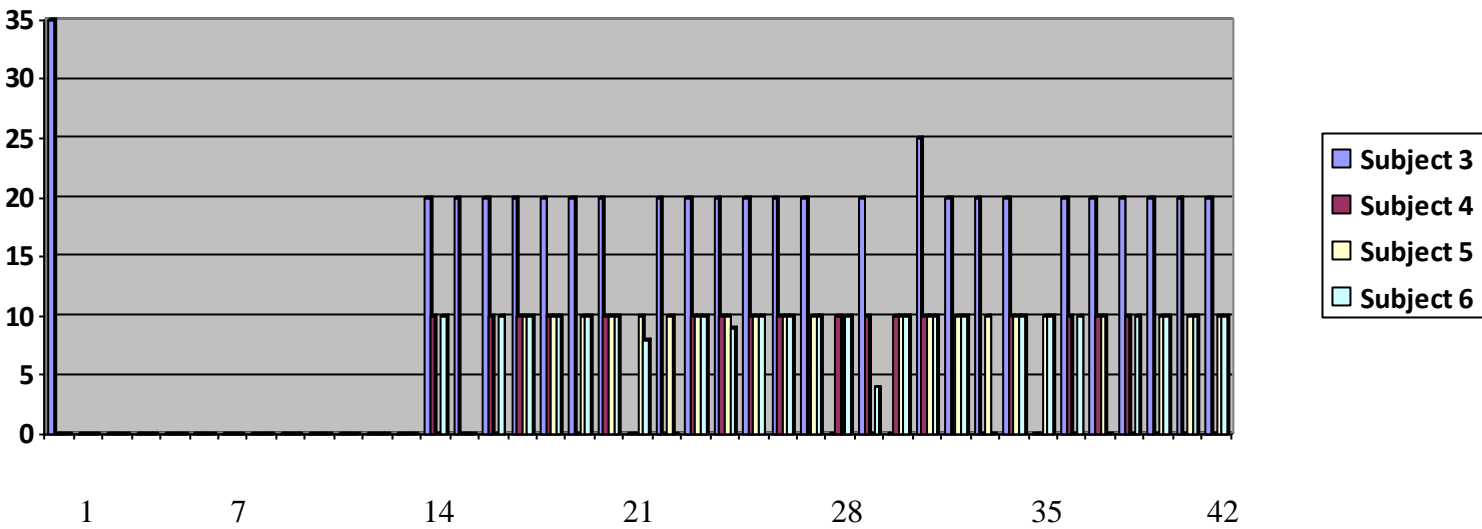
(Pretest)

(Intervention)

Meditation  
 Time in  
 Minutes



Group #2



Note: Days are to be counted between the hash marks. 0s during intervention phase indicate no meditation time reported by Subject for that day.

Graph #2

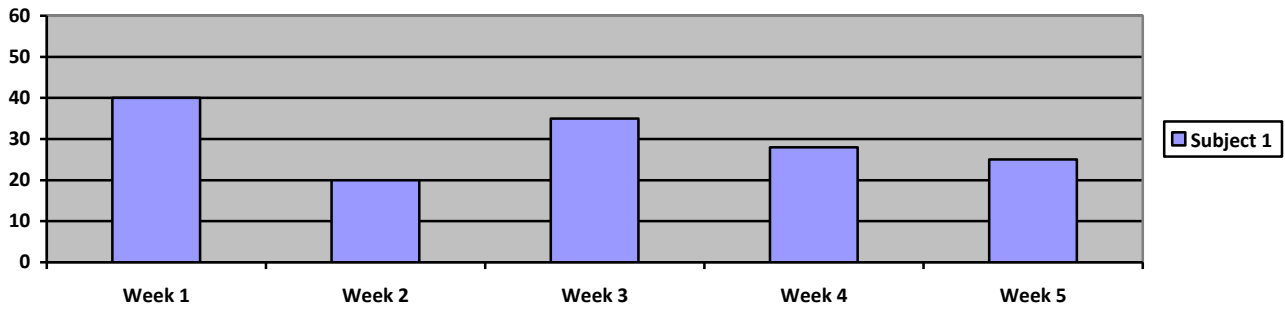
Time-Series Data Showing Weekly Adaptation to Stress (PSM-9 scores)

Pretest

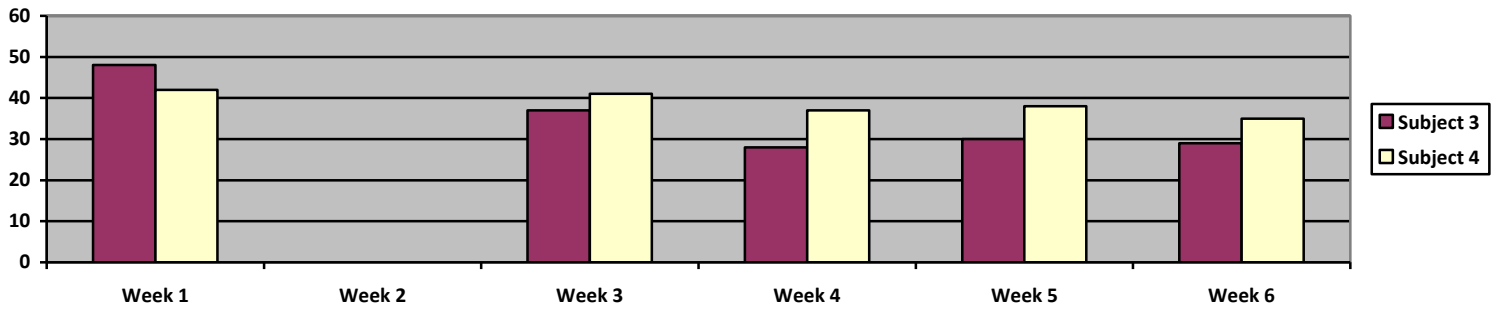
Intervention

Group #1

PSM-9 Scores



Group #2



during the intervention phase ranged from 41 at the end of Week # to 37 at the end of Week #4 to 39 at the end of Week #5 to 35 at the end of Week #6.

Graph #3 shows the weekly mean meditation times and weekly PSM-9 scores for Subjects #1, #3, and #4 who participated in the MBSR and study skills intervention and who submitted posttest scores. Weekly mean meditation times were calculated by adding together each subject's daily meditation times and dividing by five.

Subject #2 completed weekly meditation logs. For Subject #2, the pretest meditation time was 0 minutes. Weekly mean meditation times ranged from 12 minutes for Week #2 to 10 minutes for Week #3 to 18 minutes for Week #4 to 8 minutes for Week #5. Subject #1 completed the weekly PSM-9 measures, and those scores are plotted on the graph for visual inspection. The pretest PSM-9 score for Subject #1 was 40. Scores ranged from 20 for Week #2 to 35 for Week #3 to 26 for Week #4 and 25 for Week #5. The graph shows that for Subject #1, meditation time increased at the beginning of the intervention phase, then decreased slightly, increased again, then decreased. PSM-9 scores decreased at Week #2, then increased during Week #3, followed by a decrease in Week #4, and a very slight decrease in Week #5.

Subject #3 completed weekly meditation logs. Weekly mean meditation scores were calculated by adding subjects' daily meditation times and dividing by five. The pretest meditation time was 18 minutes. Weekly mean meditation scores during the intervention phase were 20 minutes at Week #2, 28 minutes at Week #3, 15 minutes for Week #4 and 18 minutes for Week #5. Subject #3 completed the weekly PSM-9 stress measures. The pretest PSM-9 score for Subject #3 was 48. Weekly PSM-9 scores for subject #3 were 35 at Week #3, 28 for Week #4, 30 for Week #5, and 29 for Week #6. The graph shows that meditation times increased from pretest during Weeks #3 and #4, decreased during Week #5, and increased

slightly during Week #6. PSM-9 scores decreased from pretest during Weeks #3 and #4, increased slightly during Week #5, and decreased slightly for Week #6.(See Graph #3).

Subject #4 completed weekly meditation logs. Weekly mean meditation scores were calculated by adding subjects' daily meditation times and dividing by five. The pretest meditation time was 3 minutes. Weekly mean meditation times were 12 minutes for Week #3, 11 minutes for Week #4, 10 minutes for week #5, and 12 minutes for Week #6. Subject #4 completed the weekly PSM-9 stress measures. The pretest PSM-9 score for subject #4 was 41. Weekly PSM-9 scores ranged from 41 for Week #3 to 38 for Week #4 to 39 for Week #5 to 34 for Week #6. For Subject #4, there was very little variability in meditation times during the intervention phase. Additionally, there was very little variability in PSM-9 scores from pretest through the intervention phase.

**Question #9: What are the reasons cited by social work graduate students for not participating in the original MBSR randomized controlled experiment pilot study?**

Social work graduate students' reasons for not participating in the original MBSR study were measured with a cross-sectional, self-administered, anonymous survey consisting of 23 items in two sections. Section One included a 10-item checklist identifying reasons for not participating. Participants received a score of 1 for each item checked (Range = 0 to 10). Section Two contained 13 items measuring socio-demographic data and meditation information that was included in the pretest instrument used for the MBSR and study skills component. Univariate statistics were used to summarize data.

Respondents were asked to check off on the survey those reasons that they chose not to participate in the original MBSR pilot study. Respondents' numbers of reasons ranged from 0 (n=3; 3.6%) to 7 (n=1; 1.8%). Similar proportions of students cited two (n = 15; 26.8%) or three (n = 16; 28.6%) reasons for not participating. Overall, 80.4% of students reported 3 or

Graph #3

Time-Series Data Showing Weekly Mean Meditation Times and Mean PSM-9 Scores for Participants in the MBSR and Study Skills Intervention

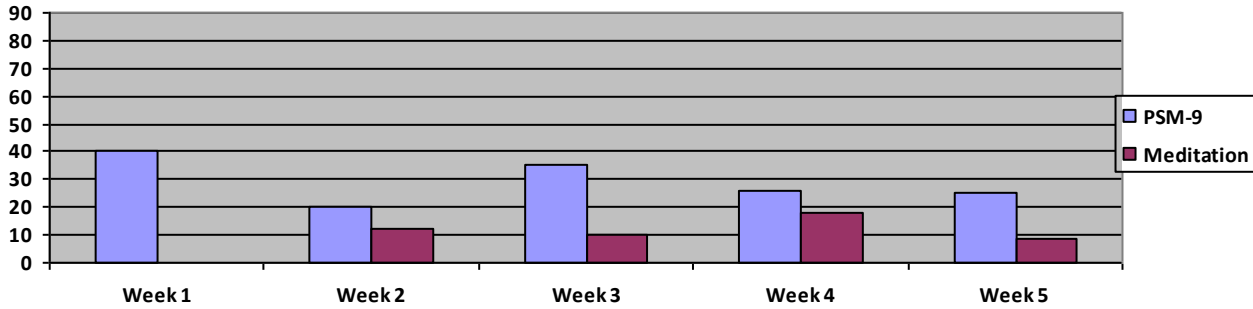
A Pretest

B Intervention

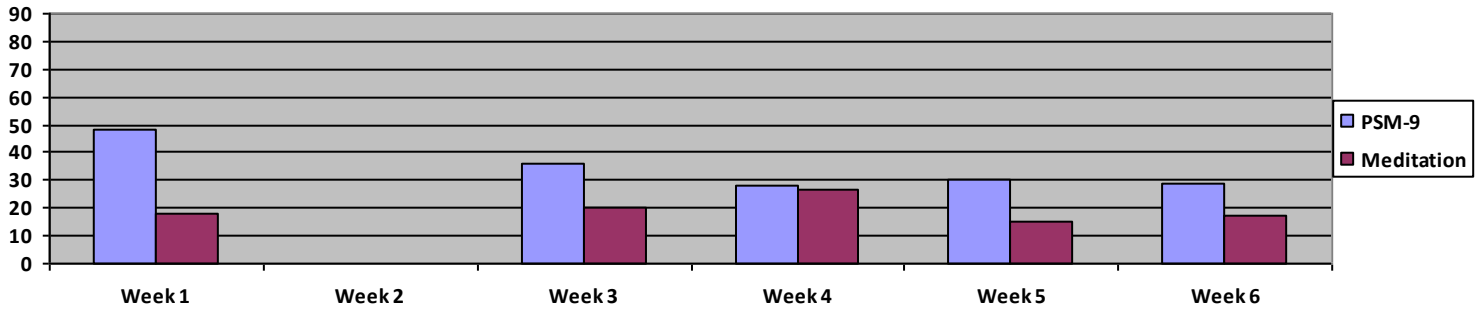
Weekly Mean Meditation Time

PSM-9 Weekly Scores

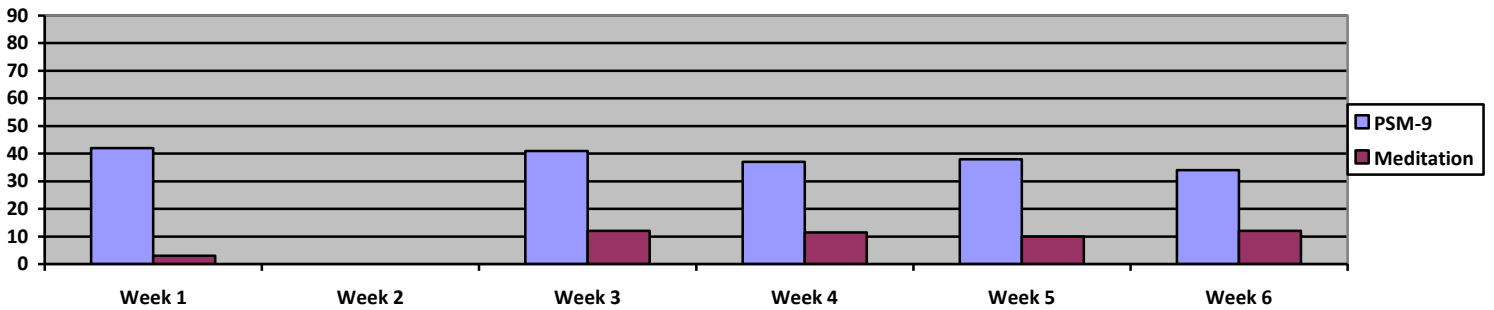
Group 1 Subject 2



Group 2 Subject 3



Group 2 Subject 4



fewer reasons for not participating in the original MBSR and study skills investigation, with a mean of 2.53 (SD = 1.42) reasons. Respondents were asked to indicate whether or not they could commit to the 4-week MBSR intervention. As seen in Table 6, the largest proportion, nearly 68% (n = 38), responded that they could not commit. Approximately two-thirds (64.3%) of respondents indicated that they could not attend the one-hour MBSR training and study skills intervention offered to students at the LSU School of Social Work. Over one-third of respondents (n = 22) reported that they could not commit to 5 days per week of meditation practice. A similar proportion either was not interested in the study skills intervention (n = 11; 19.6%) or did not want to participate in the study (n = 10; 17.9%). Almost 15% (n = 8) reported that they already had good study skills, and 5 respondents (8.9%) said they already knew how to meditate. The fewest number of respondents (n = 4; 7.1%) indicated that they did not know about the study. However, when asked whether or not they were familiar with the study, no respondents checked this item, indicating that all students responding to the survey were familiar with the original MBSR study previously offered to social work students (See Table 6).

**Question #10:** Is there an association between reasons for not participating in the pilot study and students' stressors?

Students' stressors were dichotomized prior to bivariate analysis and included female gender (0=male; 1=female), low annual income (0 = less than \$20,000; 1 = \$20,000 or more), being married (0 = unmarried; 1 = married), ethnicity (1 = Non-Hispanic White; 0 = Non-White), children in the home (0 = no; 1 = yes), employment (0 = no; 1 = yes), and enrollment in field placement (0 = no; 1 = yes). A Cramer's V table was constructed to examine the associations between students' reasons for not participating in the study and stressors (See Table 7). Cramer's V was computed to determine whether there were significant associations

Table 6

Reasons Cited by Social Work Graduate Students for Not Participating In Original MBSR and Study Skills Investigation (N = 56)

Items	Number of respondents	%
Could not commit to 4 weeks	38	68%
Could not attend one hour	36	64.3%
Could not commit 5 days	22	39.3%
Did not want to participate	11	19.6%
Not interested in study skills	11	19.6%
Not interested in the study	10	17.9%
Already have good study skills	8	14.3%
Already know how to meditate	5	8.9%
Did not know about the study	4	7.1%
Not familiar with the study	0	0

Table 7

Cramer's V Values for Associations Between Reasons for Not Participating and Stressors

(N = 56)

Reasons	Sex	Ethnicity	Income	Field	Children	Marital	Employment
Not interested In Study	.073	.021	.198	.438**	.114	.118	.036
Not want to Participate	.061	.021	.154	.287*	.208	.118	.134
Not Commit 4 weeks	.170	.123	.240	.100	.237	.178	.138
Not commit Daily	.021	.072	.326*	.040	.306*	.154	.037
Not attend hr	.083	.172	.087	.014	.007	.172	.166
Have good Study skills	.024	.032	.024	.136	.073	.180	.010

Note: Four items were eliminated from bivariate analysis due to insufficient variability.

\* p < .05    \*\*p < .01

between students' reasons for not participating in the original MBSR and study skills investigation and stressors. When both the independent and dependent variables are at the nominal level of measurement, Cramer's V is one common measure of association used (Rubin & Babbie, 2001). However, small values of Cramer's V often correspond to large proportional differences between groups, so the proximity of V to 0 can be misleading. Therefore, Cramer's V should be a secondary index used with chi square. Four items were eliminated from statistical analysis due to insufficient variability.

As seen in Table 7, enrollment in field internship was significantly associated with not being interested in the study ( $V = .438$ ;  $p < .01$ ). A significant association also emerged between enrollment in field internship and not wanting to participate in the study ( $V = .287$ ;  $p < .05$ ). Thus, students enrolled in field were less likely to be interested in the study and were less likely to want to participate.

Table 7 shows that having dependent children in the home significantly associated with not being able to commit daily to the study ( $V = .306$ ;  $p < .05$ ), indicating that those with children were less likely to be able to make a daily commitment to meditating.

Having low annual income (below \$20,000) was associated with not being able to commit daily to the study ( $V = .326$ ;  $p < .05$ ), indicating that those students with low income felt they could not commit to the study 10 minutes per day, 5 days per week.

## CHAPTER 5: DISCUSSION

### Overview

This chapter begins with a summary description of the objectives and research design and methods used in the study. A discussion of the findings follows, along with an examination of the limitations of the study, conclusions about findings, and recommendations for further research.

### Description of the Study

This multi-component study examined the impact of a Mindfulness-Based Stress Reduction Intervention (MBSR) on the appraised stress levels of MSW students enrolled in the Louisiana State University School of Social Work. In addition, the study examined changes in self-regulated learning skills from pretest to posttest among study participants and described survey respondents' reasons for not participating in the original MBSR randomized experimental pilot study offered prior to the current study. The purpose of this chapter is threefold: (1) to discuss the major results from each component of the study in the context of the literature; (2) to describe the limitations of the research; and (3) to identify the implications for social work practice, education, and research.

Prior to the current study, an investigation was proposed to measure the effectiveness of MBSR on perceived stress and study skills of social work graduate students. The original investigation used a pretest-posttest control group design. The recruitment process began in April and May of 2008, and MSW and Ph.D. students were informed about the study through mass e-mails and flyers distributed throughout the LSU School of Social Work. Nearly 80 students signed up for the study. In late August of 2008 Hurricane Gustav and the ensuing displacement of students and closure of the LSU campus postponed the study for over one month. During the month of September, students were once again informed of the study

through flyers and e-mails. Only 30 students signed up for the study following Hurricane Gustav; however, because of time constraints it was determined that a multi-component approach would be implemented incorporating the following: (1) a study exploring the impact of MBSR on the appraised stress and adaptation to stress of MSW graduate students through a pretest-posttest group design with time-series posttest data; (2) a pretest-posttest group design examining changes in a third dependent variable, self-regulated learning skills; and (3) a cross-sectional survey exploring students' self-reported reasons for not participating in the original MBSR randomized control group investigation.

### Demographics

Demographic characteristics of the total population of 180 MSW students enrolled in the Louisiana School of Social Work during the academic calendar year 2008-2009 during the time of the multi-component study were as follows: 87% female, 72% Non-Hispanic White, 81% full-time students, and 73% registered for field education. All participants in the intervention study (N = 12) were female and the majority were Non-Hispanic White (92%). All were enrolled in field education; thus, the profile of the participants was dissimilar to the total student population in that males and those not enrolled in field education were not represented. Non-white students were under-represented. Participants in the cross-sectional survey were more representative of the total student population, with respect to gender and race, with 84% female and 77% Non-Hispanic White. Survey participants were over-represented in terms of enrollment in field education, at approximately 89%. Although the sample sizes for both components were small, there appeared to be a bias with respect to field education. Demographic results suggested that the participants in both the intervention study and the cross-sectional survey did not represent a notable proportion of MSW students who were not enrolled in field internship and therefore may have been less engaged with the

program. Studies have shown that field education is a primary source of satisfaction in social work training (Fortune et al., 1985; Giddings, Vodde, & Cleveland, 2003). On the other hand, field education is an added stressor in social work graduate education (Pottage & Huxley, 1996). It is possible that those enrolled in field internship were more engaged with the school itself and were more likely to participate in research undertaken on campus than were those who were less engaged with the MSW program.

#### Component One: MBSR and Stress

In spite of numerous and systematic e-mail reminders and posted flyers, only 12 volunteers completed the pretest for the self-regulated learning skills intervention and the MBSR instruction on October 16, 2008. These 12 students were assigned to one of two groups. Subjects in Group #1 began the MBSR intervention one week following pretest, and subjects in Group #2 began the MBSR intervention two weeks following pretest. Time series data plotted for Groups #1 and #2 indicated slight decreases, on average, in scores measuring negative adaptation to stress as meditation times increased, on average, in spite of extreme scores in both groups. Visual inspection of the graphs indicates that decreases in negative adaptation to stress coincided with the introduction of the meditation intervention.

The sample for the integrated study was small ( $N = 12$ ) and made up entirely of female students who may have been more attracted to and more willing to participate in a stress reduction intervention. There is the possibility that females experienced stressors in their lives; however this study cannot confirm this latter point. Of course, the social work graduate student population is also made up of more women than men. Nevertheless, a recent study on graduate student stress has shown that women are more likely than men to experience stress while they attempt to complete their studies, mostly as a result of role strain. (Mallinckrodt & Leong, 2001). Home (1997) studied stress, role strain, role demands, and social support

among social work, nursing, and education students and this author found that female students experience higher levels of stress associated with concurrent employment and family responsibilities than do their male counterparts. In addition, Home found that lower income levels for females were associated with higher levels of stress. The APA survey (2007) showed that women generally experience more life stress than men as a result of attempts to fulfill multiple roles (i.e., wife, mother, employee, homemaker, etc.) while earning less than men. Thus, the influence of gender on stress and participation in stress reduction interventions warrants additional attention in future research.

Despite the small sample size findings from the intervention study identified potential stressors, showed moderately high levels of appraised stressful situations, and indicated negative adaptations to stress. These latter results are consistent with previous studies examining stress among graduate students enrolled in clinical disciplines (e.g., psychology and marriage and family therapy), which assert that students experience elevated stress as a result of the clinical training components added to regular graduate coursework (Polson & Nida, 1998). The APA survey (2007) also found that individuals working in education and health care services experienced higher levels of stress than did workers in other professions, a finding pertinent to social work students and practitioners.

Tobin and Carson (1994) identified five separate categories of stress identified by social workers (i.e., stress associated with direct practice with particular client populations; coping and stress management associated with direct practice; theoretical perspectives of stress; social worker burnout; and empirical studies of client stress), yet none of these latter categories specifically apply to social work graduate students' stress, per se. Dziegielewski et al. (2004) found that social work students who participated in a 45-minute seminar on stress reduction reported significantly lower levels of stress and apprehension than students who did

not participate. However, it should be noted that this latter study was conducted with a captive audience of undergraduate students who may have been more willing to participate in a one-time stress reduction study than the intervention offered in the current study, which required a 10-minute self-administered stress reduction method on a daily basis over time.

Two recent uncontrolled studies of mindfulness meditation with social work students showed positive results. Birnbaum's (2005) qualitative study with 50 undergraduate social work students showed that four mindfulness-meditation sessions administered three weeks apart as part of an introductory skills class were associated with an increase in students' self-reported self-observation skills. Because this study was conducted with an actual class, there was no attrition. A second qualitative study by Birnbaum and Birnbaum (2008) sought to enhance undergraduate social work students' self-awareness, self-trust, social consciousness, compassion, spirituality, and acceptance of self using mindfulness meditation, intuitive writing, and group sharing. Results suggested that students experienced self-reported improvements across all areas examined and, in addition, students asserted that these enhanced skills would likely strengthen their future work with clients.

#### Comparison of Daily Meditation Times Between Groups

Time-series data in Graph #1 compare Groups #1 and #2 for daily meditation time during the 4-week intervention phase. Group #1 was composed of two subjects, one of which had an extreme pretest score of daily meditation time (i.e., 45 minutes). Group #2 was composed of four subjects, one of which had an extreme pretest score of daily meditation time (i.e., 35 minutes).

#### Comparison of PSM-9 Scores Between Groups

Time-series data in Graph #2 compare weekly PSM-9 scores between Groups #1 and #2. As seen for Group #1, only one subject completed the weekly PSM-9 measures during the

intervention phase. A reduction is seen between the PSM-9 scores of 40 at pretest and the PSM-9 score of 20 following the first week of meditation. This latter score corresponds to final exam week for MSW students; however, it is beyond the scope of this study to ascertain whether final exams were associated with changes to students' negative adaptations to stress. In spite of this slight increase, PSM-9 scores on average during the intervention phase were reduced from pretest scores. Two subjects in Group #2 completed weekly PSM-9 measures, and the pretest score shows a decrease in PSM-9 scores during the intervention phase. However, the small sample and lack of time-series pretest data prevent drawing conclusions about changes between pretest and posttest.

#### Comparison of Mean Meditation Times and Weekly PSM-9 Scores Between Groups

Graph #3 compares the weekly mean meditation times and weekly PSM-9 scores for Subjects #1, #3, and #4. Subject #1 shows an increase in meditation time from 0 at pretest to 12 minutes after the first week of intervention. Subject #1 also shows a decrease of 20 points in the PSM-9 weekly score from 40 at pretest to 20 at the end of the first week of the MBSR intervention. Subject #3 shows a slight increase in meditation time from pretest to the end of the first week of the MBSR intervention, with a corresponding decrease in the PSM-9 score. While there is slight variation in weekly meditation times for Subject #3, PSM-9 scores remain lower during the intervention phase than at pretest. Subject #4 shows almost no variation between pretest meditation time and intervention meditation time. Additionally, there is almost no variation between pretest PSM-9 score and intervention PSM-9 scores, indicating that no conclusions can be drawn from pretest to intervention for Subject #4.

### Limitations of Component One (MBSR and Stress)

Limitations exist in the intervention study exploring the impact of MBSR on graduate students' negative adaptation to stress. Because of low sample size, the original pretest posttest control group design could not be implemented. Time-series posttest data were collected and plotted to illustrate the association between meditation and adaptation to stress. However, the small sample and lack of time-series pretest data prevent drawing conclusions about changes from pretest to posttest.

The use of a single data point at pretest presents another limitation. The absence of variable baseline data and few data points during the intervention phase precluded the use of sigma units, an analytic approach, for assessing whether between-phase change is significant (Nugent et al., 2001). An additional limitation of extreme scores on a single pretest data point (for Group #1 and Group #2) exerted influence on the mean meditation time at pretest. The use of self-report measures for the daily meditation logs may have influenced measurement reliability (Nugent et al.). In addition, the lack of supervision/follow-up during the intervention phase may have influenced the accuracy and reliability of the data measured with the weekly PSM-9 scores and daily meditation logs. Missing data were also a problem, as some subjects did not submit weekly PSM-9 scores. All of these latter limitation influence the extent to which conclusions can be drawn and then generalized.

### Component Two: Self-Regulated Learning Skills

Component Two used a pretest posttest group design to evaluate students' self-regulated learning skills following the MBSR and self-regulated learning skills intervention. A total of 3 subjects actually submitted posttest measures following the intervention phase. Findings indicated moderately high levels of self-regulated learning skills with only a modest increase in MSLQ subscales at posttest. Because of the small sample size, no conclusions could be

drawn from results. Graduate social work students might already have adequate study skills, as they have been through a rigorous admissions process prior to their acceptance into the MSW program. Additional study is warranted.

### Component Three: Cross-Sectional Survey

Component Three was an anonymous cross-sectional survey administered to graduate social work students (N = 56) who did not participate in the original MBSR and study skills pretest posttest control group investigation. Results suggest that the most prevalent reasons for students' not participating in the original study were that they could not commit to the four-week intervention, they could not attend the one-hour MBSR and study skills instruction session, and they could not commit to meditation 5 days per week. All of these cited reasons indicate that students simply did not have time to participate in the study. Enrollment in field education was associated with not having an interest in the study and with not wanting to participate in the study. Having low income (below \$20,000) was associated with not being able to commit daily to meditation. Also, having children in the home was associated with not being able to commit daily to the study. Thus, enrollment in field education, having low income, and having children in the home were associated with a reduction in graduate social work students' interest in the study, with their participation in the study, and with their ability to commit on a daily basis to meditation. Also, students indicated that they could not schedule the time needed to attend the instructional pretest session, nor could they schedule the time needed to meditate for four weeks. Most subjects in the study were female, single, employed, and enrolled in field education. The finding of previous studies indicating that female graduate students experienced greater levels of stress due to multiple roles are consistent with female graduate students' participation in the current study (i.e., all subjects were enrolled in field internship and most were employed) (Home, 1997; Mallinckrodt &

Leong, 2001). However, it is possible that because of social work graduate students' multiple roles, using personal time to participate in the MBSR intervention may have been a disincentive. Other studies addressing social work students' stress levels, such as Dziegielewski et al.'s, met during class time for a 45-minute stress reduction seminar and were not required to use personal time for the intervention. This was also true of Birnbaum (2005), who used mindfulness meditation to help students develop self-observation skills as part of their clinical skill-building repertoire during class time

Other limitations exist with the Survey component of the current study. The survey instrument was researcher-developed and was not tested for reliability. Primarily, this survey component was limited because of the small sample size ( $N = 56$ ). A power analysis indicated that a sample of 80 subjects was needed for appropriate statistical analysis. No multivariate statistics could be implemented, so interrelationships among variables of interest could not be explained. Another limitation is related to representativeness, similar to that in the intervention study. Cross-sectional studies conducted with representative samples can have good external validity; however, the use of a convenience sample and the small sample size prohibits generalization to a more diverse population of social work students.

Self-report presents another limitation to this component. According to Rubin and Babbie, (2001), self-reports of recalled past actions or of hypothetical action can compromise measurement reliability and validity. It is possible that in the current study, respondents may not have given serious thought to their reasons for not participating in the experimental study until actually completing the survey.

Self-report data also increases the risk of bias if subjects respond to survey questions in order to convey a desirable impression (Rubin & Babbie, 2001). The survey instrument

included a checklist of students' reasons for not participating in the MBSR and self-regulated learning skills investigation and did not have established reliability.

Finally, although the survey yielded practical results about students' reasons for not participating in the MBSR study, the findings do not substantially augment the results of the intervention study, which was the main focus of the current research project.

### Implications for Education, Practice, and Research

#### Social Work Education

Students should be educated about the negative effects of stress in their own lives as graduate students enrolled in a clinical program of study, as well as in their multiple roles of student, employee, intimate partner, and parent. However, if stress reduction skills are to be offered to social work graduate students, it would be important to test whether a better response rate could be achieved by offering programs during class times, by instructors known to the students, as was done in other studies (e.g., Birnbaum, 2005; Dziegielewski et al., 2004).

Probably the first indication that the profession of social work is becoming more receptive to mindfulness meditation as a mainstream practice occurred in December 2006 in Hong Kong for the International Conference on Social Work in Health and Mental Health. Never before had the conference included such numerous presentations on mind-body techniques, all of which utilized varied states of consciousness, such as Tai-Chi, yoga, and mindfulness meditation. Prior to this conference, such papers were relegated to conferences dedicated narrowly to social work and spirituality. The mainstream presence of research on mindfulness meditation and other mind/body techniques implies an increase in the acceptance and application of these methods by social workers.

### Social Work Practice

Professional social workers must keep apprised of and maintain skills associated with traditional direct practice methods while learning new methods which have been demonstrated to be effective with client populations. The new cognitive-behavioral therapies, or “third force” change therapies, have added mindfulness-based experiential and indirect change strategies to the direct strategies utilized in traditional cognitive-behavioral approaches and, in so doing, have considerably broadened the focus of change (Hayes, Follette, & Linehan, 2004). The low response rate in the present study is at odds with this practice trend. Dialectical Behavior Therapy and Acceptance and Commitment Therapy are two of the third force therapies incorporating mindfulness-meditation as a fundamental component of group skills training designed to enhance interpersonal effectiveness, emotional modulation, and distress tolerance by helping clients to reduce stress and anxiety levels, thereby supporting increased impulse control (Hayes, 2005; Linehan, 1993a; 1993b).

### Social Work Research

The application of mindfulness meditation to social work practice and education is still in its infancy. Examination of the social science literature reveals that most research related to mindfulness practices has been published in the fields of psychology and medicine (Miller, Fletcher, & Kabat-Zinn, 1997; Roemer & Orsillo, 2002; Speca, Carlson, Goodey, & Angen, 2000). In considering the use of mindfulness meditation in social work practice and education, it is important to consider the low response rate of the current study, which suggests a need to develop knowledge about social work student stress and its contributors, as well as what students do and are interested in doing to reduce stress. The development of a survey, which could be administered to large numbers of social work students across different graduate and undergraduate social work programs, could gather important information about

students' primary stressors, coping skills for dealing with stress while in graduate school, and students' needs for developing more effective ways of managing stress in their lives. Such survey findings could yield important information for developing further research studies exploring appropriate stress reduction interventions for students.

### Conclusion

This multi-component study was designed to measure the impact of a Mindfulness-Based Stress Reduction intervention (MBSR) on the appraised stress and adaptation to stress of MSW students enrolled in the Louisiana State University School of Social Work. In addition, the study examined self-regulated learning skills from pretest to posttest and, through a self-administered survey, described students' reasons for not participating in the MBSR offered prior to the current study.

In spite of the difficulties associated with procuring a large and more representative sample of MSW students for this study (i.e., loss of time and attrition due to Hurricane Gustav), the study did go forward. A pretest posttest group design with posttest time-series data to evaluate students' meditation times was implemented, along with a pretest posttest group design to evaluate changes in self-regulated learning skills. Finally, students completed an anonymous self-administered survey to determine their reasons for not participating in the original experimental study.

Findings for Component One showed an association between the PSS (appraised stress) and PSM-9 (adaptation to stress) scores. Visual inspection of time-series data for Subjects #1 and #4 suggested that decreases in negative adaptation to stress seemed to coincide with increases in meditation time during the intervention period.

Among survey respondents (Component Three), the most prevalent reasons for students' not participating in the original MBSR and self-regulated learning skills investigation

included not being able to commit to four weeks of meditation, not being able to attend the one-hour self-regulated learning skills intervention and meditation instruction, and not being able to commit to meditation five days per week. Enrollment in field internship was associated with not being interested in the study and with not wanting to participate in the study. This latter finding suggests a complex relationship between stress and enrollment in field internship, which can best be examined with multivariate approaches in future research. Having children in the home was associated with not being able to commit to meditation five days per week, suggesting that children at home made commitment to a meditation schedule unlikely. Overall, students' reasons for not participating in the original MBSR and study skills investigation indicated that time constraints were a factor.

#### Recommendations and Future Research

The small sample size, attrition rate, and students' reasons for not participating in the original study would seem to indicate that the intervention study, in its present form, should not be replicated. In addition, findings of the current study would suggest that attempting to implement the original MBSR and self-regulated learning skills control group study would be ill-advised because of the difficulties in obtaining an appropriate sample size. A mixed methods design could be implemented using a multiple-baseline design with a larger sample and longer baseline and intervention phases, as well as a qualitative component, to help flesh out whether a relationship exists between meditation and students' adaptation to stress. The qualitative components, such as interviews and intuitive journal writing, could lend depth to the experiences of subjects as they implement mindfulness meditation as a stress reduction technique. These qualitative strategies would help to identify specific stressors reported by students and would also indicate students' deficits in stress reduction skills. Knowledge gained from students' disclosures might help to inform the development of future studies with

this population. However, to determine whether mindfulness meditation is effective as a stress reduction intervention for graduate social work students, controlled research, as was first proposed would have to be conducted.

## REFERENCES

- Ader, R. (1980). Psychosomatic and psychoimmunological research. *Psychosomatic Medicine*, 42, 307-321.
- Ader, R. (1981). *Psychoneuroimmunology*. New York: Academic Press.
- Adler, A. (1963). *The practice and theory of individual psychology*. Patterson, NJ: Littlefield.
- Ai, A. L., Evans-Campbell, T., Santangelo, L. K., & Cascio, T. (2006). The traumatic impact of the September 11, 2001 terrorist attacks and the potential protection of optimism. *Journal of Interpersonal Violence*, 21 (5), 689-700.
- Aldwin, C. (2007). *Stress, coping, and development (2<sup>nd</sup> ed.)*. New York: The Guilford Press.
- Aldwin, C. & Gilmer, D. (2004). *Health, illness, and optimal aging: Biological and psychosocial perspectives*. Thousand Oaks, CA: Sage.
- Aldwin, C. & Stokols, D. (1988). The effects of environmental change on individuals and groups: Some neglected issues in stress research. *Journal of Environmental Psychology*, 8, 57-75.
- Altman, I. & Wohlwill, J. G. (Eds.). (1977). *Human behavior and environment: Advances in theory and research*. New York: Plenum.
- American Psychological Association (2007). *Stress in America*.
- Aponte, H. (1994). How personal can training get? *Journal of Marital and Family Therapy*, 18, 269-282.
- Appelhaus, B. M. & Schmeck, R. R. (2002). Learning styles and approach versus avoidant coping during academic exam preparation. *College Student Journal*, 36 (1), 1-5.
- Arnsten, A. (1998). The biology of being frazzled. *Science*, 280 (5370), 1711-1712.
- Austin, J. H. (1998). *Zen and the brain: Toward an understanding of meditation and consciousness*. Cambridge, MA: MIT Press.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44, 1179-1184.

- Bandura, A. (1991). Self-regulation and motivation through anticipatory and self-reactive mechanisms. In R. A. Dienstbier (Ed.), *Perspectives on emotion: Nebraska Symposium on Motivation, Vol. 38*, (pp. 69-164). Lincoln, NE: University of Nebraska Press.
- Bankier, B., Aigner, M., & Bach, M. (2001). Alexithymia in DSM-IV disorder. *Psychosomatics, 42*, 235-240.
- Barlow, D. H. (1988). *Anxiety and its disorders*. New York: Guilford Press.
- Barlow, D. H. & Hersen, M. (1984). *Single-case experimental designs*. New York: Pergamon Press.
- Baum, N. (2004). Social work students cope with terror. *Clinical Social Work Journal, 32* (4), 395-413.
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. New York: International Universities Press.
- Beck, A. T. (1988). *Love is never enough*. New York: Harper and Row.
- Beck, A. T. (1995). *Cognitive therapy: Basics and beyond*. New York: Guilford Press.
- Benjamin, M., McKeachie, W. J., Lin, Y. G., & Hollinger, D. P. (1981). Test anxiety: Deficits in information processing. *Journal of Educational Psychology, 73*, 816-824.
- Benson, H. (1975). *The relaxation response*. New York: Morrow.
- Biderman, A. D. & Zimmer, H. (Eds.). *The manipulation of human behavior*. New York: Wiley.
- Birnbaum, L. (2005). Connecting to inner guidance: Mindfulness meditation and transformation of professional self-concept in social work students. *Critical Social Work, 6* (2), <http://www.uwindsor.ca/units/socialwork/critical.com>.
- Birnbaum, L. (2008). The use of mindfulness training to create an “accompanying place” for social work students. *Social Work Education, 27* (8), 837-852.
- Birnbaum, L. & Birnbaum, A. (2008). Mindful social work: From theory to practice. *Journal of Religion and Spirituality in Social Work: Social Thought, 27* (1-2), 87-104.
- Bjorntop, P., Holm, G., & Rosmond, R. (1999). Hypothalamic arousal, insulin resistance and type 2 diabetes mellitus. *Diabetic Medicine, 16*, 373-383
- Bloom, M., Fischer, J., & Orme, J. (1999). *Evaluating practice: Guidelines for the accountable professional (3<sup>rd</sup> ed)*. Boston: Allyn & Bacon.
- Boccio, F. (2004). *Mindfulness in yoga*. Somerville, MA: Wisdom Publications.

Bol, L., Warkentin, R. W., Nunnery, J. A., & O'Connell, A. A. (1999). College students' study activities and their relationship to study context, reference course, and achievement. *College Student Journal*, 33, 608-622.

Bourne, P. G. (Ed.). (1969). *The psychology and physiology of stress: With references to special studies of the Vietnam War*. New York: Academic Press.

Bowlby, J. (1961). Processes of mourning. *International Journal of Psychoanalysis*, 42, 317-340.

Bremner, J. D. (1999). Does stress damage the brain? *Biological psychiatry*, 45, 797-805.

Bremner, J. D. & Narayan, M. (1998). The effects of stress on memory and the hippocampus throughout the life cycle: Implications for childhood and aging. *Development and psychopathology*, 4, 871-885.

Brown, D. & Engler, J. (1984). A Rorschach study of the stages of mindfulness meditation. In D. Shapiro & R. N. Walsh (Eds.), *Meditation: Classic and contemporary perspectives* (pp. 232-262). New York: Aldine.

Cacioppo, J. T. (1994). Social neuroscience: autonomic, neuroendocrine, and immune responses to stress. *Psychophysiology*, 31, 113-128.

Calicchia, J. A. & Graham, L. B. (2006). Assessing the relationship between spirituality, life stressors, and social resources: Buffers of stress in graduate students. *North American Journal of Psychology*, 8 (2), 307-320.

Caspi, A., Sugden, K., Moffitt, T., Taylor, A., Craig, I., Harrington, H., McClay, J., Mill, J., Martin, J., Braithwaite, A., & Poulton, R. (2003). Influence of life stress on depression: Moderation by a polymorphism in the 5-HTT gene. *Science*, 301, 386-389.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2<sup>nd</sup> ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Cohen, S. (1994). Psychosocial influences on immunity and infectious disease in humans. In R. Glaser & J. K. Kiecolt-Glaser (Eds.), *Handbook of human stress and immunity* (pp. 301-319). San Diego: Academic Press.

Cohen, S., Hamrick, N., Rodriguez, M. S., Feldman, P. J., Robin, B. S., & Manuck, S. B. (2002). Reactivity and vulnerability to stress-associated risk for upper-respiratory illness. *Psychosomatic Medicine*, 64, 302-310.

Cohen, S., Kamark, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385-396.

Cole, S. W., Kemeny, M. E., Weitzman, O. B., Schoen, M., & Anton, P. A. (1999). Socially inhibited individuals show heightened DTH response during intense social engagement. *Brain Behavior and Immunity*, 13, 187-200.

Coon, H. M. & Kemmelmeier, M. (2001). Cultural orientations in the United States: Examining differences among ethnic groups. *Journal of Cross-Cultural Psychology*, 32, 348-364.

Corno, L. (1986). The metacognitive control components of self-regulated learning. *Contemporary Educational Psychology*, 11, 333-346.

Cunningham, M. (2003). Impact of trauma work on social work clinicians: Empirical findings. *Social Work*, 48 (4), 451-459.

Dass, R. (1971). *Be here now*. New York: Crown Publishing.

Davidson, R. J. (2003). Affective neuroscience and psychophysiology: Toward a synthesis. *Psychophysiology*, 40 (5), 655-665.

Davidson, R. J. & Kabat-Zinn, J. (2004). Response to a letter by J. Smith. *Psychosomatic Medicine*, 66, 149-152.

Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S., Urbanowski, F., Harrington, A., Bonus, K., & Sheridan, J. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine*, 65, 564-570.

Deckro, G. R., Ballinger, K. M., Hoyt, M., Wilcher, M., Dusek, J., Myers, P., Greenberg, B., Rosenthal, D. S., & Benson, H. (2002). The evaluation of a mind/body intervention to reduce psychological distress and perceived stress in college students. *Journal of American College Health*, 50 (6), 281-287.

Dimsdale, J. E. (1974). The coping behavior of Nazi concentration camp survivors. *American Journal of Psychiatry*, 131, 792-797.

Donaldson, J. & Graham, S. (1999). A model of college outcomes for adults. *Adult Education Quarterly*, 50, 24-40.

Dorff, T. (1998). A needs assessment of the stressors and coping resources of graduate students in clinical psychology. (Doctoral dissertation, Rutgers, the State University of New Jersey, 1998). *Dissertation Abstracts International*, 58 (11-B), 6231.

Duncan, T. G. & McKeachie, W. J. (2005). The making of the Motivated Strategies for Learning Questionnaire. *Educational Psychologist*, 40, 117-128.

Dyk, P. A. H. (1987). Graduate student management of family and academic roles. *Family Relations*, 36, 329-332.

Dziegielewska, S., Roest-Marti, S., & Turnage, B. (2004). Addressing stress with social work students: A controlled evaluation. *Journal of Social Work Education*, 40 (1), 105-119.

Edwards, K. J., Hershberger, P. J., Russell, R. K., & Markert, R. J. (2001). Stress, negative social exchange, and health symptoms in university students. *Journal of American College Health, 50* (2), 75-79.

Ellis, A. (1962). *Reason and emotion in psychotherapy*. New York: Lyle Stuart.

Ellis, A. & Grieger, R. (Eds.) (1977). *Handbook of rational-emotive therapy*. New York: Springer.

Epstein, M. (1995). *Thoughts without a thinker*. New York: Basic Books.

Epstein, M. (1998). *Going to pieces without falling apart*. New York: Broadway Press.

Epstein, M. (2001). *Going on being: Buddhism and the way of change, a positive psychology for the West*. New York: Broadway Books.

Erikson, E. H. (1963). *Childhood and society* (2<sup>nd</sup> ed.). New York: Norton.

Flor, H. (2001). Psychophysiological assessment of a patient with chronic pain. In D. C. Turk & R. Melzack (Eds.), *Handbook of pain assessment* (2<sup>nd</sup> ed.) (pp. 76-96). New York: Guilford Press.

Fortune, A. E. (1987). Multiple roles, stress, and well-being among MSW students. *Journal of social work education, 23* (3), 81-90.

Fortune, A. E., Feathers, C., Rook, S. R., Scrimenti, R. M., Smollen, P., Stemerman, B., & Tucker, E. L. (1985). Student satisfaction with field placement. *Journal of Social Work Education, 21* (3), 92-104.

Fortune, A. E., McCarthy, M., & Abramson, J. S. (2001). Student learning processes in field education: Relationship of learning activities to quality of field instruction, satisfaction, and performance among MSW students. *Journal of Social Work Education, 37* (1), 111-124.

French, D., Senior, V., Weinman, J., & Marteau, T. (2001). Causal attributions for heart disease: A systematic review. *Psychology and Health, 16*, 77-98.

Freud, S. (1961). Civilization and its discontents. In J. Strachey (Ed. & Trans.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 18). London: Hogarth Press. (original work published in 1930).

Friedman, B. H. & Thayer, J. F. (1998). Anxiety and autonomic flexibility: A cardiovascular approach. *Biological Psychology, 47*, 243-263.

Fromm, E., Suzuki, D. T., & De Martino, R. (1960). *Zen Buddhism and psychoanalysis*. New York: Harper & Row.

Garssen, B. & Goodkin, K. (1999). On the role of immunological factors as mediators between psychosocial factors and cancer progression. *Psychiatry Research, 85*, 51-61.

Germain, C. B. (1973). An ecological perspective in casework practice. *Social Casework*, 54, 323-330.

Germain, C. B. (1984). *Social work practice in health care*. New York: Free Press.

Germain, C. B. & Bloom, M. (1999). *Human behavior and the social environment: An ecological view*. New York: Columbia University Press.

Germain, C. B. & Gitterman, A. (1996). *The life model of social work practice: Advances in theory and practice*. New York: Columbia University Press.

Germer, C. K., Siegel, R. D. & Fulton, P. R. (Eds.). (2005). *Mindfulness and Psychotherapy*. New York: Guilford Press.

Giddings, M. M., Vodde, R., & Cleveland, P. (2003). Examining student-field instructor problems in practicum: Beyond student satisfaction measures. *The Clinical Supervisor*, 22(2), 191-214.

Girves, J. & Yemmerus, V. (1988). Developing models of graduate students degree progress. *The Journal of Higher Education*, 59, 163-189.

Gitterman, A. & Germain, C. B. (1976). Social work practice: A life model. *Social Science Review*, 50 (December), 601-610.

Glaser, R., Rice, J., Sheridan, J., Fertal, R., Stout, J., Speicher, C., Pinsky, D., Kotur, M., Post, A., & Beck, M. (1987). Stress-related immune suppression: Health implications. *Brain, Behavior, and Immunity*, 1, 7-20.

Glasser, W. (1965). *Reality therapy*. New York: Harper and Row.

Godbey, K. L. & Courage, M. M. (1994). Stress-management program: Intervention in nursing student performance anxiety. *Archives of Psychiatric Nursing*, 8 (3), 190-199.

Gold, J. (2006). Profiling marital satisfaction among graduate students: An analysis of the perceptions of masters and doctoral students. *Contemporary Family Therapy*, 28, 485-495.

Goldman, C. S. & Wong, E. H. (1997). Stress and the college student. *Education*, 117, 604-610.

Goleman, D. (2003). *Destructive emotions: How can we overcome them?* New York: Bantam Dell.

Graham, S. & Donaldson, J. (1996). Assessing the personal growth for adults enrolled in higher education. *Journal of Continuing Higher Education*, 44, 7-22.

Grinker, R. R. & Spiegel, J. P. (1945). *Men under stress*. New York: McGraw-Hill.

Grof, S. (1985). *Beyond the brain: Birth, death, and transcendence in psychotherapy*. Albany, NY: State University of New York Press.

Grof, S. & Grof, C. (Eds.). (1989). *Spiritual emergency: When personal transformation becomes a crisis*. Los Angeles, CA: Jeremy P. Tarcher, Inc.

Hadjioannou, X., Shelton, N., Fu, D., & Dhanarattigannou, J. (2007). The road to a doctoral degree: Co-travelers through a perilous passage. *College Student Journal*, 41 (1), 160-177.

Hanh, T. N. (1976). *The miracle of mindfulness*. Boston: Beacon Press.

Hanh, T. N. (1991). *Peace is every step*. Berkeley, CA: Parallax Press.

Hanh, T. N. (1997). *Teachings on love*. Berkeley, CA: Parallax Press.

Hart, W. (1987). *The art of living: Vipassana meditation as taught by S. N. Goenka*. San Francisco, CA: Harper Collins.

Hayes, L. H. & Lin, H. R. (1994). Coming to America: Developing support systems for international students. *Journal of Multi-cultural Counseling and Development*, 22, 7-16.

Hayes, S. C. (2005). *Get out of your mind and into your life: The new acceptance and commitment therapy*. Oakland, CA: New Harbinger Publications.

Hayes, S. C., Barnes-Holmes, D., & Roche, B. (Eds.) (2001). *Relational frame theory: A post-Skinnerian account of human language and cognition*. New York: Plenum Press.

Hayes, S. C., Follette, V. M., & Linehan, M. (Eds.) (2004). *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition*. New York: Guilford Press.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York: Guilford Press.

Heaman, D. (1995). The Quieting Response (QR): A modality for reduction of psychophysiologic stress in nursing students. *Journal of Nursing Education*, 34 (1), 5-10.

Herbert, J., Moore, G. F., de la Riva, C., & Watts, F. N. (1986). Endocrine responses and examination anxiety. *Biological Psychology*, 22, 215-226.

Hinkle, L. E., Jr. (1977). The concept of "stress" in the biological and social sciences. In Z. J. Lipowski, D. R. Lipsitt, & P. C. Whybrow (Eds.), *Psychosomatic medicine: Current trends and clinical implications*. New York: Oxford University Press.

Home, A. M. (1997). Learning the hard way: Role strain, stress, role demands, and support in multiple-role women students. *Journal of Social Work Education*, 33 (2), 335-346.

Horney, K. (1945). *Our inner conflicts: A constructive theory of neurosis*. New York: Norton.

Humphrey, R. & McCarthy, P. (1998). Stress and the contemporary student. *Higher Education Quarterly*, 52, 221-242.

Hunsley, J. D. (1987). Cognitive processes in mathematics anxiety and test anxiety: The role of appraisals, internal dialogue, and attributions. *Journal of Educational Psychology*, 79, 388-392.

Jung, C. G. (1992). Psychological commentary on *The Tibetan book of Great Liberation*. In D. Meckel & R. Moore (Eds.), *Self and liberation: The Jung-Buddhism dialogue*. New York: Paulist Press. (original work published in 1939).

Justice, E. M. & Dorman, T. M. (2001). Metacognitive differences between traditional-age and non-traditional age college students. *Adult Education Quarterly*, 52 (3), 236-249.

Kabat-Zinn, J. (1990). *Full catastrophe living*. New York: Dell Publishing.

Kabat-Zinn, J., Lipworth, L., Burney, R., & Sellers, W. (1986). Four-year follow-up of a meditation-based program for the self-regulation of chronic pain: Treatment outcomes and compliance. *Clinical Journal of Pain*, 2, 159-173.

Kabat-Zinn, J., Massion, A. O., Kristeller, J., Peterson, L. G., Fletcher, K. E., Pbert, L., Lenderking, W. R., & Santorelli, S. (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *American Journal of Psychiatry*, 149, (7), 936-943.

Kabat-Zinn, J., Wheeler, E., Light, T., Shellings, A., Scharf, M. J., Croypley, T. G., Hosmer, D., & Bernhard, J. (1998). Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). *Psychosomatic Medicine*, 60, 625-632.

Kasworm, C. E. (1990). Adult undergraduates in higher education: A review of past research perspectives. *Review of Educational Research*, 60, 345-372.

Kawachi, I., Colditz, G. A., Stampfer, M. J., Willett, W. C., Manson, J. E., Speizer, F. E., & Hennekens, C. H. (1995). Prospective study of shift work and risk of coronary heart disease in women. *Circulation*, 92, 3178-3182.

Kazdin, A. (1998). *Research design in clinical psychology* (3<sup>rd</sup> ed.). Boston: Allyn & Bacon.

Kiecolt-Glaser, J. K., McGuire, L., Robles, T. F., & Glaser, R. (2002). Psychoneuroimmunology: Psychological influences on immune function and health. *Journal of Consulting and Clinical Psychology*, 70, 537-547.

Kiecolt-Glaser, J. K., Malarkey, W., B., Cacioppo, J. T., & Glaser, R. (1994). Stressful personal relationships: Immune and endocrine function. In R. Glaser & J. K. Kiecolt-Glaser (Eds.), *Handbook of human stress and immunity* (pp. 321-339). San Diego: Academic Press.

Kiecolt-Glaser, J. K., Marucha, P. T., Malarkey, W. B., Mercado, A. M., & Glaser, R. (1995). Slowing of wound healing by psychological stress. *Lancet*, 346, 1194-1196.

Kitayama, S., Markus, H. R., & Matsumoto, H. (1995). Culture, self, and emotion: A cultural perspective on self-conscious emotions. In J. P. Tangney & K. W. Fischer (Eds.), *Self-conscious emotions: The psychology of shame, guilt, embarrassment, and pride*. (pp. 349-364). New York: Guilford.

Kiviniemi, M. T., Snyder, M., & Omoto, A. M. (2002). Too many of a good thing? The effects of multiple motivations on stress, cost, fulfillment and satisfaction. *Personality and Social Psychology Bulletin*, 28, 732-743.

Klausner, S. Z. (1971). *On man and his environment*. San Francisco: Jossey-Bass.

Kornfield, J. (1993). *A path with heart*. New York: Bantam.

Krahn, G. L. (1993). Conceptualizing social support in families of children with special health needs. *Family Process*, 32, 235-248.

Kristeller, J. (2007). Mindfulness meditation. In P. M. Lehrer, R. L. Woolfolk, & W. E. Sime (Eds.), *The principles and practice of stress management (3<sup>rd</sup> ed.)* (pp. 393-427). New York: Guilford Press.

Kubler-Ross, E. (1969). *On death and dying*. New York: MacMillan.

Kushnir, T., Malkinson, R., & Ribak, J. (1998). Rational thinking and stress management in health workers: A psychoeducational program. *International Journal of Stress Management*, 5 (3), 169-178.

Langer, E. (1989). *Mindfulness*. Cambridge, MA: Da Capo Press.

Lazarus, A. (1981). *The practice of multi-modal therapy*. Baltimore: Johns Hopkins University Press.

Lazarus, R. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.

Lazarus, R. (1991). *Emotion and adaptation*. New York: Oxford University Press.

Lazarus, R. (1999). *Stress and emotion: A new synthesis*. New York: Springer Publishing.

Lazarus, R. & Averill, J. (1972). Emotion and cognition: With special reference to anxiety. In C. D. Spielberger (Ed.), *Anxiety and Behavior (2<sup>nd</sup> Ed.)*, (pp. 242-283). New York: Academic Press.

Lazarus, R., Averill, J., & Opton, E. (1970). Toward a cognitive theory of emotions. In M. Arnold (Ed.), *Feelings and Emotions*, (pp. 207-232). New York: Academic Press.

Lazarus, R., Coyne, J., & Folkman, S. (1982). Cognition, emotion, and motivation: The doctoring of Humpty-Dumpty. In R. W. J. Neufeld (Ed.), *Psychological stress and psychopathology*, (pp. 218-239). New York: McGraw-Hill.

Lazarus, R. & Erikson, C. (1952). Effects of failure stress upon skilled performance. *Journal of experimental psychology*, 43, 100-105.

Lazarus, R. & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer-Verlag.

Lazarus, R. and Lazarus, B. (1994). *Passion and reason: Making sense of our emotions*. New York: Oxford University Press.

Lemyre, L. & Tessier, R. (2003). Measuring psychological stress: Concept, model, and measurement instrument in primary care research. *Canadian Family Physician*, 49 (9), 1159-1161.

Lemyre, L., Tessier, R., & Fillion, L. (1990). *Mesure de stress psychologique (MPS). Manual d'utilisation behaviora*, Brossard-Quebec.

Lent, R. W., Brown, S. D., Talleyrand, R., McPartland, E. B., Davis, T., Chopra, S. B., Alexander, M. S., Suthakaran, V., & Chai, C-M. (2002). Career choice barriers, supports, and coping strategies: College students' experiences. *Journal of Vocational Behavior*, 60, 61-72.

Lindner, R. W. & Harris, B. (1993). Self-regulated learning: Its assessment and instructional applications. *Educational Research Quarterly*, 16, 29-37.

Linehan, M. M. (1989). Cognitive and behavior therapy for borderline personality disorder. In A. Tasman, R.E. Hales, & A. J. Frances (Eds.), *Review of psychiatry*, (Vol. 8, pp. 84-102). Washington, DC: American Psychiatric Press.

Linehan, M. M. (1993a). *Cognitive-behavioral treatment of borderline personality disorder*. New York: The Guilford Press.

Linehan, M. M. (1993b). *Skills training manual for treating borderline personality disorder*. New York: The Guilford Press.

Linehan, M. M. (1999). Dialectical behavior therapy for patients with borderline personality disorder and drug-dependence. *American Journal of Addictions*, 8 (4), 279-292.

Lovullo, W. (2005). *Stress and health: Biological and psychological interactions*. Thousand Oaks, CA: Sage Publications.

Lynch, T. R., Morse, J. Q., Mendelson, T., & Robins, C. J. (2003). Dialectical behavior therapy for depressed older adults: A randomized pilot study. *American Journal of Geriatric Psychiatry*, 11, 33-45.

McAlpine, L. & Norton, J. (2006). Reframing our approach to doctoral programs: An integrative framework for action and research. *Higher Education Research and Development*, 25 (1), 3-17.

McEwen, B. (2003). Mood disorders and medical illness: Mood disorders and allostatic load. *Biological Psychiatry*, 54, 200-207.

McEwen, B. & Lasley, E. N. (2003). Allostatic load: When protection gives way to damage. *Advances*, 19, 28-33.

McEwen, B. & Wingfield, J. C. (2003). The concept of allostasis in biology and medicine. *Hormones and behavior*, 43, 2-15.

McGrady, A. (2007). Psycho-physiological mechanisms of stress: A foundation for the stress-management therapies. In P. M. Lehrer, R. L. Woolfolk, & W. E. Sime, (Eds.), *Principles and practice of stress management (3<sup>rd</sup> ed.)*. (pp. 16-37). New York: Guilford Press.

McKeachie, W. G., Pintrich, P. R. & Lin, Y-G. (1985). Learning to learn. In G. D'Ydville (Ed.), *Cognition, information processing, and motivation* (pp. 601-618). Amsterdam: Elsevier.

Maddus, J. (1989). Introducing relaxation methods to young children. In F. McGuigan, W. Sine, & G. Wallace (Eds.), *Stress and tension control 3: Stress Management* (pp. 201-208). New York: Plenum.

Magid, B. (2002). *Ordinary mind: Exploring the common ground of Zen and psychotherapy*. Somerville, MA: Wisdom Publications.

Makrides, L, Veinot, P., Richard, J., McKee, E., & Gallivan, T. (1998). A cardiovascular risk assessment of students living in residence. *Canadian Journal of Public Health*, 89, 171-175.

Mallinckrodt, B. & Leong, F. T. (1992). International students, stress, and social support. *Journal of College Student Development*, 33, 71-78.

Marlatt, G. A. & Kristeller, J. L. (1999). Mindfulness and meditation. In W. R. Miller (Ed.), *Integrating spirituality into treatment: Resources for practitioners* (pp. 67-84). Washington, DC: American Psychological Association.

Marucha, P. T., Kiecolt-Glaser, J. K., & Favagehi, M. (1998). Mucosal wound healing is impaired by examination stress. *Psychosomatic Medicine*, 60, 362-365.

Maskarinec, G., Gotay, C., Tatsumura, Y., Shumay, D., & Kakai, H. (2001). Perceived cancer causes: Use of complementary and alternative therapy. *Cancer Practice*, 9, 183-190.

Maslow, A. (1968). *Toward a psychology of being*. New York: Van Nostrand Reinhold Company.

Maslow, A. (1971). *The farther reaches of human nature*. New York: Viking Compass Book.

Meichenbaum, D. (1977). *Cognitive-behavior modification: An integrated approach*. New York: Plenum.

Meichenbaum, D. & Cameron, R. (1973). Training schizophrenics to talk to themselves: A means of developing attentional control. *Behavior Therapy*, 4, 515-534.

Meichenbaum, D. & Novaco, R. (1978). Stress inoculation: A preventive approach. In C. D. Spielberger & I. G. Sarason (Eds.), *Stress and Anxiety Vol. 5*. New York: Holstead.

Middleton, S. (2001). Making room: the place of academic study (TMO32513). Paper presented at the Annual meeting of the American Educational Research Association (Seattle, WA, April 10-14, 2001). (ERIC Document Reproduction Service No. ED452228).

Miller, G. E., Cohen, S. & Ritchey, A. K. (2002). Chronic psychological stress and the regulation of pro-inflammatory cytokines: A glucocorticoid resistance model. *Health psychology*, 21, 531-541.

Miller, J., Fletcher, K., & Kabat-Zinn, J. (1997). Three-year follow-up and clinical implications of a mindfulness-based stress reduction intervention in the treatment of anxiety disorders. *Mind-Body Medicine*, 2, (3), 101-109.

Miller, W. & Irby, B. (1999). An inquiry into the exigency of a beginning doctoral cohort in educational leadership. *College Student Journal*, 33 (3), 141-147.

Morin, C., Rodrigue, S., & Ivers, H. (2003). Role of stress, arousal, and coping skills in primary insomnia. *Psychosomatic Medicine*, 65, 259-267.

Morris, J. A. B., Blount, R. L., Brown, R. T., & Campbell, R. M. (2001). Association of parental psychological and behavioral factors and children's syncope. *Journal of Consulting and Clinical Psychology*, 5, 851-857.

Nelson, N., Dell'Oliver, C., Koch, C., & Buckley, R. (2001). Stress, coping, and success among graduate students in clinical psychology. *Psychological Reports*, 88, 759-767.

Newman, B. M. & Newman, P. R. (1995). *Development through life: A psychosocial approach (6<sup>th</sup> ed.)*. Pacific Grove, CA: Brooks/Cole.

Norton, J. G. (1982). *Introduction to medical psychology*. New York: The Free Press.

Nugent, W. R., Sieppert, J. D., & Hudson, W. W. (2001). *Practice evaluation for the 21<sup>st</sup> century*. Belmont, CA: Wadsworth/Thomson Learning.

Nunn, G. D. (1994). Adult learners' locus of control, self-evaluation and learning temperament as a function of age and gender. *Journal of Instructional Psychology*, 21, 260-264.

Olf, M. (1999). Stress, depression, and immunity: The role of defense and coping styles. *Psychiatry Research*, 85, 2.

Omoto, A. M. & Snyder, M. (2002). Considerations of community: The content and processing of volunteerism. *American Behavioral Scientist*, 45, 846-867.

Onwuegbuzie, A. J. (1997). Writing a research proposal: The role of library anxiety, statistics anxiety, and composition anxiety. *Library and Information Science Research*, 19, 5-33.

Onwuegbuzie, A. J. (1998). Teachers' attitudes towards educational research courses: Implications for teacher-as-researcher movement. *Gateways to Teacher Education*, 11, 39-51.

Onwuegbuzie, A. J. (1999). The effect of advance organizers in research methodology courses. *National Forum of Applied Educational Research Journal*, 12E (3), 83-91.

Onwuegbuzie, A. J. & Daley, C. E. (1996). The relative contributions of examination-taking coping strategies and study coping strategies on test anxiety: A concurrent analysis. *Cognitive Therapy and Research*, 20, 287-303.

Onwuegbuzie, A. J., Slate, J. R., & Schwartz, R. A. (2001). Role of study skills in graduate-level educational research courses. *Journal of Educational Research*, 94 (4), 238-246.

Orme, J. G. & Cox, M. E. (2001). Analyzing single-subject design data using statistical process control charts. *Social Work Research*, 25 (2), 115-127.

Paterson, C. C. (1996). Self-regulated learning and academic achievement of senior biology students. *Australian Science Teachers Journal*, 42, 48-52.

Perneger, T., Etter, J., & Rougemont, A. (1997). Prospective versus retrospective measurement of change in health status: A community based study in Geneva, Switzerland. *Journal of Epidemiology and Community Health*, 51 (3), 320-325.

Perry, B. (2002). Childhood experience and the expression of genetic potential: What childhood neglect tells us about nature and nurture. *Brain and Mind*, 3, 79-100.

Perry, B. & Pollard, R. (1998). Homeostasis, stress, trauma, and adaptation: A neurodevelopmental view of childhood trauma. *Child and adolescent psychiatric clinics of North America*, 7 (1), 33-51.

Pintrich, P. R. & deGroot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82 (1), 33-40.

Pitts, S. P. (1992). Reentry women in higher education: The quiet revolution. *College Student Affairs Journal*, 12, 69-75.

Plotnikoff, N., Murgo, A., Faith, R., & Wybran, J. (2000). *Stress and immunity*. Boca Raton, FL: CRC Press.

Plummer, C. A., Ai, A. L., Lemieux, C. M., Richardson, R., Dey, S., Taylor, P., Spence, S., & Kim, H-J. (2008). Volunteerism among social work students during hurricanes Katrina and Rita: A report from the disaster area. (In press).

Polson, M. & Nida, R. (1998). Program and trainee lifestyle stress: A survey of AAMFT student members. *Journal of Marriage and Family Therapy*, 24 (1), 95-112

Pottage, D. & Huxley, P. (1996). Stress and mental health social work: A developmental perspective. *International Journal of Social Psychiatry*, 42 (2), 124-131.

Poyrazli, S. & Kavanaugh, P. R. (2006). Marital status, ethnicity, academic achievement, and adjustment strains: The case of graduate international students. *College Student Journal*, 40 (4), 767-780.

Poyrazli, S., Kavanaugh, P. R., Baker, A., & Al-Timimi, N. (2004). Social support and demographic correlates of acculturative stress in international students. *Journal of College Counseling*, 7, 73-82.

Pressley, M., Borkowski, J. G., & Schneider, W. (1987). Cognitive strategies: Good strategy users coordinate metacognition and knowledge. In R. Vasta & G. Whitehurst (Eds.), *Annals of child development Vol. 5*, (pp. 89-129). New York: JAI Press.

Pulido, M. L. (2007). In their words: Secondary traumatic stress in social workers responding to the 9/11 terrorist attacks in New York City. *Social Work*, 52 (3), 279-281.

Raison, C. & Miller, A. (2003). When not enough is too much: The role of insufficient glucocorticoid signaling in the path physiology of stress-related disorders. *Psychiatry*, 160, 1554-1565.

Santorelli, S. & Kabat-Zinn, J. (Eds.). (2003). *Mindfulness-based stress reduction professional training: MBSR curriculum guide and supporting materials*. Center for Mindfulness in Medicine, Health Care, and Society. Worcester, MA: University of Massachusetts Medical School.

Silver, B. B., Smith, Jr., E. V., & Greene, B. (1999). Social cognitive influences on college student GPA: Testing a model. Poster presented at the annual meeting of the American Educational Research Association. Montreal, Canada.

Stockols, D. (Ed.). (1977). *Perspectives and environment and behavior: Theory, research, and applications*. New York: Plenum.

Tathus, J. H. & Miller, A. L. (2002). Dialectical behavior therapy adapted for suicidal adolescents. *Suicide and Life-Threatening Behavior*, 32, 146-157.

Ravid, R. & Leon, M. R. (1995, April). *Students' perception of the research component in master's level teacher education programs*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Richardson, J. T. E. (1995). Mature students in higher education: I. A literature survey on approaches to studying. *Studies in Higher Education*, 19, 309-325.

Richardson, J. T. E. & King, E. (1998). Adult students in higher education: Burden or boon. *Journal of Higher Education*, 69, 65-88.

Roembke, J. E., Jr. (1995). Prevention of burnout among graduate students and new professionals in mental health. (Doctoral dissertation, Biola University, 1995). *Dissertation Abstracts International*, 56 (6-A), 2177.

Roemer, L. & Orsillo, S. (2002). Expanding on conceptualization of and treatment for generalized anxiety disorder: Integrating mindfulness/acceptance-based approaches with existing cognitive-behavioral models. *Clinical Psychology—Science and Practice*, 9, 54-68.

Rohrkemper, M. (1989). Self-regulated learning and academic achievement: A Vygotskian view. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theory, research, and practice*. (pp. 143-167). New York: Springer-Verlag.

Ross, J. M. (1988). Transitions, triggers, and the return to college: No simple decision. *Journal of College Student Development*, 29, 112-118.

Ross, S. E., Niebling, B. C., & Heckert, T. M. (1999). Sources of stress among college students. *College Student Journal*, 33 (2), 312-318.

Rothblum, E. D., Solomon, L. J., & Murakami, J. (1986). Affective, cognitive, and behavioral differences between high and low procrastinators. *Journal of Counseling Psychology*, 33 (4), 387-394.

Roy-Byrne, J. (1997). Generalized anxiety disorder in primary care: The precursor/modifier pathway. *Journal of Clinical Psychiatry*, 58 (3), 34-38.

Royse, D., Thyer, B. A., Padgett, D. K., & Logan, T. K. (2006). *Program evaluation: An introduction*. Belmont, CA: Thomson Brooks/Cole.

Rubin, E. & Babbie, E. (2001). *Research methods for social work*. Belmont, CA: Wadsworth/ Thomson Learning.

Rubin, R. R. & Peyrot, M. (2001). Psychological issues and treatments for people with diabetes. *Journal of clinical psychology*, 57, 457-478.

Sadock, B. J. & Sadock, V. A. (2003). Anxiety disorders: In *Synopsis of psychiatry* (9<sup>th</sup> ed.). Philadelphia: Lippincott Williams & Wilkins.

Safran, J. E. (2003). *Psychoanalysis and Buddhism*. Boston: Wisdom Publications.

Saleebey, D. (2001). *Human behavior and social environments: A biopsychosocial approach*. New York: Columbia University Press.

Salzberg, S. (Ed.). (1999). *Voices of Insight*. Boston: Shambhala.

Sapolsky, R. (2003). Stress and plasticity in the limbic system. *Neurochemical research*, 28, 1735-1742.

Sausen, K. P., Lovallo, W. R., Pincomb, G. A., & Wilson, M. F. (1992). Cardiovascular responses to occupational stress in medical students: A paradigm for ambulatory monitoring studies. *Health and Psychology*, 11, 55-60.

Schauben, L. J. & Frazier, P. A. (1995). Vicarious trauma: The effects on female counselors of working with sexual violence survivors. *Psychology of Women Quarterly*, 19, 49-64.

Schins, A., Honig, A., Crijns, H., Baur, L., & Hamulyak, K. (2003). Increased coronary events in depressed cardiovascular patients: 5-HT<sub>2a</sub> receptor as missing link? *Psychosomatic Medicine*, 65, 729-737.

Schunk, D. H. (1986). Verbalization and children's self-regulated learning. *Contemporary Educational Psychology*, 11, 347-369.

Schwartz, J. & Begley, S. (2002). *The mind and the brain: Neuroplasticity and the power of mental force*. New York: Harper Collins.

Segal, Z., Williams, M., & Teasdale, J. (2002). *Mindfulness-based cognitive therapy for depression*. Guilford Press.

Selye, H. (1974). *Stress without distress*. New York: Lippincott.

Selye, H. (1976). *The stress of life*. New York: McGraw-Hill Book Co.

Seeman, M. (1959). On the meaning of alienation. *American Sociological Review*, 24, 783-791.

Smith, J. (2004). Alterations in brain and immune function produced by mindfulness meditation: Three caveats. *Psychosomatic Medicine*, 66, 148-152.

Smith, M. C. & Pourchot, T. (1998). *Adult learning and development: Perspectives from educational psychology*. Mahwah, NJ: Lawrence Erlbaum.

Soboda, J. A. ((1990). Combating examination stress among university students: Action research in an institutional context. *British Journal of Guidance and Counseling*, 18, 124-136.

Specia, M., Carlson, L., Goodey, E., & Angen, M. (2000). A randomized, wait-list controlled clinical trial: The effect of a mindfulness-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosomatic Medicine*, 62, 613-622.

Stanton, A. L., Collins, C. A., & Sworowski, L. (2001). Adjustment to chronic illness: Theory and research. In A. Baum, T. A. Revenson, & J. Singer (Eds.), *Handbook of healthy psychology*, (pp. 387-404). Mahwah, NJ: Erlbaum.

Stein, P. K., Carney, R. M., Freeland, K. E., Skala, J. A., Jaffe, A. S., Kleiger, R. E., & Rottman, R. H. (2000). Severe depression is associated with markedly reduced heart rate variability in patients with stable coronary heart disease. *Journal of Psychosomatic Research*, 48, 493-500.

Sterling, P. & Eyer, J. (1988). Allostasis: A new paradigm to explain arousal pathology. In J. Fisher & J. Reason (Eds.), *Handbook of life stress, cognition, and health* (pp. 629-649). New York: Wiley.

Stone, G. C., Cohen, F., & Adler, N. E. (Eds.). (1979). *Health psychology: A handbook*. San Francisco: Jossey-Bass.

Tangney, J. P. & Fischer, K. W. (1995). *Self-conscious emotion: The psychology of shame, guilt, embarrassment, and pride*. New York: Guilford.

Tart, C. T. (1969). *Altered states of consciousness*. New York: Anchor Books.

Tart, C. T. (Ed.). (1975). *Transpersonal psychologies*. New York: Harper and Row.

Tatum, T., Lundervold, D. A., & Ament, P. (2006). Abbreviated upright behavioral relaxation training for test anxiety among college students. Initial results. *International Journal of Behavioral Consultation and Therapy*, 2 (4), 27-32.

Telch, C. F., Agras, W. S., & Linehan, M. M. (2001). Dialectical behavior therapy for binge eating disorder. *Journal of Consulting Clinical Psychology*, 69, 1061-1065.

Ting, L., Sanders, S., Jacobson, J. M., & Power, J. R. (2006). Dealing with the aftermath: A qualitative analysis of mental health social workers' reactions after a client suicide. *Social Work*, 51 (4), 329-341.

Teasdale, J. D., Segal, Z. V., & Williams, J. M. (1995). How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behavior Research and Therapy*, 33, 25-39.

Teasdale, J. D., Segal, Z. V., Williams, J. M., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*, 68 (4), 615-623.

Thayer, J. & Lane, R. (2000). A model of neurovisceral integration in emotion regulation and dysregulation. *Affective Disorders Journal*, 61, 201-216.

Thera, Nyanaponika (1972). *The power of mindfulness*. San Francisco, CA: Unity Press.

Thera, Nyanaponika (2006). *The heart of Buddhist meditation*. Boston: Weiser Press.

Tobias, S. (1985). Test anxiety: Interference, defective skills and cognitive capacity. *Educational Psychologist*, 3, 135-142.

Tobin, P. J. & Carson, J. (1994). Stress and the student social worker. *Social Work and Social Sciences Review*, 5 (3), 246-255.

Tosone, C., Lee, M., Bialkin, L., Martinez, A., Campbell, M., Martinez, M. M., Charters, M., Milich, J., Gieri, K., Riofrio, A., Gross, S., Rosenblatt, L., Grounds, C., Sandler, J., Johnson, K., Scali, M., Kitson, D., Spiro, M., Lanzo, S., & Stefan, A. (2003). Shared trauma: Group reflections on the September 11<sup>th</sup> disaster. *Psychoanalytic Social Work*, 10 (1), 57-77.

Towbes, L. C. & Cohen, L. H. (1996). Chronic stress in the lives of college students. Scale development and prospective prediction of distress. *Journal of Youth and Adolescence*, 25 (2), 199-217.

Trockel, M. T., Barners, M. D., & Egget, D. (2000). Health-related variables and academic performance among first-year college students: Implications for sleep and other behaviors. *Journal of American College Health*, 49 (3), 125-131.

Turk, D. C. (2001). Physiological and psychological basis of pain. In A. Baum, T. A. Revenson, & J. Singer (Eds.), *Handbook of health psychology* (pp. 117-138). Mahwah, NJ: Erlbaum.

Turner, F. J. (1996). *Social work treatment: Interlocking theoretical approaches (4<sup>th</sup> ed.)*. New York: The Free Press.

Wallace, M., Levens, M., & Singer, G. (1988). Blue collar stress. In C. Cooper and R. Payne (Eds.), *Causes, coping, and consequences of stress at work* (pp. 53-76). Chichester, UK: Wiley.

Watson, G., Batchelor, S., & Claxton, G. (Eds.). (1999). *The psychology of awakening*. London: Rider.

Weinbach, R. W. & Grinnell, R. M. (2001). *Statistics for social workers (5<sup>th</sup> ed.)*. Boston: Allyn & Bacon.

Weiner, H. (1977). *Psychobiology and human disease*. New York: Elsevier.

Welwood, J. (2000). *Toward a psychology of awakening*. Boston: Shambhala.

- Wilber, K. (1977). *The spectrum of consciousness*. New York: Quest Books.
- Wilber, K. (1981). *Up from Eden: A transpersonal view of human evolution*. New York: Anchor/Doubleday.
- Wilber, K., Engler, J., & Brown, D. (1986). *Transformations of consciousness*. Boston: New Science Library/Shambhala.
- Williams, J. M., Teasdale, J. D., Segal, Z. V., and Soulsby, J. (2000). Mindfulness-based cognitive therapy reduces overgeneral autobiographical memory in formerly depressed patients. *Journal of Abnormal Psychology*, 109 (1), 150-155.
- Wine, J. (1980). Cognitive-attentional theory of test anxiety. In I. G. Sarason (Ed.), *Test anxiety, research and applications* (pp. 349-385). Hillsdale, NJ: Erlbaum.
- Winterowd, C., Beck, A., & Gruener, D. (2003). *Cognitive therapy with chronic pain patients*. New York: Springer Publishing Company.
- Wolfgang, M. E. & Dowling, W. D. (1981). Differences in motivation of adult and younger undergraduates. *Journal of Higher Education*, 52, 640-648.
- Woolfolk, R. L., Lehrer, P. M., & Allen, L. A. (2007). Conceptual issues underlying stress management. In P. M. Lehrer, R. L. Woolfolk, & W. E. Sime (Eds.), *Principles and practice of stress management (3<sup>rd</sup> ed.)* (pp. 3-15). New York: The Guilford Press.
- Younes, M. N. & Asay, S. M. (1998). Resilient women: How female graduate students negotiate their multiple roles. *College Student Journal*, 32 (3), 451-463.
- Zautra, A. J. & Manne, S. L. (1992). Coping with rheumatoid arthritis: A review of a decade of research. *Annals of Behavioral Medicine*, 14, 31-39.
- Zimmerman, B. J. (1985). The development of "intrinsic" motivation: A social learning analysis. In R. Vasta & G. Whitehurst (Eds.), *Annals of child development Vol.5* (pp. 117-160). New York: JAI Press.
- Zimmerman, B. J. (1986). Development of self-regulated learning: Which are the key subprocesses? *Contemporary Educational Psychology*, 11, 333-346.
- Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, 81, 329-339.
- Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist*, 25 (1), 3-17.
- Zimmerman, B. J. (2000). Self-regulatory cycles of learning. In G. A. Straka (Ed.), *Conceptions of self-directed learning*. (pp. 221-234). Munster: Waxmann.

Zimmerman, B. J. and Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, 23, 614-628.

Zimmerman, B. J. and Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology*, 82, 51-59.

Zimmerman, B. J. & Schunk, D. H. (Eds.). (1989). *Self-regulated learning and academic achievement: Theory, research, and practice*. New York: Springer-Verlag.

APPENDIX A

CONSENT FORM



**Measuring the Impact of a Mindfulness-Based Stress Reduction Intervention on Perceived Stress and Study Skills of Graduate Social Work Students  
Consent Form**

The following investigators are available for questions about this study between the hours of 10:00 a.m. and 4:00 p.m., Monday through Friday: Margot Hasha, LCSW (337) 288-8120  
Catherine Lemieux, Ph.D (225) 578-1018

The **purpose** of this research project is to examine the impact of an empirically-verified, four-week, mindfulness-based stress reduction program, plus a study skills intervention, on perceived stress and self-regulated learning skills.

**Study subjects include** students enrolled in the LSU School of Social Work Program as MSW or Ph.D. students who voluntarily agree to participate. Approximately **30 students** will be participating in this project.

**The study procedures** are as follows: Approximately 30 students will be randomly assigned to either Group A or Group B in a Multiple Baseline Design study. Both groups will meet in classrooms used by the LSU School of Social Work during times that do not conflict with class schedules. Both groups will receive the pretest during the initial meeting, which consists of the Perceived Stress Scale (PSS), a 10-item instrument designed to measure the degree to which situations in one's life are appraised as psychologically stressful; the Psychological Stress Measure (PSM-9), a 9-item instrument developed to assess psychological stress in primary care and population health research; and a modified version of the Motivated Strategies for Learning Questionnaire (MSLQ). The modified MSLQ asks 22 questions about learning skills, with 4 questions addressing self-efficacy, 11 questions addressing cognitive strategy use, and 7 questions addressing self-regulation. Thirteen additional pretest questions will collect basic demographic data and information about school, employment, and knowledge about meditation. Participants in the control and experimental groups will receive a self-regulated learning skills intervention consisting of a 20-minute oral power point presentation by the researcher. In addition, both groups will receive a 10-minute training in a modified version of the Mindfulness-Based Stress Reduction (MBSR) Program. At the conclusion of the first session all participants will receive a 10-minute CD with instructions for the meditation intervention to be used 5 days per week for 4 weeks. Students in the Group A will be administered a daily log to record the frequency and duration of meditation sessions and instructions about when to begin the

intervention. Group B will also receive a daily log to record the frequency and duration of meditation sessions and instructions about beginning one week after Group A. After both groups have completed the four-week intervention, all students will be administered the posttest, which will include the 10-item PSS, the 9-item PSM-9, and the 22-item modified MSLQ.

In terms of **benefits**, this study may yield valuable information about sources of stress among graduate students, as well as provide preliminary data about the impact of a mindfulness-based stress reduction plus a study skills intervention on perceived levels of stress and study skills. No compensation will be provided to participants in either the control or experimental groups.

The **risks** to participants are minimal. There is no danger to subjects who use the MBSR program, which is only contraindicated for actively psychotic patients. However, subjects may become keenly aware of sources of stress as a result of completing the PSS and the PSM-9. The researcher will be able to refer students to appropriate resources for managing stress, if needed. Every effort will be made to vigilantly maintain the confidentiality of participants. Names will not be recorded on written questionnaires. Only the last six digits of the participants' social security numbers will be recorded to allow the researcher to link posttest to pretest responses. Raw data will be kept in secure files accessible only to the researcher. Only group data will be reported, and the responses of individuals will not be disclosed.

Prospective participants have the **right to refuse to participate in this project**. Subjects may choose not to participate or to withdraw from the study at any time, without any penalty whatsoever. Participants may discontinue at any time without any negative effects occurring within their respective academic programs.

**The privacy of participants will be protected**, The results of the study may be published, but no names or identifying information about either the participants or the institution will be included in any publications.

### Signature

This study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigators. If I have questions about subjects' rights or other concerns, I can contact Dr. Robert C. Matthews, Institutional Review Board, at (225) 578-8692. I agree to participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of this consent form.

Signature of Participant \_\_\_\_\_

Date \_\_\_\_\_

APPENDIX B

MBSR AND STUDY SKILLS QUESTIONNAIRE

Louisiana State University School of Social Work

Measuring the Impact of a Mindfulness-Based Stress Reduction Intervention on Perceived Stress and Study Skills of Graduate Social Work Students

The Questionnaire

This survey asks students about their perceived stress and study skills as Social Work graduate students. Most questions are from standardized instruments adapted for this survey. This instrument is part of a research project testing the effectiveness of a mindfulness-based stress reduction intervention.

Please complete the attached Informed Consent form. Individuals in both the intervention and control groups are being asked to complete this survey. Those who have been assigned to the intervention group will receive the mindfulness-based stress reduction training this semester. Those in the control group will be given an opportunity to receive this training at the conclusion of the study.

The instrument consists of 56 questions in four main sections. Please read the instructions for each section and answer the questions to the best of your ability.

Thank you in advance for your participation!

1. Please record the last six digits of your SS# here: \_\_\_\_ \_\_\_\_ - \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_

(This will be used to match posttest responses only.)

2. Please record today's date: \_\_\_\_/\_\_\_\_/\_\_\_\_

MM/DD/YYYY

Section 1. This section asks you questions about the degree to which situations in your life are appraised by you as stressful. The following questions ask you about your feelings and thoughts during the last month. Please circle the number that corresponds to the most accurate response, using the scale below:

0 = Never

1 = Almost never

2 = Sometimes

**3 = Fairly often**

**4 = Very often**

3. In the last month, how often have you been upset because of something that happened unexpectedly?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
4. In the last month, how often have you felt you were unable to control the important things in your life?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
5. In the last month, how often have you felt nervous and “stressed?”	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
6. In the last month, how often have you felt confident to handle your personal problems?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
7. In the last month, how often have you felt that things were going your way?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

**0 = Never**

**1 = Almost never**

**2 = Sometimes**

**3 = Fairly often**

**4 = Very often**

8. In the last month, how often have you found that you could not cope with all the things that you had to do?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
9. In the last month, how often have you been able to control irritations in your life?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
10. In the last month, how often have you felt that you were in control of things?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
11. In the last month, how often have you been angered because of things that were outside of your control?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
12. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

**Section 2: This next section asks you questions about the degree to which each statement has applied to you during the last 5 days. Please circle the number that corresponds to the most accurate response, using the scale below:**

- 1=Not at all**
- 2=Not really**
- 3=Very little**
- 4=A bit**
- 5=Somewhat**
- 6=Quite a bit**
- 7=Very much**
- 8=Extremely**

**During the last 5 days:**

13. I feel calm.	1	2	3	4	5	6	7	8
14. I feel rushed; I do not seem to have enough time.	1	2	3	4	5	6	7	8
15. I have physical aches and pains: sore back, headache, stiff neck, stomach ache.	1	2	3	4	5	6	7	8
16. I feel preoccupied, tormented, or worried	1	2	3	4	5	6	7	8
17. I feel confused; my thoughts are muddled; I lack concentration; I cannot focus.	1	2	3	4	5	6	7	8
18. I feel full of energy and keen.	1	2	3	4	5	6	7	8
19. I feel a great weight on my shoulders.	1	2	3	4	5	6	7	8
20. I have difficulty controlling my reactions, emotions, moods, and gestures.	1	2	3	4	5	6	7	8
21. I feel stressed.	1	2	3	4	5	6	7	8

**Section 3: This next section asks you questions about your current study habits as a graduate student in the School of Social Work. Please circle the number that corresponds to the most accurate response, using the scale below:**

**1=Not at all true of me**

**2= Rarely true of me**

**3= Sometimes true of me**

**4= True half the time**

**5= Usually true of me**

**6=Often true of me**

**7=Very true of me**

22. Compared with other students in my program, I expect to do well	1	2	3	4	5	6	7
23. I am certain that I can understand concepts taught in my courses.	1	2	3	4	5	6	7
24. I expect to do very well in my courses.	1	2	3	4	5	6	7
25. My study skills are excellent compared to others in my program.	1	2	3	4	5	6	7
26. I know that I will be able to learn any material presented to me.	1	2	3	4	5	6	7
27. When I study for an exam, I try to put together information from course lectures and from the book.	1	2	3	4	5	6	7
28. When I study, I try to remember what the professor said in lectures about the material..	1	2	3	4	5	6	7
29. When I study, I ask myself questions about the material I have been studying.	1	2	3	4	5	6	7
30. When I study, I interpret ideas in my own words.	1	2	3	4	5	6	7

31. I always attempt to understand what the professor is saying, even if it doesn't make sense.	1	2	3	4	5	6	7
32. When I study for an exam, I try to remember as many facts as I can.	1	2	3	4	5	6	7
33. When studying, I re-copy my notes to help me remember material.	1	2	3	4	5	6	7
32. Even when study material is dull or uninteresting, I work until I complete the task	1	2	3	4	5	6	7
35. When I study for an exam, I practice saying to myself the important facts over and over.	1	2	3	4	5	6	7
36. Before I begin studying, I think about the things I will need to do to learn the material.	1	2	3	4	5	6	7
37. I use what I have learned from old assignments and texts to work on new assignments.	1	2	3	4	5	6	7
38. When I am studying material for a course, I try to make everything fit together.	1	2	3	4	5	6	7
39. When I am reading, I stop occasionally and go over what I have read.	1	2	3	4	5	6	7
40. When work is difficult, I stay with it until I am finished.	1	2	3	4	5	6	7

**1=Not at all true of me**

**2= Rarely true of me**

**3= Sometimes true of me**

**4= True half the time**

**5= Usually true of me**

**6=Often true of me**

**7=Very true of me**

41. I outline the chapters from my texts to help	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---



52. Place an "X" next to the category that best describes your marital/partnership status?

- Single, never married
- Single, with a significant partner
- Married
- Married, and separated
- Divorced
- Widowed

53. Please circle the number of children under age 18 currently living in your household:

- 0      1      2      3      4      5 or more

54. Place an "X" next to the category that best describes your household's annual income?

- Below \$20,000
- \$20,000 - \$34,999
- \$35,000 - \$50,000
- \$50,000 or more

55. Have you ever been trained in any form of meditation, such as TM (Transcendental Meditation), guided imagery, Vipassana, or contemplation? (Please circle the correct response).

- Yes                      No

56. Please specify the number of hours you currently practice meditation on average, per month:

\_\_\_\_ Hours of meditation per month

**Please take a moment to review your responses to ensure that you have not missed any questions. Thank you for your participation! Your answers are an important part of this research study.**



5. Excluding your field internship, do you receive wages for any type of employment at this time? (Please circle the correct response).

Yes (Please answer next question)

No (Please skip to question #7)

6. If yes, please place an "X" next to the correct response:

10 or fewer per week

11-20 per week

21-30 per week

31 or more per week

7. Excluding your internship, please specify the number of hours you currently volunteer on average, per month:

Volunteer hours per month

8. Are you currently registered for field internship? (Please circle the correct response).

Yes

No

9. Place an "X" next to the category that best describes your marital/partnership status.

Single, never married

Single, with a significant partner

Married

Married, and separated

Divorced

Widowed

10. Please circle the number of children under age 18 currently living in your household:

0

1

2

3

4

5 or more

11. Place and "X" next to the category that best describes your household's annual income?

Below \$20,000

\$20,000 - \$34,999

\$35,000 - \$50,000

\$50,000 or more

12. Have you ever been trained in any form of meditation, such as TM (Transcendental Meditation), guided imagery, Vipassana, or contemplation? (Please circle the correct response).

Yes

No

13. Please specify the number of hours you currently practice meditation on average, per month:

Hours of meditation per month

**Please take a moment to review your responses to ensure that you have not missed any questions.**

**Please be sure to detach the Informed Consent form from this survey.**

**Place your consent form and your completed survey in the MBSR study box located in the student lounge by the mailboxes.**

**Thank you for participating in the survey!!**

**APPENDIX D**

**WEEKLY MEDITATION LOG**

**Mindfulness-Based Stress Reduction and Study Skills Improvement**

**Group #1**

Please record last four digits of your social security number here: \_\_\_\_\_

**Directions:** For each day, in the spaces provided, please check whether or not you've meditated, the start and finish times if you've meditated, and the total number of minutes you've meditated. Space is provided for any comments you wish to make. You will receive a log for each of the four weeks that you are in the study.

Once you have completed the log, please deposit it in the drop-off box provided in the student lounge near the student mailboxes. Again, thank you for your willingness to participate in this important study.

**Did you meditate?**

<b>Friday</b>	<b>Saturday</b>	<b>Sunday</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>
<b>Oct. 24</b>	<b>Oct. 25</b>	<b>Oct. 26</b>	<b>Oct. 27</b>	<b>Oct. 28</b>	<b>Oct. 29</b>	<b>Oct. 30</b>

<b>Yes</b> ___	<b>Yes</b> ___	<b>Yes</b> ___	<b>Yes</b> ___	<b>Yes</b> ___	<b>Yes</b> ___	<b>Yes</b> ___
<b>No</b> ___	<b>No</b> ___	<b>No</b> ___	<b>No</b> ___	<b>No</b> ___	<b>No</b> ___	<b>No</b> ___
<b>Start</b>	<b>Start</b>	<b>Start</b>	<b>Start</b>	<b>Start</b>	<b>Start</b>	<b>Start</b>
<b>Finish</b>	<b>Finish</b>	<b>Finish</b>	<b>Finish</b>	<b>Finish</b>	<b>Finish</b>	<b>Finish</b>
<b># of min.</b>	<b># of min.</b>	<b># of min.</b>	<b># of min.</b>	<b># of min.</b>	<b># of min.</b>	<b># of min.</b>

**Comments:**

**Friday:** \_\_\_\_\_  
**Saturday:** \_\_\_\_\_  
**Sunday:** \_\_\_\_\_  
**Monday:** \_\_\_\_\_  
**Tuesday:** \_\_\_\_\_  
**Wednesday:** \_\_\_\_\_  
**Thursday:** \_\_\_\_\_

## VITA

Margot Hasha was born in Metairie, Louisiana, on November 3, 1954. She graduated from Comeaux High School in Lafayette, Louisiana, in 1972. She received her Bachelor of Arts degree in English from Sam Houston State University in Huntsville, Texas, in 1982, and returned to Lafayette to begin graduate studies at the University of Southwestern Louisiana. She received a Master of Arts degree in English in 1985. Margot taught English at Notre Dame High School and at the Louisiana State University Department of English. In 1988, Margot began graduate studies at the Louisiana State University School of Social Work and received her master's degree in 1990. Margot began private practice in 1991 and was licensed as a Board Certified Social Worker in 1992. In 1997 she was received Board Certified Diplomate status. As a private practitioner, Margot specialized in addictive/compulsive disorders, sexual trauma, mood disorders, and women's issues. Margot also began teaching various forms of meditation to clients as adjunctive therapy in 1994. In 2001, Margot began doctoral studies at the Louisiana State University School of Social Work. She has continued to maintain her private practice since 1991, and in 2008 became a faculty member in the Department of Sociology and Anthropology at the University of Louisiana at Lafayette.