

THE EFFECTS OF MINDFULNESS MEDITATION ON ADOLESCENTS WITH  
HIGH-INCIDENCE DISABILITIES

by

Ernest L. Solar, II  
A Dissertation  
Submitted to the  
Graduate Faculty  
of  
George Mason University  
in Partial Fulfillment of  
The Requirements for the Degree  
of  
Doctor of Philosophy  
Education

Committee:

\_\_\_\_\_ Chair

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Program Director

\_\_\_\_\_ Dean, College of Education and Human  
Development

Date: \_\_\_\_\_ Fall Semester 2013  
George Mason University  
Fairfax, VA

The Effects of Mindfulness Meditation on Adolescents with High-Incidence Disabilities

A dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy at George Mason University

by

Ernest L. Solar, II  
Master of Education  
George Mason University, 2008  
Bachelor of Science  
East Carolina University, 1996

Director: Margaret King-Sears, Professor  
College of Education and Human Development

Fall Semester 2013  
George Mason University  
Fairfax, VA



This work is licensed under a [creative commons attribution-noncommercial 3.0 unported license](https://creativecommons.org/licenses/by-nc/3.0/).

## **DEDICATION**

I dedicate this dissertation to my children, Christian and Cassandra. Even though you are young, you both have understood the amount of time it has taken to complete this project. Thank you for giving me the time and support to see this to the end. I hope one day my efforts will inspire the both of you to accomplish your own dream.

## ACKNOWLEDGEMENTS

As a child, I wanted to be Han Solo. I wanted to be Batman. But after seeing *Raiders of the Lost Ark*, I wanted to be Indiana Jones. I counted the years and figured out I could finish my doctorate degree by the year 2000, which I thought was cool. But as we all know, life takes us on an unpredictable path. The path I walked was the path God needed me to transverse to become the man I am today. The year 2000 was a pivotal year for me because my son, Christian was born. Four years later I was blessed with my daughter Cassandra. Now, in the year 2013, 13 years later than my childhood goal, I have accomplished one of my dreams.

The not so obvious thank you! I would like to thank Pandora Radio, Starbucks Coffee, calm meditation music, Pink Floyd, Basil Poledouris, John Williams, comic books, George Lucas for creating the *Star Wars* universe, Robert Howard for dreaming up Conan the Barbarian and the Hyborian Age, and the inventors of beer and wine for providing me the sanity to write my research papers and dissertation. I would like to thank the Moon, the stars, the grass, the trees, and the river for listening to my screams, my complaints, my wishes, my hopes, and my dreams.

There are so many people to acknowledge for this endeavor that I apologize for the length, but I hope at least a smile will creep across your lips. I would like to thank Dr. Rick Leichtweis for giving me the opportunity to work with children with emotional disabilities. I still think he was crazy to think I would be perfect for those children, but I love the bonds and connections I have made with each and every one of my students. I would like to thank Dr. Margo Mastropieri for asking me to stay after class and instructing me to apply to the Ph.D. program at GMU. Her words dusted off a dream I had placed on the top shelf and thought was impossible. I would like to thank Dr. Pam Baker and Dr. Rick Brigham for their insight, guidance, and patience for being on my portfolio committee and dissertation committee. I know that my dissertation topic skirted the edge of acceptance, but they never lost faith in me. Dr. Peggy King-Sears deserves a special thank you for her undying belief in me. Over the past five years she has provided me with guidance, direction, and support when I knew I needed it and when I didn't know. She gave me permission to be myself, to believe in myself, and even to heal when it was necessary.

My family deserves a trip to the moon and back for the patience and support they have provided to me since I started this endeavor. As my sister Robin put it, "Are you done yet? I'm sick of your dissertation!" Even though my parents and sisters may have had a

hard time understanding or accepting my reasons for not attending family events or being on the edge of the Cliffs of Insanity, they always embraced me and supported me. My sisters, Robin and Retha, would always listen to me complain and tell me the end was near. My late brother-in-law, Pokey, was always proud of what I was working to accomplish and wanted to know more. My parents are the few lucky ones to see me in the troughs of anguish as I raced against the clock to meet a deadline. (Yes, there was a time in the past five years when I was a Ph.D. student living in my parents' basement.) My parents may not have always understood the stress and anxiety I faced in this process, but they never lost faith in me. They listened to every complaint, dried my tears, and loved me more than I deserved.

I have teased for years that I completed my Master's degree and my Ph.D. between the hours of 10 p.m. and 1 a.m. Most nights, while my children were asleep I was writing a paper or conducting research so I could spend time with my kids. Finding a balance between being a father and a student was never easy. My daughter has never seen me with hair and she has never known me not working on a degree. Christian and Cassandra, for their ages, have been patient and understanding of the time I have had to commit to finishing this degree. They may not have always liked the amount of time I spent writing papers but they never stopped cuddling with me. Now that the end is near I can't wait to have the free time to run, jump, play, and cuddle with my perfect children. I love you both so very much!

My Christine has been my saving grace through this entire endeavor! There have been so many days and nights that she has taken my hand in hers and led me away from the Cliffs of Insanity. She would then wrap me in her arms and whisk me away to some far off place to calm my soul. She would listen with sympathy and understand my fears. Her words would encourage me and her smile strengthened me. Christine believed in me when despair would reach out its ugly talons. Christine never lost hope in me when all I saw was a bleak landscape. Christine has and will always be my *light in the darkness*. I love you!

I may not be Han Solo, but I still fight Stormtroopers. I may not be Batman, but I still believe I am a super-hero. I may not be Dr. Indiana Jones, but I am always ready for an adventure. Thank you to everyone who has touched my life and helped me accomplish this dream.

Lastly, thank you God for leading me down this path you wanted me to follow.

The contents of this dissertation were developed under a grant from the US Department of Education H325D080036. However, those contents do not necessarily represent the policy of the US Department of Education, and you should not assume endorsement by the Federal Government.

## TABLE OF CONTENTS

	Page
List of Tables .....	xi
List of Figures .....	xii
List of Abbreviations .....	xiii
Abstract .....	xvi
1. INTRODUCTION .....	1
Mindfulness .....	3
Mindfulness-based stress reduction .....	5
Mindfulness program versus mindfulness technique. ....	6
Mindfulness research with children and adolescents. ....	7
Characteristics of Students with a Disability .....	8
Emotional disability (ED).....	8
Specific learning disability (SLD).....	10
Other health impairment (OHI). ....	11
Mindfulness for Students with a Disability.....	11
Stress and students with a disability. ....	12
The use of mindfulness with students with disabilities. ....	13
Research Questions .....	15
Definition of Terms.....	16
Definition of terms related to mindfulness. ....	16
Definition of terms related to special education. ....	19
Definition of terms related to research. ....	21
2. LITERATURE REVIEW .....	22
Historical Data of Mindfulness-Based Stress Reduction .....	22
Mindfulness-based programs for children and adolescents.....	23
Literature Review Parameters .....	25
Control Groups.....	27

Elementary Students with Disabilities .....	28
No control group.....	28
Control group.....	30
Waitlist control groups. ....	35
Secondary Students with Disabilities .....	40
No control group.....	41
Control group.....	44
Waitlist control group.....	47
Synthesis of Studies Reviewed .....	50
Independent variable.....	50
Research design. ....	52
Control group.....	53
Participants. ....	54
Setting.....	54
Participant disability.....	55
Length and duration of the intervention session.....	56
Number of intervention minutes.....	56
Dependent variables. ....	57
Summary .....	58
3. METHODS .....	60
Research Questions .....	60
Study Design .....	61
Setting.....	62
Participants .....	62
Recruitment .....	63
Group Selection.....	65
Materials.....	66
Participant incentives.....	66
Teacher incentives. ....	67
Mindfulness meditations.....	67
Research assistants. ....	67
Independent Variable .....	68



Start of the intervention session.....	69
Description of the mindfulness meditation.....	70
Journaling activity. ....	73
End of the intervention session.....	74
Completers v. non-completers.....	75
Dependent Variables .....	76
Mindful awareness.....	76
Perceived stress.....	77
Anxiety. ....	77
Classroom behavior. ....	78
Research Questions .....	78
Research questions linked to dependent variables and measurements.....	79
Data analysis of research questions. ....	79
Data collection procedure.....	80
Procedural reliability .....	81
Fidelity of Treatment.....	83
On-task Behavior.....	84
Definition of on-task behavior during meditation. ....	85
Definition of off-task behavior during meditation. ....	86
Momentary time sampling.....	86
Time on-task data collection procedure.....	87
Social Validity.....	88
Summary .....	89
4. RESULTS .....	90
Sample Description .....	90
Fidelity of Treatment.....	94
Results. ....	96
On-task Behavior.....	96
Results. ....	97
Preliminary Analyses of Groups' Scores.....	98
Mindfulness. ....	99
Perceived Stress.....	101

Anxiety.....	103
Classroom behavior in mathematics class.....	105
Classroom behavior in English class.....	107
Posttest means.....	109
Pooled.....	110
Research Questions.....	111
Data analysis.....	111
Research question #1.....	112
Research question #2.....	113
Research question #3.....	113
Social Validity.....	115
Summary.....	116
5. DISCUSSION.....	118
Research Overview.....	118
Summary of Results.....	120
Research Questions.....	120
Research question #1.....	121
Research question #2.....	121
Research question #3.....	121
Program versus Technique.....	122
Contemplation program versus contemplation technique.....	122
Components.....	123
Amount of time and frequency per session.....	124
Discussion of Results.....	124
Comparing results to previous studies.....	124
Summary.....	130
Limitations.....	133
Recommendations for Future Study.....	135
Conclusion.....	137
Appendix A: Review of Mindfulness Interventions.....	139
Appendix B: Recruitment Package.....	142
Appendix C: Meditations.....	148

Appendix D: Dependent Measures .....	155
Appendix E: Procedural Checklists .....	161
Appendix F: Fidelity of Treatment Forms .....	166
Appendix G: On-Task Behavior Data Collection Forms.....	172
Appendix H: Social Validity Scale .....	175
References.....	177

## LIST OF TABLES

Table	Page
1. Reported Effect Size as Measured by the Youth Self-Report.....	48
2. Use of Control Groups in the 19 Studies Reviewed .....	54
3. Sequence of Events During Intervention Sessions .....	74
4. Timeline for Data Collection of Dependent Variable Measurements .....	81
5. Participant Demographics .....	93
6. Participant Special Education Demographics.....	94
7. Pretest Means and Standard Deviations (CAMM) .....	101
8. Pretest Means and Standard Deviations (PSS) .....	102
9. Pretest Means and Standard Deviations (RCMAS-2).....	104
10. Pretest Means and Standard Deviations in mathematics class (TOCA-C) .....	106
11. Pretest Means and Standard Deviations in English class (TOCA-C) .....	109
12. Pretest and Posttest Means and Standard Deviations for All Dependent Measures	109
13. Summary of Tests Within-Subjects Contrast.....	115

## LIST OF FIGURES

Figure	Page
1. Interventions used in the 19 studies reviewed. ....	52
2. Research design used in the 19 studies reviewed. ....	53
3. Settings used in the 19 studies reviewed.....	55
4. Most common dependent variables used in the 19 studies reviewed. ....	58
5. Pretest CAMM score.....	100
6. Normal Q-Q plot of pretest CAMM score.....	101
7. Pretest PSS score.....	102
8. Normal Q-Q plot of pretest PSS score.....	103
9. Pretest RCMAS-2 score.....	104
10. Normal Q-Q plot of pretest RCMAS-2 score. ....	105
11. Pretest TOCA-C score in mathematics class. ....	106
12. Normal Q-Q plot of pretest TOCA-C score from mathematics teachers.....	107
13. Pretest TOCA-C score in English class. ....	108
14. Normal Q-Q plot of pretest TOCA-C score from English teachers.....	109

## LIST OF ABBREVIATIONS

Acceptance and Commitment Therapy.....	ACT
ADD_H Comprehensive Teacher Rating Scale.....	ACTeRS
ADHD Rating Scale.....	ARS
Attention Academy Program .....	AAP
Attention Deficit and Hyperactivity Disorder.....	ADHD
Attention Network Task.....	ANT
Behavior Rating Inventory of Executive Function .....	BRIEF
Behavioral Regulation Index .....	BRI
Child Acceptance and Mindfulness Measure .....	CAMM
Child Behavior Checklist.....	CBCL
Child Behavior Checklist: Teacher Report Form .....	CBCL-TR
Children's Depression Inventory.....	CDI
Depression Anxiety Stress Scales.....	DASS
Dialectical Behavior Therapy .....	DBT
Difficulties in Emotion Regulation Scale .....	DERS
Disruptive Behavior Disorder Rating Scale.....	DBDRS
Emotional Disability .....	ED
Emotional Reactivity Scale.....	ERS
Executive Functioning .....	EF
Freiburg Mindfulness Inventory .....	FMI
Goal Attainment Scale .....	GAS
Global Executive Composite .....	GEC
Individuals with Disabilities Education Act .....	IDEA
Individualized Education Program .....	IEP
Intelligence Quotient.....	IQ

Involuntary Engagement Coping Scale .....	IECS
Involuntary Stress Responses Scale.....	RSQ
Kaufman Test of Educational Achievement-Second Edition, Form A.....	KTEA-II
Metacognition Index .....	MI
Mindful Attention and Awareness Scale .....	MAAS
Mindful Child.....	MC
Mindfulness-Based Cognitive Therapy .....	MBCT
Mindfulness-Based Cognitive Therapy-Children .....	MBCT-C
Mindfulness-Based Stress Reduction .....	MBSR
Mindfulness Education .....	ME
Mindfulness Meditation Intervention .....	MMI
Mood Symptoms Scale .....	MS
Multidimensional Anxiety Scale for Children .....	MASC
Oppositional Defiant Disorder .....	ODD
Other Health Impairment .....	OHI
Perceived Stress Scale.....	PSS
Positive and Negative Affect Scale.....	PANAS
Positive and Negative Emotions Inventory.....	EP
Progressive Muscular Relaxation .....	PMR
Resiliency Inventory .....	RI
Revised Children's Manifest Anxiety Scale-Second Edition.....	RCMAS
Ruminative Response Scale.....	RRS
Scales of Psychological Well-being.....	SPWB
Self-Description Questionnaire.....	SDQ
Self-Discovery Program.....	SDP
Self-Esteem Scale .....	SES
Short Mood and Feelings Questionnaire.....	SFMQ
Social Skills Rating System .....	SSR
Somatization Index of the Child Behavior Checklist .....	SICBC
Specific Learning Disability .....	SLD
State Anxiety Inventory for Children .....	SAIC

State Trait Anxiety Inventory .....	STAI
State Trait Anxiety Inventory for Children.....	STAIC
Strengths and Difficulty Questionnaire .....	SDQ
Subjective Happiness Scale .....	SHS
Swanson, Nolan and Pelham Scale.....	SNAP-IV
Symptom Checklist-90-Revised .....	SCL-90R
Teacher Observations of Classroom Adaptation-Checklist.....	TOCA-C
Teacher's Rating Scale of Social Competence.....	TRSC
Test Anxiety Scale .....	TAS
Test of Everyday Attention for Children .....	TEA-CH
Transcendental Meditation.....	TM
Youth Self Report .....	YSR
Wechsler Individual Achievement Test-Second Edition.....	WIAT-II
Wechsler Individual Achievement Test-Third Edition.....	WIAT-III
Wechsler Intelligence Scale for Children Fourth Edition.....	WISC-IV
Wechsler Preschool and Primary Scale of Intelligence-Third Edition .....	WPPSI-III
Woodcock-Johnson III, Normative Update .....	WJ III NU



## **ABSTRACT**

### **THE EFFECTS OF MINDFULNESS MEDITATION ON ADOLESCENTS WITH HIGH-INCIDENCE DISABILITIES**

Ernest L. Solar, II, Ph.D.

George Mason University, 2013

Dissertation Director: Dr. Margaret King-Sears

Research has shown evidence that mindfulness-based meditation practices may be effective treatment interventions for mental, emotional, and medical disabilities in the adult population. There has been a limited number of research studies showing the effectiveness of meditation practices with secondary students who receive special education services. This randomized waitlist control study was designed to assess the effect of mindfulness meditation practice with 10 secondary students who receive special education services. The independent variable was a mindfulness meditation technique that was delivered as an afterschool program, twice a week, for 45 minutes per session. The duration of the intervention covered a ten-week period, with two, five-week intervention cycles, administered consecutively. The dependent variables of mindfulness, perceived stress, anxiety, and classroom behavior were assessed through pre, posttest, and follow-up measurements completed by the students and teachers. Only students in

the treatment group completed the follow-up measurements. Students who attended seven of the ten meditation sessions were considered to have received the intervention, they were referred to as the Completers. Multivariate analysis of repeated-measures on the four dependent variable measurements of mindfulness, perceived stress, anxiety, and classroom behavior, indicated no statistically significant effect between the pretest and posttest scores. However, the effect size of the perceived stress and anxiety scores between the pretest and posttest measurements demonstrated a low to medium effect size with  $d = -.46$  and  $d = -.22$ , respectively. Limitations included (a) the number of minutes the students experienced the mindfulness intervention (b) the use of journaling in place of group discussions.

## 1. INTRODUCTION

In 1976, Ferguson published a position paper in the *Journal of Special Education* proposing the use of *Transcendental Meditation (TM)* in the field of special education. Transcendental Meditation is one of the oldest forms of meditation, and is a concentrative meditative technique based on the ancient tradition of enlightenment practiced in India for over five thousand years (Burns, Lee, & Brown, 2011). The TM technique is not a religion or philosophy, but is a technique practiced by sitting in a chair for 20 minutes, twice a day, and chanting in order to clear one's mind of thoughts during the meditation session (Maharishi Foundation, 2012). The position paper by Ferguson (1976) identified 17 different research studies between 1972 and 1975 that summarized the positive effects of TM practice with general education students. The benefits of TM with general education students included (a) decreases in stress, anxiety, depression, and psychiatric disorders; with (b) increases in self-esteem, inner control, and social relations. Academically, the general education students experienced increases in their grade point average, intelligence quotient, perceptual-motor performance, focused attention, and improved memory.

Ferguson (1976) summarized that if the research reported that practicing TM is accompanied with subjective and objective correlation of increased well-being, relaxation, and the normalizing of physiological parameters, "then teaching TM to

developmentally disabled individuals should have substantial and significant educational and therapeutic benefits" (p. 217). Ferguson continued by stating "learning and perceptual difficulties experienced by special education students may be significantly normalized by the practice of TM" (p. 217). Ferguson concluded that "[meditation] should definitely be investigated as an adjunct to already existing special education programs" (p. 218).

Eppley, Abrams, and Shear (1989) published a meta-analysis of 146 studies that demonstrated the effectiveness of TM on reducing stress and anxiety in adult populations, as compared to other stress reduction programs. The other stress reduction programs in the Eppley et al. study, compared to TM, were *Progressive Muscular Relaxation (PMR*; Epelbaum, 2012), other forms of relaxation, and other forms of meditation. Other forms of meditation included any activity described as meditation, or similar to an established form of meditation. Eppley et al. did not provide specifics of these other forms of meditation. The meta-analysis reported an effect size of  $d = .70$  for TM and  $d = .28$  for all other forms of meditation. Effect size identifies the magnitude of an observed effect based on the conclusions of the group differences or the relationship among variables in a quantitative study (Cohen, 1977; Creswell, 2008). Based on Cohen (1977), effect sizes of  $d = 0.2$  are considered small,  $d = 0.5$  are medium, and  $d = 0.8$  are considered large. Even though TM displays a high effect size ( $d = .70$ ) for reducing stress and anxiety in adults, TM must be taught by a qualified instructor (Maharishi Foundation, 2012), which can be a roadblock to teaching TM to any population, adult or children.

## **Mindfulness**

In addition to TM there is another form of meditation called mindfulness. TM and mindfulness fall under the same agency of "meditation" in that they both teach participants how to increase attention and awareness. However, the difference between these two types of meditation systems is based on the focus of each practice: concentration or awareness. TM is a form of concentrative meditation that requires the participant to focus on a single external or internal event, such as the breath, a word, or a sound (Maharishi Foundation, 2012). Mindfulness is a form of awareness meditation that is cultivated by our "inner capacities for relaxation, paying attention, awareness, and insight" (Kabat-Zinn, 1990, p. 2). Mindfulness is based on seven principles defined by Kabat-Zinn (1990): (a) non-judging, (b) patience, (c) beginner's mind, (d) trust, (e) non-striving, (f) acceptance, and (g) letting go.

*Non-judging* is defined as being an impartial witness to the "constant stream of judging and reacting to inner and outer experiences" (Kabat-Zinn, 1990, p. 30). Through this principle the practitioner learns how to identify automatic responses and how to recognize judgmental thinking. Therefore, by suspending judgment of an experience the practitioner is able to witness what will happen next (Kabat-Zinn, 1990).

*Patience* is defined as understanding and accepting that experiences must unfold over time (Kabat-Zinn, 1990). Through this principle the practitioner learns how to "give ourselves room to have experiences" (Kabat-Zinn, 1990, p. 34) and to patiently allowing each moment to develop without allowing our thoughts to overwhelm the perception of the present moment.

*Beginner's mind* is defined as viewing the present moment as if for the first time (Kabat-Zinn, 1990). Through this principle the practitioner becomes more "receptive to new possibilities and prevents us from getting stuck in our own expertise" (Kabat-Zinn, 1990, p. 35); therefore, experiencing new possibilities.

*Trust* is defined as believing in one's own feelings and knowledge to guide one's experience of actions and events (Kabat-Zinn, 1990). Through this principle the practitioner takes responsibility for learning how to listen and to trust one's self, which will promote trusting and learning from other people (Kabat-Zinn, 1990).

*Non-striving* is defined as not straining or forcing a result (Kabat-Zinn, 1990). Through this principle the practitioner "starts to focus on seeing and accepting things as they are, moment by moment" (Kabat-Zinn, 1990, p. 38); therefore, not getting caught up in the end result of the goal.

*Acceptance* is defined as "seeing things as they actually are in the present" (Kabat-Zinn, 1990, p. 38). Through this principle the practitioner learns to accept things as they are, instead of forcing situations to be what he or she may desire (Kabat-Zinn, 1990).

*Letting go* is defined as "letting our experience be what it is and practice observing it from moment to moment" (Kabat-Zinn, 1990, p. 40). Through this principle the practitioner learns how to practice controlling automatic responses: holding on to what is pleasant in an experience and rejecting what is unpleasant in an experience. Therefore, one lets go of impulses to hold on to or push away emotions and learns how to just experience the moment without reacting (Kabat-Zinn, 1990).

**Mindfulness-based stress reduction.** *Mindfulness-Based Stress Reduction*

(*MBSR*) was developed by Kabat-Zinn (1990) as an experiential contemplative program that uses a pedagogical approach through (a) weekly group sessions, (b) a core curriculum embedded with the seven principles of mindfulness, (c) mindfulness guided meditations, (d) group discussion, and (e) regular home practice that is between 90 and 120 minutes per session and is taught for eight weeks. The main concept behind MBSR is for the practitioner to learn how to apply the seven principles of mindfulness (non-judging, patience, beginner's mind, trust, non-striving, acceptance, and letting go) to daily events, thoughts, and feelings. As applied within a school setting, for example, if a teacher who practices mindfulness is yelled at by an angry student, the teacher would first not judge the student or react to the situation (non-judgment). Then, he or she may use patience to allow the student to calm down, accept that the student is upset, and not strive to change the situation or the student's emotions. Lastly, the teacher would view the experience from a different perspective, and trust his or her decision in relation to the events and feelings he or she experienced. Through this approach a practitioner may minimize stressful reactions to daily events, which may increase overall well-being and reduce psychological stress (Carmody & Baer, 2008; Carmody, Baer, Lykins, & Olendzki, 2009).

*Guided meditation*, which is used in MBSR, is defined as the process of leading an individual (via an outside source, teacher or recording) through a visualization exercise to use his or her imagination to engage in relaxation or problem solving (Hart, 2004). For example, a guided meditation begins with the instructor asking the participant

to sit or lie down comfortably with his or her eyes closed. The instructor then asks the participant to visualize a lake. The instructor then provides guidance for the practitioner to mentally perform while visualizing the lake. These instructions may include bringing awareness to the physical act of breathing, or visualizing throwing an object that represents a stressful event into the lake as a way of releasing that stressful moment.

The group discussion of MBSR practice gives the practitioners an opportunity to share his or her experience related to using the seven principles of mindfulness in everyday life. The group discussion typically happens at the beginning of each session (to share experiences related to the home practice) and after the meditation session. In this way the instructor can help the participants connect how to use the principles of mindfulness in relation to real-world experiences (Kabat-Zinn, 1990). As an example, if a student with a disability is unable to read on the same grade levels as his or her peers, the group discussion may help the student accept his or her limitation as opposed to denying the reading deficiency. With this acceptance the student may then view reading remediation programs with a *beginner's mind* and become more willing to receive reading instruction.

**Mindfulness program versus mindfulness technique.** In 2005, the Garrison Institute released the *Garrison Institute Report on Contemplation and Education*, a survey of contemplative practices used in K-12 educational settings. The authors of this report define contemplation practice as *secular* meditation practices, meaning that the practices are unrelated to religious organizations or doctrine (Schoeberlein, Koffler, &



Jha, 2005). Within the report, the authors organize the programs discussed into two categories: contemplative programs and contemplative techniques.

As defined by the Garrison Institute Report (Schoeberlein et al., 2005), a *contemplative program* uses a pedagogical approach that specifically emphasizes mindfulness and improving a person's capacity for self-awareness. The authors based their definition on the structure of MBSR created by Kabat-Zinn (1990), which is a stress reduction program designed to convey the seven principles of mindfulness through instructional activities, mindfulness meditation, and group discussions. Outcomes associated with a contemplative program include increased mindfulness and attention. Whereas, a *contemplative technique*, as defined by the authors of the Garrison Report, are techniques that include attention training, meditation, and yoga without using a pedagogical approach. Outcomes associated with contemplative techniques include an increase in mindfulness, self-awareness, emotional intelligence, and social skills (Schoeberlein et al., 2005). For example, a contemplative technique may be the practice of meditating for 20 minutes twice a day.

**Mindfulness research with children and adolescents.** In 2010, Burke published a literature review of 15 studies that examined the use of contemplative programs or techniques with students of all ages, kindergarten through 12th grade, in school and outside of school. The programs included MBSR or similar programs developed by the researchers. The techniques were mindfulness meditations. The studies in the Burke literature review showed decreases in psychological distress and negative school behavior, and improvements in emotional regulation.

In 2012, Meiklejohn et al. published a review of contemplative programs available for children and adolescents within and outside of school. The researchers reviewed ten different contemplation programs that showed improvements in anxiety, attention, depression, social skills, and stress for children and adolescents. Eight of the ten programs are located within the United States, while the other two are located in Europe. Four of the ten programs were specifically tailored to be used in a school environment, while the other six were developed for children and adolescents in general. In the literature reviews of Burke (2010) and Meiklejohn et al. (2012) the researchers do not make a distinction of whether the contemplative program was taught to general education or special education students.

### **Characteristics of Students with a Disability**

As defined by the Individuals with Disabilities Education Act (IDEA), *special education* means specially designed instruction, at no cost to the parents, to meet the unique needs of a child with a disability (34 C.F.R. § 300.39, 2006). For the purposes of this study, only students with an emotional disability, specific learning disability, and other health impairment will be targeted.

**Emotional disability (ED).** Kauffman (2005) points out that it is often difficult to determine a reliable definition of an emotional disability because it is “a thing that exists outside a social context but is a label assigned according to cultural rules ... an emotional or behavioral disability is whatever behavior a culture’s chosen authority figures designate as intolerable” (p. 11). With that in mind, for the purpose of this study the definition provided by IDEA will be used, which states

*Emotional disturbance* is a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:

- (A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
- (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
- (C) Inappropriate types of behavior or feelings under normal circumstances.
- (D) A general pervasive mood of unhappiness or depression.
- (E) A tendency to develop physical symptoms or fears associated with personal or school problems.

(ii) Emotional disturbance includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance under paragraph (c) (4) (i) of this section (34 C.F.R. § 300.8 (c) (4), 2006).

Among students with high incidence disabilities, students receiving special education services for an emotional disability may present greater challenges due to manifestation of externalizing and/or internalizing behaviors (Gage, 2013). Externalizing behaviors are characterized as a pattern of actions directed toward the social environment through aggression, disruption, defiance, and destruction (Hallahan & Kauffman, 2006; Gage, 2013). Internalizing behaviors are characterized as a pattern of actions directed inwardly, towards oneself, and includes depression, withdrawal, and obsessive-

compulsive actions (Hallahan & Kauffman, 2006; Gage, 2013). From an educational perspective, students with ED often display poor and unsatisfactory academic achievement, high suspension and drop-out rates, an increased risk for interaction with law enforcement, and are often placed in restrictive school settings (Hallahan & Kauffman, 2006; Bradley, Doolittle, & Bartolotta, 2008). Students with ED are often difficult to connect with because they are not popular with their peers and do not respond positively to teachers who try to help (Hallahan & Kauffman, 2006).

**Specific learning disability (SLD).** A student with a *specific learning disability* is defined by IDEA as having a disorder in one or more basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations (34 C.F.R. § 300.8 (c) (10), 2006).

Students receiving special education services for a specific learning disability often experience deficiency in one or several cognitive processes, such as perception, attention, memory, or metacognition (Swanson, 1996; Masoura, 2006). Students with SLD may display low academic achievement (Fletcher, Lyons, Fuchs, & Barnes, 2007), less capable of performing immediate verbal and visual working memory tasks (Hitch & McAuley, 1991; Masoura, 2006), deficits in expressive and receptive language (Flanagan, Ortiz, Alfonso, & Dynda, 2006), phonological processing (Torgesen, 2000), and accessing previously learned material (Swanson, 2009) as compared to their peers (Berninger, 2006; Swanson & Jerman, 2006). Lastly, students with SLD may also experience low self-awareness, anxiety, and depression (Elbaum & Vaughn, 2003).

**Other health impairment (OHI).** A student with *other health impairment* is defined by IDEA as having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, that

(i) Is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, and Tourette syndrome; and

(ii) Adversely affects a child's educational performance (34 C.F.R. § 300.8 (c) (9), 2006).

According to Hallahan, Lloyd, Kauffman, Weiss, and Martinez (2005) there has been a steady increase of students receiving special education services for OHI over the past twenty years. They believe the increase is due to the number of students with Attention Deficit and Hyperactivity Disorder (ADHD) being identified to receive special education services under an OHI classification. A student with ADHD often needs directions to be repeated, appears to be daydreaming, acts before thinking, blurts out responses, interrupts instruction, and moves around excessively (Mastropieri & Scruggs, 2010).

### **Mindfulness for Students with a Disability**

Mindfulness is intentionally paying attention to one's thoughts as they surface without making judgments about them (Kabat-Zinn, 2003), and it is also the state of being fully present to one's thoughts and actions without reacting out of habit (Salzberg

and Goldstein, 2001). Through the use of a contemplative technique such as mindfulness meditation, a student may learn how to objectively observe his or her own moment-to-moment experiences and decrease their sense of "going through the motions". For example, a student with SLD due to a writing deficiency may become automatically stressed and anxious, which is his or her typical moment-to-moment response, when given a writing assignment. Through mindfulness practices, the student may learn to reduce these automatic feelings of stress and anxiety and become more open to employing strategies that can improve the outcome of the writing assignment.

**Stress and students with a disability.** There is a growing concern over the amount and type of stress that students are experiencing in the school environment (Burchinal, Roberts, Zeisel, & Rowley, 2008; Grannis, 1992), regardless of whether they are receiving special education services or not. Specifically, for a student with ED, SLD, or OHI, a typical school day presents many potential stressors that make it difficult to manage his or her disability on top of adolescence and other major experiences, such as biological, educational, and social role transitions (Bandura, 2006). For example, a student with OHI may have a difficult time completing class work or making friends because of ADHD impulsivity, which could lead to a mixture of stress and anxiety.

Pajares and Urdan (2006) state that, "adolescence is a pivotal development period in which youth begin to form an enduring sense of personal identity and agency about themselves" (p. x). A combination of stressors can lead to a high level of anxiety that may interfere with a student's ability to make adequate or appropriate academic progress by impairing attention or disrupting the cognitive information process (Semple, Lee,

Rosa, & Miller, 2010). Early intervention and prevention programs show promise for improving student behavior and academic success, however students with disabilities are at risk of becoming resistant to behavioral, social, and academic interventions as they move through the school system because of inconsistent implementation of intervention and prevention programs (Bradley, Doolittle, & Bartolotta, 2008). One approach to the growing problem of school-related conduct, behavior, and academic problems with students who receive special education services may be to provide training in stress reduction (Barnes, Bauza, & Treiber, 2003), which could be accomplished through a contemplation program or technique.

**The use of mindfulness with students with disabilities.** The foundation of mindfulness is based on training, through straight-forward, secular, contemplative technique in order to change a person's relationship to stressful thoughts and events, while decreasing emotional reactions (Kabat-Zinn, 2003). For example, if a student with SLD fails a test and becomes disappointed, the intent of mindfulness is for the student to not judge the test performance or become disappointed, but to try and be an impartial witness to the experience. From this point, the student would then try to accept the outcome of the poor test grade and look at the situation from a different view, to see if something could have been done to prevent the low test score that might be applied to future test taking.

With the contemplative technique of mindfulness meditation, the student learns how to identify the *intention*, *attention*, and *attitude* towards the event that has captured his or her awareness (Shapiro, Carlson, Astin, & Freedman, 2006). Shapiro, Brown, and

Astin (2011) define *intention* as consciously paying attention to an event, action, or emotion. *Attention* is defined as the ability to focus on the present moment without interruption or interpretation. *Attitude* is the frame of mind brought to the event, action, or emotion and is taught to be open and accepting (Shapiro et al., 2011). For example, a student with OHI due to ADHD is required to give a presentation to his Biology class. If the student practices mindfulness, he may choose to intentionally attend to his emotions related to anxiety about giving the presentation. Then he may focus his attention on the action of giving the presentation without letting his anxious feelings cause him to impulsively skip class and avoid giving the presentation. Finally, the student may accept that he is anxious about giving the presentation, but may choose not to let his anxiety determine the outcome of his actions. This frees up his potential to give the presentation in front of the class.

Gethin (2011) refers to an ancient metaphor that equates *mindfulness* to a gatekeeper guarding a city with five gates. The body is the city, the five senses are the five gates, and mindfulness is the gatekeeper. The characterization of mindfulness guarding the gates (senses) is to maintain a presence of mind, or vigilance to one's own surroundings.

If we have mindfulness then we will remember what it is that we should be doing in a given moment and thus when perceptions, feelings, states of mind and emotions that might interfere with this arise, we will have the presence of mind not to let them overcome our minds and take hold (p. 272).



Per the definition in IDEA, students with ED display inappropriate types of behavior or feelings under normal circumstances or have a general pervasive mood of unhappiness or depression (34 C.F.R. § 300.8 (c) (4), 2006). As stated by Gethin, if a student with ED practices mindfulness he or she may be able to display appropriate behaviors and feelings instead of using inappropriate language towards a teacher when given a direction. In this example, the student with ED who learns how to be more mindful may develop the ability to not have his or her actions be controlled by his or her emotions.

### **Research Questions**

The aim of this research project is to explore the extent to which secondary students receiving special education services can increase their mindfulness, to events and emotions, through the contemplative technique of mindfulness meditations. As a result of the students' increased awareness, do levels of perceived stress and anxiety decrease? Lastly, as perceived by the students' English and mathematics teachers, do behaviors in the classroom as they relate to concentration, disruptive behavior, and social interactions change?

The significance of this study is to determine the extent to which a mindfulness meditation practice can provide students who receive special education services additional skills for managing stress and social, academic, and family challenges. Mindfulness meditations are designed to reduce stress, enhance attention, and decrease negative self-judgments (Semple et al., 2010), which may break the counterproductive cycle of stress, anxiety, and self-blame that many students who receive special education

services face on a daily basis. The counterproductive cycle of stress, anxiety, and self-blame may be broken because the students who receive special education services, through practicing the principles of mindfulness, may learn to (a) cultivate patience and acceptance towards one's self, (b) be nonjudgmental and nonreactive to events and emotions, and (c) let go of the positive and negative emotions connected to events.

Through this study the following questions were asked:

- 1) After a student is taught how to use mindfulness meditation, is there a statistically significant increase in his or her level of mindfulness awareness?
- 2) From the pretest measurements to the posttest (and follow-up) measurements, is there a statistically significant change in the student's perceived stress levels and anxiety?
- 3) Do the English and mathematics teachers observe a statistically significant (a) decrease in concentration problems, (b) disruptive or aggressive behavior in the classroom, and (c) an increase in positive social interactions from the beginning to the conclusion and the follow-up of the intervention?

### **Definition of Terms**

**Definition of terms related to mindfulness.** For the purpose of this study, *mindfulness* is defined as a form of secular meditation that "is a self-regulatory, mind-body process used to help engage attention and awareness" (Burke & Gonzalez, 2011, p. 49) in the practitioner. The purpose of mindfulness meditations is to intentionally pay attention to present-moment experiences, nonjudgmentally, over a sustained period of time. Through a sustained mindfulness practice, an individual may be able to develop a

nonreactive present moment awareness to everyday life (Kabat-Zinn, 1990; Meiklejohn et al., 2012; Miller, Fletcher, & Kabat-Zinn, 1995).

As defined by Webster's Third New International Dictionary (Encyclopedia Britannica, 1986), *secular* is related "to the worldly as distinguished from the spiritual: not sacred" (p. 2053).

As defined by Smalley et al. (2009), *body scans* are a form of meditation where the participant is verbally guided by an instructor to feel the presence of each body part or muscle group for a specified period of time. The purpose of the body scan meditation is for the participant to become more aware of his or her body in relation to his or her environment.

*Guided meditation* is defined as the process by which an individual is led by an outside source, teacher or recording, through a visualization exercise to use their imagination for the purpose of tapping into the symbolic and metaphorical aspects of the mind for relaxation or problem solving (Hart, 2004).

*Breathing exercise* is the process of focusing on the act of breathing to clear the mind of any unnecessary thoughts and to increase the inhalation and exhalation of each breath (Desikachar, 1999).

*Meditation* is a secular devotional exercise of contemplation, which means concentrated thinking about a single topic (Kirk and Boon, 2004). For example, if a person sits and thinks about the direction of his or her life, this is a form of meditation. For the purpose of this study, participants will be guided through a meditation exercise with specific topic to think about, which is also a form of guided meditation.

*Contemplative program* is defined as specifically teaching principles of mindfulness through instructional activities, mindfulness meditation, and group discussions through a pedagogical approach. The lessons of a contemplation program are taught typically organized into eight class sessions between 90 and 120 minutes in length, similar to the Mindfulness-Based Stress Reduction program by Kabat-Zinn (1990) or Mindfulness-Based Cognitive Therapy by Segal et al. (2001). Outcomes associated with contemplative programs include an increase in mindfulness and attention (Schoeberlein et al., 2005).

*Contemplative technique* is defined as techniques that include training to increase attention, meditation, and yoga, but are not associated with a program structure. For example, a contemplative technique may be the practice of meditating for 20 minutes twice a week. Outcomes associated with contemplative techniques include increased mindfulness, self-awareness, and emotional intelligence (Schoeberlein et al., 2005).

*Transcendental Meditation (TM)* is a concentrative technique of meditation practiced by sitting in a chair for 20 minutes, twice a day, and is taught by a qualified instructor. TM promotes relaxation through concentrating on breathing and chanting exercises led by an instructor (Maharishi Foundation, 2012).

*Progressive Muscle Relaxation (PMR)* is a form of relaxation that is performed by the person tensing and releasing every muscle group in a prescribed order. PMR may leave the individual relaxed and possibly lethargic (Epelbaum, 2012).

*Mindfulness-Based Stress Reduction (MBSR)* is a specific contemplative program that is led by an instructor who teaches mindfulness meditations through guided practices

during weekly sessions, and group discussions that last approximately 120-minutes a class for eight weeks (Kabat-Zinn, 1990).

*Mindfulness-Based Cognitive Therapy (MBCT)* is a therapy designed to prevent the relapse of depression by combining traditional Cognitive Behavioral Therapy (CBT) and mindfulness. Through this structured program, individuals are taught mindfulness techniques to learn to notice when an automatic response occurs and to change their reaction to one of observation without judgment (Segal, Williams, & Teasdale, 2001).

*Dialectical Behavior Therapy (DBT)* is a therapy that was developed to treat individuals with borderline personality disorder. The therapy uses a combination of cognitive behavioral techniques, emotional regulation, and mindful awareness (Linehan, 1993).

*Acceptance and Commitment Therapy (ACT)* is a psychological intervention that uses acceptance and mindfulness techniques to help individuals better control their thoughts, feelings, and emotions (Hayes, Strosahl, & Wilson, 2011).

**Definition of terms related to special education.** *Special education* means specially designed instruction, at no cost to the parents, to meet the unique needs of a child with a disability (34 C.F.R. § 300.39, 2006). If a student in a school system is determined to need special education services, through a referral and evaluation process, an Individualized Education Program (IEP) is developed. The IEP is a written plan of specifically designed interventions, supports, and services to be provided to the student in order that he or she can access the general education curriculum provided to nondisabled, age appropriate peers (Overton, 2006). In order for a student to receive special education

services the school system must first evaluate the student and determine if they have a qualifying disability that affects his or her learning.

For the purpose of this study, the three disabilities that were targeted were (a) an *emotional disability*, (b) *specific learning disability*, and (c) *other health impairment*. An *emotional disability* is defined by IDEA as a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:

(A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.

(B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

(C) Inappropriate types of behavior or feelings under normal circumstances.

(D) A general pervasive mood of unhappiness or depression.

(E) A tendency to develop physical symptoms or fears associated with personal or school problems.

(ii) Emotional disturbance includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance under paragraph (c) (4) (i) of this section (34 C.F.R. § 300.8 (c) (4), 2006).

*Specific learning disability* is defined by IDEA as a disorder in one or more basic psychological processes involved in understanding or in using language, spoken or

written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations (34 C.F.R. § 300.8 (c) (10), 2006).

*Other health impairment* is defined by IDEA as having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, that (i) is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, and Tourette syndrome; and (ii) adversely affects a child's educational performance (34 C.F.R. § 300.8 (c) (9), 2006).

*Executive function* is the ability of an individual to guide one's behavior by tapping into the cognitive process of working memory, inner dialogue, control of his or her emotions, problem analysis, and communicating solutions to problems to others (Flook et al., 2010).

**Definition of terms related to research.** With research that implements a *waitlist control design*, participants are identified into two different groups. The treatment group is designated to receive treatment first and receives the intervention immediately. The group not receiving treatment immediately is designated as the waitlist control group and is required to wait a specified amount of time before receiving the intervention. The specified time that the waitlist control group participants wait to receive treatment is usually the same amount of time it takes to administer the intervention to the first group (Goodwin, 2009; McKay, 2007).

## **2. LITERATURE REVIEW**

This chapter provides a literature review of the research related to contemplative programs and techniques based on the Mindfulness-Based Stress Reduction (MBSR) program as developed by Kabat-Zinn (1990). First is a description of the historical research results of MBSR with adult populations, which leads to justification of the development of MBSR related programs for children and adolescents. Next, the literature review parameters used to find current research, related to MBSR interventions with adolescents, are identified. A review of the literature based on the research studies that were identified through the search parameters is presented. Last, the chapter synthesizes the research findings of the studies reviewed, outlining the strengths and weaknesses of these findings, and providing an overview of best practices. The synthesis of the studies reviewed leads to the development and justification of the study as outlined in Chapter 3.

### **Historical Data of Mindfulness-Based Stress Reduction**

Mindfulness-Based Stress Reduction (MBSR) is a specific contemplative program that is led by an instructor who teaches mindfulness meditations through guided practices, during weekly group sessions that last approximately 120 minutes per class for eight weeks (Kabat-Zinn, 1990). Use of MBSR to reduce stress, increase relaxation, alleviate pain, and reduce anxiety with adult populations having various physical and



psychological ailments has been researched by the medical and psychiatric communities (Carmody & Baer, 2008; Carmody et al., 2009; Grossman, Niemann, Schmidt, & Walach, 2004; Kabat-Zinn, 2003; Miller et al., 1995; Shapiro et al., 2011).

Several meta-analyses and literature reviews of empirical research, related to mindfulness-based meditation and contemplative techniques, report an overall medium effect size ( $d = .50 - .59$ ) on outcome measures of physical and psychological health (Baer, 2003; Burke, 2010; Grossman et al., 2004). Based on Cohen (1977), effect sizes of  $d = 0.2$  are considered small,  $d = 0.5$  are medium, and  $d = 0.8$  are considered large. In addition, MBSR and contemplative techniques may be helpful in improving psychological health and well-being, and for reducing stress (Baer, 2003; Carmody & Baer, 2008; Gold et al., 2010; Kabat-Zinn, 1990; Meiklejohn et al., 2012). Grossman et al. (2004) concluded that "mindfulness training might enhance general features of coping with distress and disability in everyday life, as well as under more extraordinary conditions of a serious disorder or stress" (p. 39).

**Mindfulness-based programs for children and adolescents.** Since MBSR's inception at the University of Massachusetts Medical School by Kabat-Zinn, several mindfulness-based programs have been developed for use with children and adolescents. These programs are supported by research that indicate that contemplative programs, such as MBSR, are effective with children (Biegel, Brown, Shapiro, & Schubert, 2009; Burke, 2010; Lee, Semple, Rosa, & Miller, 2008; Meiklejohn et al., 2012; Thompson & Gauntlett-Gilbert, 2008). Approaches with the strongest empirical evidence that incorporate the principles of mindfulness include Mindfulness-Based Stress Reduction

(MBSR; Kabat-Zinn, 1990); *Mindfulness-Based Cognitive Therapy (MBCT)*; Segal et al., 2001); *Dialectical Behavior Therapy (DBT)*; Linehan, 1993); and *Acceptance and Commitment Therapy (ACT)*; Hayes, Strosahl, & Wilson, 2011).

Mindfulness-Based Cognitive Therapy (MBCT) is a therapy designed to prevent the relapse of depression by combining traditional Cognitive Behavioral Therapy (CBT) and mindfulness. Through this structured program, individuals are taught mindfulness techniques to learn to notice when an automatic response occurs and to change their reaction to one of observation without judgment (Segal, Williams, & Teasdale, 2001).

Dialectical Behavior Therapy (DBT) is a therapy that was developed to treat individuals with borderline personality disorder. The therapy uses a combination of cognitive behavioral techniques, emotional regulation, and mindfulness (Linehan, 1993). Acceptance and Commitment Therapy (ACT) is a psychological intervention that uses the principles of mindfulness to help individuals better control their thoughts, feelings, and emotions (Hayes, Strosahl, & Wilson, 2011).

Randomized research studies of these interventions have shown significant outcomes for (a) adolescents with stress and anxiety-related disorders (Carmody & Baer, 2008; Carmody et al., 2009; Reibel, Greeson, Brainard, & Rosenzweig, 2001; Semple, Reid, & Miller, 2005; Lee et al., 2008); (b) bipolar disorder (Goldstein, Axelson, Birmaher, & Brent, 2007); (c) low executive functioning (Flook et al., 2010); and (d) Attention Deficit and Hyperactivity Disorder (ADHD; Semple et al., 2010; Smalley et al., 2009). Based on research findings, with effect sizes ranging from small to large ( $d = -.2 - 1.2$ ), mindfulness-based meditations and contemplative techniques may enhance

adolescents' ability to cope with stress-related symptoms and behaviors (Burke, 2010; Carmody et al., 2009; Grossman et al., 2004).

### **Literature Review Parameters**

The following electronic databases were searched: Academic Search Complete, APA PsycInfo, Education Full Text, Education Research Complete, Educational Administration Abstracts, ERIC, Medline, ProQuest Education Journals, ProQuest Research Library, Psychological and Behavioral Sciences Collection, and Social Sciences Full Text. Search terms included contemplation, education, meditation, mindfulness, Mindfulness-Based Cognitive Therapy (MBCT), Mindfulness-Based Stress Reduction (MBSR), relaxation, special education, special need, special population, and student. These search terms were used in several different combinations when searching the databases. Sets of different combinations included contemplation and education, meditation and education, mindfulness and education, contemplation and special education, meditation and special education, mindfulness and special education, contemplation and special need, meditation and special need, and mindfulness and special need. Search terms also included key authors, such as Baer, Biegel, Carmody, Ciarrochi, Kabat-Zinn, Reibel, Saltzman, Semple, and Shapiro. These researchers were identified as key authors based on the frequency of published research and number of times cited. Reference lists of all articles were searched for additional related articles based on key terms in the titles and key authors. Any article pulled from a reference list was then reviewed based on the search criteria. Only research studies published in peer-reviewed journals were reviewed. Therefore, unpublished dissertation and thesis studies

were not reviewed. Only articles written in English were reviewed and only studies that used secular contemplative mindfulness meditation techniques were included. Lastly, because Kabat-Zinn first introduced MBSR and mindfulness-based meditation to the public starting in 1990 with the release of his book, *Full Catastrophe Living: Using the Wisdom of your Body and Mind to Face Stress, Pain, and Illness*, only studies written between 1990 and 2012 were reviewed.

The criteria for the inclusion of studies for the research review were based on a modified version of Burke's (2010) search parameters. The criteria included the following.

- Contemplation program or technique that consisted of a mindfulness-based intervention.
- Interventions were based on a length of 5 to 12 weeks, consisting of at least 30 minutes per week.
- The intervention was conducted in a school or clinical setting.
- The type of research design, including the use, or no use, of control groups.
- Quantitative outcome measures were available.
- Outcome measures were linked to stress, anxiety, behavior, or academic concerns.
- Outcome measures were derived from standardized and validated scales.

There were 19 studies that met these criteria. The complete list of the 19 studies that meet the literature search criteria can be found in Appendix A. For review in this

chapter, the studies were divided based on elementary (K through 6th grade) or secondary (7th to 12th grade) grade level. Under those two headings, individual studies are described based on whether the research design included no control group, a control group, or a waitlist control group.

### **Control Groups**

A research design with no control group implies that all participants are receiving the intervention. With no control group there is no baseline data to compare the results to at the conclusion of the intervention (McKay, 2007). In a study where there are two conditions—treatment and no treatment—some participants will receive the treatment and other participants will not. The participants who receive treatment are often defined as the experimental group. Participants who do not receive treatment are categorized as the control group. In theory, the participants are equally the same in all ways except one group receives treatment while the other group does not. Control groups are necessary for making comparisons of data to baseline performance. In this way the control group is providing a baseline for comparison (Goodwin, 2009).

The purpose of a waitlist control group is so that all the participants receive the treatment, but at different times (Goodwin, 2009; McKay, 2007). The division of the two groups can be done through random or non-random assignment. Both groups of participants, regardless of group assignment, complete all measures associated with the study. The two groups of participants are identified and the group designated to receive treatment first receives the intervention immediately, and is designated as the treatment group. The group that has not received treatment is designated as the waitlist control

group because they are required to wait a specified amount of time before receiving the intervention. The specified time that the waitlist control participants have to wait to receive the treatment is usually the same amount of time it takes to administer the intervention to the first group. A waitlist control group design eliminates any ethical concerns associated with a no-treatment design because all participants receive the treatment. Additionally, a waitlist control group provides the researcher with data to compare the results of the initial treatment participants to those participants receiving treatment later, and provides a larger sample size for analysis (Goodwin, 2009; Heppner, Wampold, & Kivlighan, 2008; McKay, 2007).

### **Elementary Students with Disabilities**

Eleven studies were reviewed with participants in elementary grades between second and seventh grade, and between the ages of seven to 14 years. Of the eleven studies, four studies focused on children with emotional disabilities and one study focused on children with learning disabilities. All eleven of the studies measured a variety of dependent variables. The variables included mindfulness, anxiety, stress, depression, behavior, attention, executive function, feelings, and relationships. One of the studies used a research design, with no control group, five studies used a control group design, and five studies used a waitlist control group design.

**No control group.** One study used a no control group study design. Semple et al. (2005) conducted a modified MBCT intervention in an inner-city school environment with five children between the ages of seven and eight years old, in 2nd and 3rd grade. All of the children were chosen to participate in the study based on teacher observations

of anxiety symptoms. The intervention was conducted at an elementary school, in a small group setting, over a six-week period. The purpose of the intervention was to train the children's attention by focusing on body sensations and perceptions through breathing, walking, visual, auditory, and tactile exercises (Semple et al., 2005). The participants met once a week for 45 minutes and acted as their own control group in a within-subject, pre and post-design. Further, pretreatment data were collected four days before the start of the intervention and outcome data were collected at the conclusion of the sixth intervention session. The dependent variables for the intervention were anxiety and behavior in the classroom, which were measured with three teacher-reporting instruments, the *Child Behavior Checklist: Teacher Report Form (CBCL-TR)*, the *Multidimensional Anxiety Scale for Children (MASC)*, and the *State Trait Anxiety Inventory for Children (STAIC)*.

Due to the small sample size of the participants within the intervention, the researchers used an ideographic approach to the data analysis. An ideographic approach means the results were evaluated based on graphic displays and visual analysis of pre and post changes, as reported by the participants and teachers (Semple et al., 2005). The teacher ratings from the CBCL-TR, suggest that all five children made gains in adaptive functioning, internalizing behaviors, and externalizing behaviors. That is the participants increased their academic performance, increased effort in working hard in school, reduced somatic complaints, and increased attention. Semple et al. indicated that the teachers reported fewer problem behaviors in the classroom due to the gains the participants made during the intervention. The results from the MASC and the STAIC

were not reported by Semple et al. because in contrast to teacher reports, the participants reported low levels of anxiety at the time of the baseline measurement and posttest measurement. Participants did not report a significant level of anxiety at the start of the intervention; therefore, there was no apparent change in the participants' levels of anxiety at the end of the study. However, the researchers reported clinical observations that suggest the intervention was acceptable to the children and holds promise in treating children with anxiety symptoms.

**Control group.** There were five studies that used a control group study design. Cullen-Powell, Barlow, and Bagh (2005) reported on a year-long study in a public elementary school, with 18 children in grades two and three, between the ages of six and eight years old, with behavioral and learning disabilities. The intervention was a mindfulness-based curriculum called the *Self-Discovery Program (SDP)*, which was created by Cullen-Powell et al. The SDP was designed for children between the ages of 10 and 14 years old with an emotional/behavioral disability. The purpose of the program is to teach children how to discover themselves, their bodies, thoughts, emotions, and behaviors. This is done through teaching practical skills, such as positive touch, relaxation, and emotional regulation. The study was conducted over the course of one academic school year with the participants receiving approximately one 45-minute session per month for a total of eight sessions. The dependent variable for this study included the participants' overall behavior. Behaviors were measured with the *Strengths and Difficulty Questionnaire (SDQ)*, which measures participants' emotional symptoms, conduct, hyperactivity, inattention, peer relationships, and pro-social behavior. Based on



the results from the SDQ, there was no change for participants in the control group. However, the intervention group displayed improvements in pro-social behavior and hyperactivity. This means that the participants in the intervention group displayed increased social confidence with peers and teachers, improved classroom participation, and increased eye contact during conversations. The researchers did not include statistical findings to support the gains reported.

Napoli, Krech, and Holley (2005) reported a randomized control study with 228 first to third grade students across nine elementary schools who participated in the *Attention Academy Program (AAP)*, which was developed by the researchers. The AAP intervention class consisted of a sequential structure of breathing exercises, a body-scan visualization, a body-movement task, and a post-session discussion with instructor feedback (Napoli et al., 2005). The AAP intervention included 12 sessions, 45 minutes long, conducted over 24 weeks on a bi-monthly schedule. The dependent variables monitored by the researchers included test anxiety, attention, and overall behavior. The assessments used to measure these variables consisted of the *Test Anxiety Scale (TAS)*, *Test of Everyday Attention for Children (TEA-Ch)*, and the *ADD\_H Comprehensive Teacher Rating Scale (ACTeRS)*.

Napoli et al. (2005) reported mixed results on the findings. The TEA-Ch Sustained Attention subscale, as completed by the participants, showed no significant differences between treatment and control groups, nor from pre to posttest. However, the paired *t*-tests for the treatment and control group from pre to posttest measurement reported significant results on several of the subscales. For example, the TEA-Ch

selective attention subscale reported a significant result with  $t_{\text{diff}} = 7.94$ ,  $p < .001$ ,  $d = 0.60$ , the ACTeRS Attention subscale, as completed by the teachers, reported a significant result with  $t_{\text{diff}} = -7.19$ ,  $p = .001$ ,  $d = 0.49$ , the ACTeRS Social Skills subscale reported a significant result with  $t_{\text{diff}} = -3.30$ ,  $p = .001$ ,  $d = 0.47$ , and the Test Anxiety Scale, as completed by the participants a significant result with  $t_{\text{diff}} = -1.34$ ,  $p = .007$ ,  $d = 0.9$ . The researchers believed these significant results indicated fewer problems in the classroom as reported by the teachers.

Powell, Gilchrist, and Stapley (2008) reported on a follow-up study using the Self-Discovery Program, SDP, which is a program that teaches children how to discover themselves, their bodies, thoughts, emotions, and behaviors. This is done through teaching practical skills such as positive touch, relaxation, and emotional regulation. This study was conducted with 107 children, between the ages of eight and 11 years old. Within this study, the participants were administered the intervention once a week for 45 minutes, over 12 weeks. The dependent variable for this study was the participants' overall behavior. As used in the Cullen-Powell et al. (2005) study, Powell et al. used the SDQ and reported that compared to the control group, the intervention group showed a statistically significant improvement in the overall total score of the SDQ. Participants in the intervention group may show an improvement in emotional symptoms, conduct, hyperactivity and inattention, peer relationships, and pro-social behavior at the conclusion of the intervention.

Powell et al. (2008) reported that the intervention group, compared to the control group had significant improvements in mean scores on five of the teacher-reported SDQ

subscales. For example, participants had significant improvements in self-confidence ( $p = 0.029$ ), social confidence with teachers ( $p = 0.042$ ), communication with peers ( $p = 0.050$ ), communication with teachers ( $p < 0.001$ ), and contribution in the classroom ( $p < 0.001$ ). The researchers believe that the SDQ provided the participants with various techniques to use at any given time to regulate their own behavior.

Flook et al. (2010) reported on a mindful awareness intervention with 64 children between the ages of seven and nine years old attending elementary school. The intervention program was delivered to block randomized classes for 30 minutes, twice a week, for 8 weeks. The intervention consisted of activities that promote a state of heightened and receptive attention to the current experience. Each intervention consisted of a sitting meditation for about three minutes, a modified body-scan for about five minutes, and then an activity focusing on sensory awareness or attention regulation. The researchers were examining the impact of executive functions (EF) as reported by teachers and parents. Executive functioning is the ability of an individual to guide one's behavior by tapping into the cognitive processes of working memory, inner dialogue, control of his or her emotions, problem analysis, and communicating solutions to problems to others (Flook et al., 2010; Hallahan & Kauffman, 2006).

Flook et al. (2010) reported mixed significant results based on their study. The primary EF outcomes, as reported by parents and teachers, were based on the *Metacognition Index (MI)*, *Behavioral Regulation Index (BRI)*, and *Global Executive Composite (GEC)*, which revealed no significant change among the participants. Based on Flook et al.'s data analysis, there were no significant group main effects between the

intervention and the control group from pre to posttest. However, the *Behavior Rating Inventory of Executive Function* (BRIEF) reported a statistical increase in EF with children with poor initial EF (Wilks lambda = .796,  $F(3,55) = 4.70$ ,  $p = .005$ ) as reported by the parents and teachers. There was no change in EF for children with average or higher functioning EF. The researchers summarized that even though all the participants received the intervention, for a participant who had a below average EF at the start of the study the intervention may have increased the participant's overall Executive function. However, if the participant had average to above average EF, the intervention had no effect on the participant's executive function.

Liehr and Diaz (2010) reported on a two-week mindfulness intervention conducted at a summer camp with 18 participants, nine to 10 years old. The intervention consisted of a 15 minute, mindfulness exercise administered daily during the two-week camp. During the intervention the participants were taught how to focus on their breath, purposeful movement, and generosity through various meditation and movement exercises. The dependent variables were the participants' mood, feelings, and state anxiety.

Liehr and Diaz (2010) reported mixed results for the study. Based on the *Short Mood and Feelings Questionnaire* (SMFQ), as reported by the participants, there was a significant reduction in the depressive symptoms for participants in the intervention group, as compared to the control group. However, there were no significant changes in the participants' anxiety, between groups or over time, as reported by the participants, using the *State Anxiety Inventory for Children* (SAIC). This means there were no

differences in anxiety levels between the intervention and control groups. However, the researchers reported that both groups (intervention and control) showed a decrease in the raw scores of state anxiety from the baseline to posttest measurement, as measured by the SAIC. Both groups, regardless of receipt of the intervention treatment, had lower levels of anxiety from the start of the program to the end. Therefore, no changes could be attributed to the two-week mindfulness intervention.

**Waitlist control groups.** There were five studies that used a waitlist control group study design. Mendelson et al. (2010) reported on a randomized, waitlist control study, with 97 children, in fourth and fifth grade, between the ages of nine and 10 years, attending an inner-city public elementary school. The mindfulness intervention consisted of four, 45-minute sessions, four times a week, for 12 weeks. The mindfulness intervention consisted of yoga-based activities, breathing techniques, and guided mindfulness practices, such as paying attention to each breath. The researchers examined the effects of the intervention on the participants' levels of stress, coping skills, depression, positive and negative emotions, and relationships to other people.

Mendelson et al. (2010) reported mixed results for the study. The intervention group showed significant improvements on the total score for the *Involuntary Engagement Coping Scale (IECS)* ( $p < 0.001$ ) as compared to the control group. Within the IECS, three of the five subscales indicated significant differences. The three subscales that showed improvements were Rumination ( $p < 0.01$ ,  $d = 0.70$ ), Intrusive Thoughts ( $p < 0.05$ ,  $d = 0.51$ ), and Emotional Arousal ( $p < 0.01$ ,  $d = 0.64$ ). According to the *Involuntary Stress Responses Scale (RSQ)*, *Short Mood and Feelings Questionnaire-*

*Child Version (SMFQ-C) Depressive symptoms subscale, the Positive and Negative Emotions Inventory (EP), and Relations with Peers and School People in My Life scale,* there were no significant changes between the groups or over time. Therefore, there were no changes in the participants' levels of stress, depression, positive or negative emotions, and relationships with people in their lives.

Lee et al. (2008) reported on a 12-week *Mindfulness-Based Cognitive Therapy-Children (MBCT-C)* program with 25 children between the ages of nine and 12 years old that attended an afterschool reading clinic. The researchers were examining the effects of mindfulness practices on the participants' behavior, anxiety, and depression. The MBCT program used in the study was originally developed for adults, but for the purpose of this study was modified to accommodate younger children. The purpose of the intervention was to teach participants how to become more aware of their thoughts, feelings, and body sensations as related to day-to-day experiences, through participatory, multisensory experiences. The multisensory activities focused on specific sensory modalities to connect the participants' attention to hearing, touching, tasting, and smelling. The intervention sessions were reduced to 90 minutes from two hours, and the class size reduced from 12 to six to eight participants. The researchers also incorporated rewards and incentives targeted for children, to increase attendance and participation. At the end of the study, the participants were categorized by *Intent-to-Treat* and *Completers*. *Completers* are defined as completing at least eight of the 12 intervention sessions and *Intent-to-Treat* were participants who completed less than eight intervention sessions.

Lee et al. (2008) reported mixed results as the outcome of the study. Based on the *Child Behavior Checklist (CBCL)*, the researchers reported significant reduction in the total score among the participants who completed the program from pre to posttest ( $t(16) = 2.19, p = .04$ ). The subscale of Externalizing Problems on the Child Behavior Checklist was close to demonstrating a significant change with a score  $t(16) = 1.94, p = .07$ , while the Internalizing Problems subscale was not significant with a  $t(16) = 1.48, p = .16$ . In addition, there was no significant reduction in anxiety and depression measurements among the Completers of the program. Lastly, the researchers reported anecdotal data that participants in the study used breathing exercises learned in the intervention to alleviate stress before exams.

Saltzman and Goldin (2008) reported a non-randomized waitlist control group study with 31 children in grades four through six who participated in a MBSR intervention. The researchers were examining the effects of mindfulness-based meditations on the children's attention, emotional reactions, and mood. The 8-week MBSR intervention consisted of eight sessions conducted once a week for 120 to 150 minutes. The intervention consisted of participants learning how to meditate, practice paying attention, and to become more aware of their feelings and emotions. To measure the dependent variables, the assessment tools used by the researchers included the *Attention Network Task (ANT)*, *Emotional Reactivity Scale (ERS)*, and a *Mood Symptoms Scale (MS)*.

Saltzman and Goldin (2008) reported mixed results as the outcome of the study. Although the researchers did not include statistical data of their findings, they did report

that when comparing the intervention group to the waitlist control group there was an improvement in alerting the participants to the presence of distracters that lead to conflict. In addition, the participants in the intervention group showed improvements in self-judgment and self-compassion. Lastly, comparing the intervention and waitlist control groups, there were no changes in positive or negative self-views, and no change in the total score for mood symptoms.

Schonert-Reichl and Lawlor (2010) reported on a randomized waitlist control study with 12 elementary classrooms consisting of 139 students in grades four through seven. Six of the classrooms received a Mindfulness Education (ME) curriculum, and six of the classrooms were the waitlist control group. The ME curriculum consisted of teaching the students how to quiet their minds, increase their mindful attention, and manage negative emotions. The ME curriculum consisted of the participants sitting in a comfortable position, attentively listening to a single sound, and using the breath as a focal point to be mindful of the present moment. Then the instructors would share a lesson related to mindfulness thinking, such as eliminating negative thinking or concentrating on positive emotions and outcomes. The intervention was conducted once a week for 40 to 50 minutes for an unreported number of weeks. The dependent variables for this study included the participants' optimism, self-concept, affect, and social competence.

Based on self-reports and teacher reports on collected measurements, Schonert-Reichl and Lawlor (2010) reported mixed results on the outcome of the study. The results did indicate that the students in the ME classrooms ( $n = 139$ ) had an increase in



optimism and improved behavior. More specifically, based on the optimism subscale from the *Resiliency Inventory (RI)*, the students in the intervention group showed significant increases in optimism from pre to posttest, as compared to the waitlist control group. Interestingly, at the same time, the waitlist control group decreased in optimism from pre to posttest. Based on the *Self-Description Questionnaire (SDQ)*, students in the intervention group showed significant increases in general self-concept from pre to posttest as compared to the waitlist control group. According to the *Positive and Negative Affect Schedule (PANAS)* the students in the intervention group showed significant increases in positive affect from pre to posttest as compared to the control group. However, there were no changes in negative affect between groups. Lastly, there were no significant differences in social competence between groups or over time, based on the *Teacher's Rating Scale of Social Competence (TRSC)*.

van der Oord, Bogels, and Peijnenburg (2012) reported a quasi-experimental, waitlist control design study with 16 children, between the ages of eight and 12 years old who had been identified with ADHD and Oppositional Defiant Disorder (ODD). The intervention was a program created by the researchers called the Mindful Child (MC) and consisted of teaching the participants how to focus and enhance their attention, and develop more self-control through mindfulness exercises. The researchers did not report an example of the type of mindfulness exercises that were taught during the intervention. The intervention was conducted in an academic clinic designed to help struggling students, over the course of 8 weeks, taught once a week, for 90-minute sessions. The

dependent variables were the participants overall behavior, mindful awareness, and attention.

The researchers, van der Oord et al. (2012), reported mixed results on the outcome of the study. Based on parent reports on the *Disruptive Behavior Disorder Rating Scale (DBDRS)*, participants who received the intervention showed significant reduction in inattention and hyperactivity ( $d = .80$ ) and impulsivity ( $d = .59$ ) symptoms from the pretest to follow-up measurement. But according to the *Mindful Attention and Awareness Scale (MAAS)* and the *ADHD Rating Scale (ARS)*, there were no significant changes between groups (intervention and waitlist control) or across any time period (pre to posttest, or to follow-up). This indicated that the participants' levels of mindfulness attention and overall attention did not increase or change from the beginning of the intervention to the conclusion.

### **Secondary Students with Disabilities**

Eight studies were reviewed with participants in secondary school between eighth and twelfth grade, and 15 to 21 years old. Of the eight studies reported, two studies focused on adolescents with other health impairments, such as Attention Deficit and Hyperactivity Disorder (ADHD). One study focused on adolescents with learning disabilities, and one focused on adolescents with an emotional disability. All eight of the studies measured a variety of dependent variables. The variables included mindfulness, anxiety, stress, depression, behavior, attention, feelings, and relationships. Four of the studies used a research design, with no control group, two studies used a control group design, and one study used a waitlist control group design.

**No control group.** There were four studies that used a no control group study design. Zylowska et al. (2007) reported on an 8-week mindfulness intervention with 32 participants, diagnosed with ADHD. The participants included eight adolescents (M = 15.6 years) and 24 adults (M = 48.5 years). The mindful awareness practices were designed to increase the participants' attention. Each weekly session followed the same format with (a) short meditation, (b) discussion of the previous week's at home practice sessions, (c) introduction and practice of new exercises, (d) another group discussion, (e) review of the next week's at-home practice, and (f) a closing sitting meditation.

Zylowska et al. (2007) reported mixed results on the outcome of the study. Based on the Swanson, Nolan and Pelham Scale (SNAP-IV), a self-reporting measurement tool to determine Attention Deficit and Hyperactivity Disorder (ADHD), the results indicated significant improvement in self-reported overall ADHD symptoms ( $p < .01$ ). The participants reported improved control over their attention and emotional regulation. However, there was no significant change in depression as reported by the *Children's Depression Inventory (CDI)*, or anxiety as reported by the *Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978; Reynolds, 1985)*.

Beauchemin, Hutchins, and Patterson (2008) conducted a study with 32 adolescents attending a private residential school for students with learning disabilities. The mindfulness intervention consisted of a 5- to 10-minute mindfulness meditation sessions at the beginning of every class period, five days a week, for five consecutive weeks. The researchers reported that no formal script was used during the intervention instruction, but a sequence was created to ensure that the intervention was delivered

consistently each session. The sequence included the participants starting the session by focusing their attention on their breathing. Then to increase their awareness, the participants were asked to mentally note any thoughts or feelings that occurred. The goal of the exercise was to practice the mindfulness principle of observing thoughts and feelings with nonjudgmental attention. The dependent variables for this study consisted of the participants' levels of state and trait anxiety and social skills.

Beauchemin et al. (2008) reported that the participants indicated a significant decrease in trait and state anxiety from the beginning of the intervention to the end. Based on the *State-Trait Anxiety Inventory (STAI)*, a self-reporting measurement tool to determine state and trait anxiety, the results indicated significant improvement in trait anxiety,  $t(33) = 2.88, p < .05$ , and significant improvement in state anxiety,  $t(33) = 4.88, p < .05$ . Participants may have experienced a reduction in long-term and short-term anxiety symptoms during the intervention period. The *Social Skills Rating System (SSR)* is a measurement tool to determine the behaviors influencing a student's social functioning. The SSR was completed by the participant and a teacher. The participant-reported SSR showed a significant increase from the pretest to the posttest with  $t(33) = 3.11, p < .05$ . The teacher-reported SSR showed a significant increase from the pretest to the posttest in all three subscales. There was a significant increase in the participants' social skills,  $t(33) = 3.35, p < .05$ , and a significant decrease in the participants' problem behaviors,  $t(33) = 4.95, p < .05$ . Lastly, there was a significant improvement in participants' academic performance,  $t(33) = 4.84, p < .05$ .

Sibinga et al. (2011) conducted a study of an 8-week MBSR program for adolescents and young adults between the ages of 13 and 21 years. The participants were recruited from an urban medical clinic associated with a teaching hospital. Participants were eligible if they received medical care at the clinic. The participants received the intervention once a week, for 120 to 150 minutes, for eight weeks. The sequence of the intervention consisted of presentations related to mindfulness and the mind-body connection, experimental practice of various mindfulness meditations, and a group discussion on the application of mindfulness in everyday situations. The dependent variable for this study was the participants overall psychological symptoms, as measured by the *Symptom Checklist-90-Revised (SCL-90R)*.

Sibinga et al. (2011) reported that there was a statistically significant reduction in hostility, general discomfort, and emotional discomfort when comparing the results over time, from the pre to posttest. Based on the SCL-90R, a self-reporting inventory that measures a large range of psychological problems and symptoms, the results indicated significant reductions in hostility ( $p = 0.02$ ), general discomfort ( $p = 0.01$ ), and emotional discomfort ( $p = 0.02$ ). The researchers also reported anecdotal evidence that the participants perceived improvements in interpersonal relationships, school achievement, and a reduction in stress.

van de Weijer-Bergsma, Formsma, de Bruin, and Bogels (2012) reported on a non-experimental, non-control group study with 10 children between the ages of 11 and 15 years old who had been identified with ADHD. The intervention sessions were administered once a week, for 90 minutes over an 8-week period. The intervention

consisted of mindfulness training that taught the participants how to focus and enhance their attention, awareness, and self-control. The 90-minute session started and concluded with a short breathing meditation, and the participants practiced mindfulness exercises that focused on reducing distractibility, impulsivity, and hyperactivity. The dependent variables were the participants' overall behavior, executive function, mindfulness, and happiness.

van de Weijer-Bergsma et al. (2012) reported mixed results on the outcome of the study. The *Behavior Rating Inventory of Executive Function (BRIEF)*, a parent and teacher reporting measurement tool to assess a child's executive functioning, showed a "borderline statistically significant" (2012, p. 780) reduction in metacognitive problems subscale, as reported by the teacher ( $p = .08$ ), and behavioral regulation subscale, as reported by the parent ( $p = .06$ ), from the pretest to follow-up measurements. Therefore, the teacher may have seen an improvement in the participants taking more ownership on their ability to learn. Also, parents saw an improvement in their children being able to regulate their behavior. However, according to the *Youth Self Report (YSR)*, *Child Behavior Checklist (CBCL)*, *Mindful Attention and Awareness Scale (MAAS)*, and the *Subjective Happiness Scale (SHS)* there were no statistically significant changes across any time period (pretest to posttest or pretest to follow-up).

**Control group.** There were two studies that used a control group study design. Broderick and Metz (2009) reported on a non-randomized, control group pilot using a program called *Learning to BREATHE*. The *Learning to BREATHE* program was designed as a school-based mindfulness intervention to be taught in the classroom. The

structure of the program centered around six themes to include (a) body awareness, (b) understanding thoughts, (c) understanding feelings, (d) integrating awareness and feelings, (e) reducing self-judgments, and (f) integrating mindful awareness into daily life. Each session included (a) a short introduction on a topic, (b) activities and group discussions related to the topic of the session, and (c) a mindfulness meditation practice. The pilot study was conducted in a private high school with 137 12<sup>th</sup>-grade females who participated in six-sessions of the program over the course of five weeks. The researchers did not provide how many minutes each session was or how the sessions were organized. The dependent variables were the participants' positive and negative affect (or interaction with a stimuli), emotion regulation, rumination, and somatic symptoms.

As reported by Broderick and Metz (2009) there were mixed results on the outcome of the study. Two out of the three subscales on the *Positive and Negative Affect Schedule (PANAS)*, a self-reporting tool to measure the positive and negative affect of an individual, were significantly different between the intervention and control group, from pre to posttest. The intervention group showed a significant decrease in negative affect ( $p < 0.05$ ,  $d = 0.57$ ) and an increase in feeling calm, relaxed, and self-accepting ( $p < 0.05$ ,  $d = 0.53$ ). Based on paired  $t$ -tests from pre to posttest of the *Difficulties in Emotion Regulation Scale (DERS)*, a self-reporting measure to assess the regulation of emotions, the participants displayed a significant change in two of the subscales. There was a decrease in the subscales of lack of emotional awareness and lack of emotional clarity. Therefore, the participants may have showed signs of being more aware and understanding of their emotions. In addition, based on paired  $t$ -tests from pre to posttest

of the *Somatization Index of the Child Behavior Checklist (SICBC)*, a self-reporting measure to assess the frequency of somatic complaints, the participants displayed a statistically significant change in the subscales of feeling over-tired and complaints of aches and pains. Lastly, there was no significant change in the *Ruminative Response Scale (RRS)* between groups or over time.

Lau and Hue (2011) reported on a 6-week MBSR study with 48 participants, between the ages of 14 to 16 years old, in a public school. The MBSR intervention consisted of six, 120-minute sessions, once a week, and a one-day, six-hour retreat. The sequence of the intervention consisted of (a) presentations related to mindfulness and the mind-body connection, (b) experimental practice of various mindfulness meditations, and (c) a group discussion on the application of mindfulness in everyday situations. The dependent variables for this study included, mindful awareness, depression, stress, and anxiety.

As reported by Lau and Hue (2011), there were mixed results on the outcome of the study. To measure mindful awareness, the researchers used two different mindful awareness measures, the Mindfulness Attention and Awareness Scale (MAAS) and the *Freiburg Mindfulness Inventory (FMI)*, both measures are self-reporting tools used to assess an individual's mindful awareness. Based on the MAAS, there were no significant changes in mindful awareness across time or between the control and intervention groups. However, the FMI showed a significant increase in mindful awareness in the intervention group as compared to the control group,  $F(1, 46) = 6.56, p = .01$ .



According to the *Scales of Psychological Well-Being (SPWB)*, a self-reporting measurement to assess psychological well-being with regard to life challenges, there were no significant changes in well-being across time or between the intervention and control group. However, the intervention group did show a significant increase in personal growth subscale of the SPWB,  $F(1,46) = 9.54, p < .001$ , after the mindfulness training. The *Depression Anxiety Stress Scales (DASS)*, a self-reporting measurement to assess depression, anxiety, and stress, indicated that the scores for the intervention group for the posttest measurement did not increase. Therefore, the researchers believe that the mindfulness program was significantly related to controlling the depressive levels of the intervention group. Lastly, there were no significant changes between groups or over time for the *Perceived Stress Scale* measurement, which is a self-reporting tool used to evaluate an individual's perceived stress over the past 30 days.

**Waitlist control group.** There were two studies that used a waitlist control group study design. Bogels, Hoogstad, van Dun, Schutter, and Restifo (2008) reported a pilot study using a modified MBCT program with a quasi-experimental, waitlist control, non-randomized study design with 14 adolescents between the ages of 11 and 18 years. All of the participants were identified with externalizing disorders that included ADHD, oppositional and conduct disorders, and autism spectrum disorders. The intervention was administered once a week, for 90 minutes, for eight weeks. Each intervention session started and ended with a short breathing meditation, and the participants practiced mindfulness exercises that focused on reducing distractibility, impulsivity, and hyperactivity. The mindfulness exercises were used to teach the participants how to

focus and enhance their self-control. The dependent variables for this study consisted of happiness, goal attainment, mindful awareness, and behavior.

Bogels et al. (2008) reported results showing participants attained significant improvement in happiness and sustained attention ( $p < .05$ ;  $d = .60$ ), with the posttest, and at the 8-week follow-up ( $p < .001$ ;  $d = 1.1$ ) based on the *Subjective Happiness Scale (SHS)*, a self-reporting measure used to assess an individual's happiness. As reported by the *Goal Attainment Scale (GAS)*, a self-reporting and parent-reporting measurement used to assess an individual's ability to maintain and accomplish goals, the participants and parents both showed a significant improvement on the children's personal goals from pre to posttest (child-self  $d = 1.4$ ; parent-child  $d = 1.4$ ) and maintained this with the follow-up (child-self  $d = 1.5$ ; parent-child  $d = 1.6$ ) measurements. Through the use of the MAAS, a self-reporting measurement to assess mindful awareness, the participants also reported a significant improvement in mindful awareness from pre to posttest ( $d = 0.5$ ) and maintained this through the follow-up ( $d = 0.5$ ) measurement. Lastly, the *Youth Self Report (YSR)*, a measurement used to assess a child's internalizing and externalizing behaviors, reported significant improvement on the total scale score and several of the subscales. Table 1 summarizes the effect size for the subscales of the YSR (Bogels et al., 2008).

**Table 1.**

*Reported Effect Size as Measured by the Youth Self-Report*

YSR	Pre to Posttest	Pre to Follow-up
ES		
Total	0.9	1.0
Internalizing behaviors	0.5	0.5
Externalizing behaviors	1.2	1.1
Social competence	0.5	0.6
Thinking	0.3	0.4
Attention	0.9	1.0

Biegel et al. (2009) and Brown, West, Loverich, and Biegel (2001) reported a randomized waitlist control trial of an MBSR intervention with 102 adolescents between the ages of 14 and 18 years, who were receiving treatment at a psychiatric outpatient facility. Treatment at the psychiatric outpatient facility "involved individual or group psychotherapy and/or psychotropic medication management" (p. 858), which was considered to be referred to as *treatment as usual*. The waitlist control group received such *treatment as usual*, while the intervention group received treatment as usual, as well as participating in an 8-week MBSR program. The intervention was administered once a week for 120 minutes. The sequence of the intervention consisted of (a) presentations related to mindfulness and the mind-body connection, (b) experimental practice of various mindfulness meditations, and (c) a group discussion on the application of mindfulness in everyday situations. The dependent variables consisted of the

participants' (a) perceived stress, (b) state and trait anxiety, (c) self-esteem, (d) mindful awareness, and (e) overall psychological symptoms.

Biegel et al. (2009) reported that the intervention group showed significant improvements over time in the self-reported measures on perceived stress and anxiety. The 3-month follow-up measurement of the *Perceived Stress Scale* (PSS; Cohen, Kamarck, & Mermelstein, 1983) showed an effect size of  $d = .89$  and the *State/Trait Anxiety Inventory* (STAI) showed an effect size  $d = .70$  for state anxiety and  $d = .79$  for trait anxiety. Based on the *Self-Esteem Scale* (SES) the intervention group showed significant improvements over time in self-esteem with a 3-month follow-up effect size of  $d = 0.6$ . Lastly, the *Hopkins Symptom Checklist 90* (SC-90R) showed that the intervention group had significant improvement over time and at the 3-month follow-up in four of the six subscales of somatization ( $d = .80$ ), obsessive-compulsive ( $d = 1.1$ ), interpersonal sensitivity ( $d = .82$ ), and depressive symptoms ( $d = .95$ ).

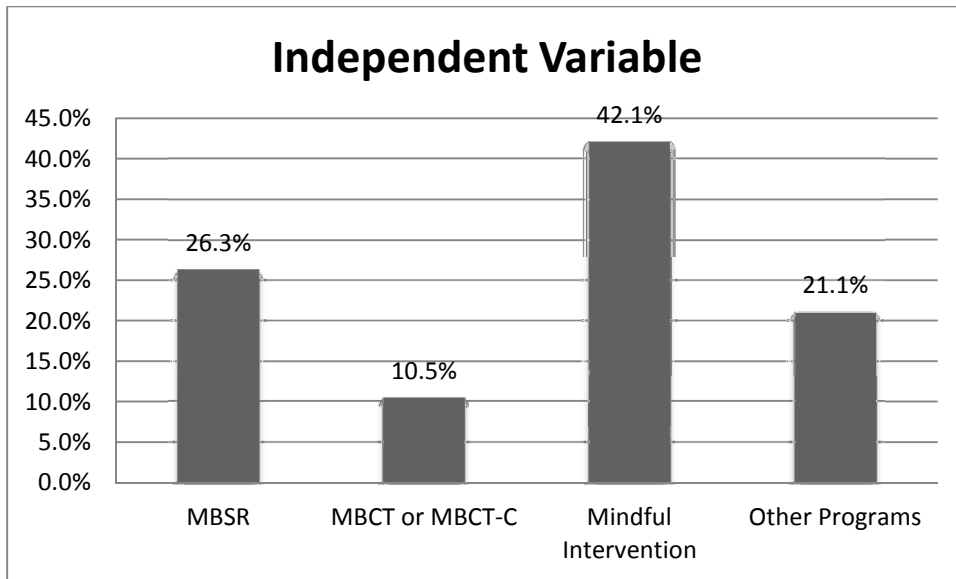
Brown et al. (2011) reported the results of the mindful awareness variable in a separate report. Based on the *Mindful Attention Awareness Scale - Adolescents* (MAAS-A) the participants showed a statistically significant improvement over time from pretest to follow-up measurement with a medium-size effect score of  $d = .61$ . In light of these findings the researchers reported that more time spent in mindfulness practice predicted declines in self-reported depressive and anxiety symptoms.

### **Synthesis of Studies Reviewed**

**Independent variable.** Based on the 19 quantitative studies reviewed, 42% of the studies used a contemplative technique, or mindfulness practice, as defined by the

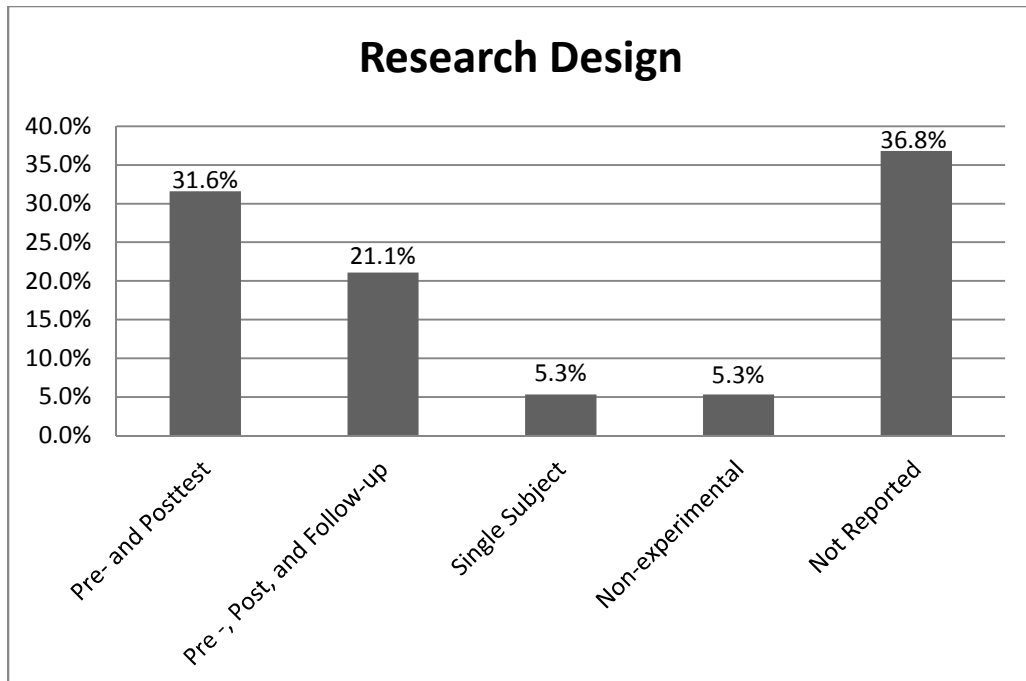
Garrison Institute report (Schoeberlein et al., 2005), which defines a contemplative technique as a portion of a defined contemplative program, or as a technique that is unrelated to a program. For example, a contemplative technique would be practicing meditation in order for participants to become more aware of their actions and emotions. Twenty-six percent of studies used a traditional MBSR program and 10% of the studies used a MBCT program, both of which are considered contemplative programs as defined by the Garrison Institute Report (Schoeberlein et al., 2005). For example, MBSR and MBCT are stress reduction programs designed to give instruction in the seven principles of mindfulness through instructional activities, mindfulness meditation, and group discussions, and are taught for 90 to 120 minutes for eight weeks. The other 21% of the studies used contemplative programs that were mindfulness in nature, but created specifically for the school environment. For example, Broderick and Metz (2009) created a structured contemplative program called *Learning to BREATHE* specifically for the school environment.

Figure 1 provides a graphical representation of the interventions used in the 19 studies reviewed. In Figure 1, the Mindful Intervention label means the independent variable incorporated a contemplation technique, such as a mindfulness meditation. The Other Programs label means that the independent variable was a structured contemplation program created by the researcher, such as *Learning to BREATHE*.



*Figure 1.* Interventions used in the 19 studies reviewed.

**Research design.** Based on the 19 studies reviewed, 52% of the studies used a pretest-posttest, follow-up measurement design. Five percent of the studies used a single-subject design and 5% used a non-experimental design. Lastly, 36% of the studies did not report the type of research design used. Figure 2 provides a graphical representation of the research design used in the 19 studies reviewed.



**Figure 2.** Research design used in the 19 studies reviewed.

**Control group.** A summary of the type of control groups and use of randomization is shown in Table 2. Seventy-three percent of the 19 studies reviewed used a control group, 21% did not use a control group, and 5% did not report if a control group was used or not. Of the 73% of the studies that used a control group, 31% used a waitlist control group design. Of the 19 studies reviewed, 36% of those studies used random assignment to create the treatment and control groups, 42% of the studies did not use random assignment, and 21% did not report if random assignment was or was not used. Random assignment means that each participant has the same probability of being placed in the treatment or the control group (McMillian, 2008). The purpose of random assignment is to equalize the extraneous characteristics of the participants that may

influence the outcome; therefore, minimizing the threat to internal validity (Creswell, 2008; McMillian, 2008).

Table 2

*Use of Control Groups in the 19 Studies Reviewed*

Element	Yes	No	NR <sup>1</sup>
Control Group	73.7%	21.1%	5.3%
Waitlist Control Group <sup>2</sup>	31.6%	57.9%	10.5%
Randomization	36.8%	42.1%	21.1%

<sup>1</sup>Not Reported

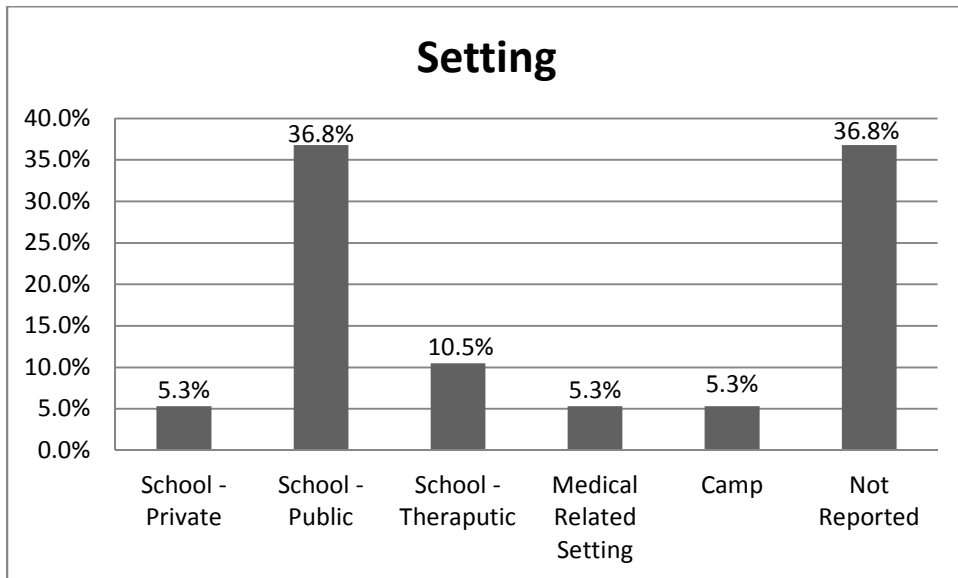
<sup>2</sup>Based on studies that reported the use of a control group design.

**Participants.** In the 19 studies reviewed, 47% of the participants were between the ages of 7 and 12 years old. Twenty-six percent of the studies reported the participants were between the ages of 13 to 21. Twenty-one percent of the studies reported a mixed age range of adolescents and adults between the ages of 15 and 48 years old and 5% of the studies did not report an age range. Within the 19 studies, 58% of the studies did not provide details on the research setting. Thirty-six percent were conducted with students in grades Kindergarten through 7th grade and 5% were conducted with students in 8th grade through 12th grade.

**Setting.** As shown in Figure 3, of the 19 studies reviewed, 52% of the studies were conducted in a school environment such as a public school, private school, or



therapeutic school. Five percent were conducted in a medically related setting and 5% were conducted at a summer camp. Thirty-six percent of the studies did not report the setting of the study.



**Figure 3.** Settings used in the 19 studies reviewed.

**Participant disability.** Cullen-Powell et al. (2005) and Powell et al. (2008) are the only two studies that specifically targeted elementary-aged students identified with a behavior disability with the Self-Discovery Program. Lee et al. (2008) and Beauchemin et al. (2008) targeted elementary-aged (Lee et al.) and secondary-aged (Beauchemin et al.) students identified with a learning disability. Zylowska et al. (2007) and van de Weijer-Bergsma et al. (2012) targeted secondary-aged (Zylowska et al.) and mixed-aged (van de Weijer-Bergsma et al.) students identified with ADHD. The other 13 studies

either did not mention if the participants had a disability, or all of the participants were listed as having multiple psychiatric diagnoses.

**Length and duration of the intervention session.** Of the 19 studies reviewed, 68% conducted the intervention over a period of six to 12 weeks. Fifteen percent of the studies were five weeks or less in duration and 10% of the studies were 13 or more weeks in duration. Five percent of the studies did not report the duration of the study.

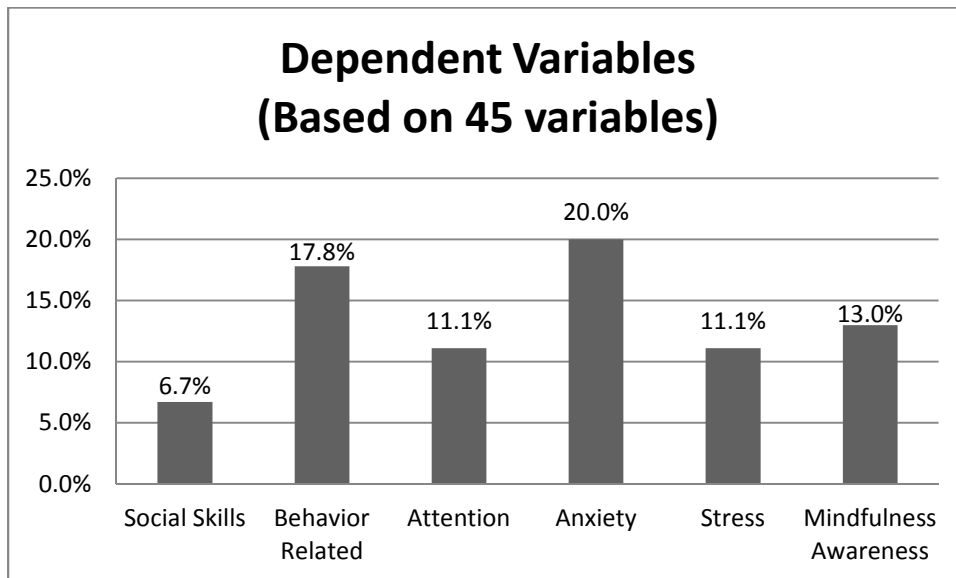
Each intervention was comprised of a specific number of intervention sessions, ranging from less than five to 13 or more. Sixty-three percent of the studies conducted six to 12 sessions, 5% of the studies conducted less than five sessions, and 15% of the studies conducted 13 or more sessions. Fifteen percent of the studies did not report the number of individual intervention sessions. Lastly, the intervention sessions were not always delivered on a weekly basis. Fifty-seven percent of the intervention sessions were delivered once a week, 15% were delivered three or more times a week, 5% were delivered twice a week, and 5% were delivered once a month. Fifteen percent of the studies did not report how often the intervention sessions were held.

**Number of intervention minutes.** The number of intervention minutes the participants in the studies received was based on the number of sessions multiplied by the number of minutes per session, if the data were reported. For example, the number of intervention minutes for an intervention that was 90-minutes long, for eight sessions would be calculated by multiplying 90 by 8 to equal 720 minutes. The total number of intervention minutes was qualified by the participants being with the researcher or

instructor for the entire intervention sessions, to include a learning activity, mindfulness meditation, and group discussion, or just a mindfulness meditation.

Of the 19 studies reviewed, 31% consisted of 45-minute intervention sessions. Forty-two percent of the studies were 90- to 150-minutes per intervention session and 15% of the studies were less than 10 to 30 minutes per intervention session. Five percent of the studies did not report the number of intervention minutes per session. In relation to the total number of intervention minutes within the 19 studies review, 36% of the studies provided one to 719 minutes of intervention. Twenty-six percent of the studies delivered 720 minutes to 999 minutes and 21% of the studies delivered over 1000 minutes of intervention. Fifteen percent of the studies did not report enough data to determine the number of total intervention minutes.

**Dependent variables.** There were 45 different measures used to evaluate the dependent variables within the 19 studies reviewed. Based on the information provided in each study and a compilation of the dependent variables listed in each study, there were 16 different dependent variables used throughout the studies reviewed. Eighty percent of the 16 different dependent variables were related to social skills, behavior, attention, anxiety, stress, and mindfulness awareness. Of the 80%, the three most common dependent variables were anxiety (20%), behavior (17%), and mindful awareness (13%). The *Perceived Stress Scale (PSS; Cohen et al., 1983)* was one of the most frequently used standardized measures throughout the 19 studies. Figure 4 provides a graphical representation of the most common dependent variables used in the 19 studies reviewed.



**Figure 4.** Most common dependent variables used in the 19 studies reviewed.

## Summary

The 19 quantitative research studies reviewed provided mixed results regarding the effectiveness of mindfulness-based intervention with children and adolescents.

Thirteen of the 19 studies reported mixed results in their findings. For example, Lau and Hue (2011) reported a significant increase in mindful awareness, but no significant change in depression, anxiety, and stress. However, all of the studies support that a mindfulness-based intervention, program, or technique, may be effective for teaching children and adolescents to manage

- stress (Biegel et al., 2009);
- anxiety (Beauchemin et al., 2008; Napoli et al., 2005);

- behavior (Lee et al., 2008; Powell et al., 2008; Semple et al., 2005; van der Oord et al., 2012); and
- to increase mindful awareness (Bogels et al., 2008; Brown et al., 2011; Lau & Hue, 2011).

With an experimental research design, such as Biegel et al. (2009), for study of a contemplative program or contemplative technique, researchers may be able to show that such an intervention may be helpful in a school environment for students receiving special education services for an emotional disability, learning disability, or other health impairment. An experimental research design would include comparison groups that are randomly assigned to intervention and control conditions, and pretest-posttest measurements to evaluate the small changes in the dependent variables as affected by the independent variable (Creswell, 2008; McMillian, 2008; Gersten et al., 2005). Even though only three studies, Cullen-Powell et al. (2005), Powell et al. (2008), and Beauchemin et al. (2008) specifically target students with an emotional disability or learning disability, these researchers' evidence indicated some positive results for the mindfulness-based interventions used in those studies. For example, Beauchemin et al. (2008) reported a significant decrease in state and trait anxiety in participants with a learning disability and Powell et al. (2008) reported a significant increase in self-confidence for participants with a behavioral disability. In conclusion, based on the 19 studies reviewed, there is some evidence to support that adolescents with disabilities, such as an emotional disability, learning disability, or other health impairment, may benefit from mindfulness-based programs or techniques.

### **3. METHODS**

This chapter provides a description of the research design used to answer three research questions. The research questions, research design, and intervention setting of the study are described. Additionally, recruitment techniques and random assignment to treatment and waitlist control groups are described. Materials used for the study are identified. This chapter also describes the independent variable, the intervention procedure, and the dependent variables and the measurements that were used. The data analysis procedures of analysis of variance of the pretest scores and multivariate analysis of variance of the posttest scores are described. Lastly, this chapter describes the procedural reliability, the fidelity of treatment, and the social validity scale, which were analyzed through generating a Kappa value or the mean score for the values reported.

#### **Research Questions**

The purpose of this research is to examine the effectiveness of mindfulness meditation used by secondary students who receive special education services in a public school setting. The following questions were asked:

- 1) After a student is taught how to use mindfulness meditation, is there a statistically significant increase in his or her level of mindfulness awareness?

- 2) From the pretest measurements to the posttest (and follow-up) measurements, is there a statistically significant change in the student's perceived stress levels and anxiety?
- 3) Do the English and mathematics teachers observe a statistically significant (a) decrease in concentration problems, (b) disruptive or aggressive behavior in the classroom, and (c) an increase in positive social interactions from the beginning to the conclusion and the follow-up of the intervention?

### **Study Design**

This study employed a true quantitative, experimental randomized, pretest-posttest-follow-up, waitlist control group design to assess the impact of mindfulness meditation on secondary students who receive special education services in a public school setting. This design was chosen because "true experiments comprise the most rigorous and strong experimental design because of equating the groups through random assignment" (Creswell, 2008, p. 313). The benefits of using this type of research design minimizes threats to internal and external validity (Dimitrov, 2008) and uses the same research methodologies and scientific methods as other fields of research (Gersten et al., 2005).

The meditation intervention occurred throughout two consecutive five-weeks cycles, after the participants were randomly assigned to the treatment or waitlist control group. Starting Week 1, the randomly selected treatment group of 10 students (Group A) participated in the first five-week meditation intervention cycle. The randomly-selected waitlist control group of 10 participants (Group B) received no treatment during the first

five-week intervention. Starting in Week 6, the waitlist control group began the second five-week meditation intervention cycle and received the same treatment as Group A.

The study concluded Week 10.

### **Setting**

The mindfulness meditation intervention took place as an after-school program that was located in a secondary public school in a suburban community in the mid-Atlantic region of the United States. The meditation intervention was not part of the existing school program. A classroom in the school was utilized to provide adequate space and privacy for the participants to receive the intervention and was large enough to accommodate twenty students. There were chairs available for the participants if they chose to sit in a chair as opposed to on the ground with a yoga mat.

### **Participants**

All of the students who were eligible to participate in the study were from the same suburban secondary school and received the same curriculum and instruction. The school was chosen out of convenience because the researcher was a special education teacher at the school and received permission from the Principal to conduct the study. Therefore the students were not selected as a clinical sample, but as a convenience sample of suburban middle to upper-class income children with behavioral or academic difficulties (Creswell, 2008; Lee et al., 2008).

The inclusion criteria for a student to be selected to participate in the study included (a) the student must already be identified as currently receiving special education services under the classification of an emotional disability (ED), specific



learning disability (SLD), or other health impairment (OHI), (b) have a current Individualized Education Program (IEP), and (c) attended the targeted secondary public school. The exclusion criteria for a student to not be eligible to participate in the study was the student (a) was identified with a disability other than ED, SLD, or OHI, (b) did not have a current IEP, (c) did not attend the targeted secondary public school, and (d) had the researcher as a teacher during the current school year.

### **Recruitment**

The researcher completed a Human Subjects Review Board application for George Mason University and for the participating school district to obtain permission to conduct the meditation intervention. When final approval was granted, the researcher identified eligible applicants by contacting the Assistant Principal who oversaw the Special Education Program, within the targeted secondary school.

The criteria for student eligibility to participate in the study included attending the targeted school, in grades 9 to 12, and receiving special education services under the classification of an emotional disability, learning disability, or other health impairment. The Assistant Principal provided a list of students meeting the outlined criteria. Based on this list of identified students, the researcher mailed home a recruitment package to the parents or guardians of the 101 identified students. The recruitment package contained a cover letter, Parent Informed Consent Form, and a Student Informed Assent. The recruitment package was mailed to the parents' homes on two separate occasions. The second recruitment package mailing was followed up with a telephone call to the 101 parents of the identified students to answer any questions. When the parent was

reachable by telephone the researcher introduced himself and the reason for the telephone call. He answered any questions that the parent or student may have had in regards to the study. If the parents were unreachable by the telephone the researcher left a voice mail message.

The cover letter within the recruitment package outlined the purpose and structure of the study and invited the identified student to participate in project. The cover letter also informed the parents that their child was eligible to participate in this study and could volunteer to do so in an after-school program that would last for a total of ten weeks. Further, it was explained that participants were expected to attend all of the sessions throughout the duration of the study, but were allowed to stop without penalty if the need arose. This is consistent with research procedures for voluntary participation. Also, participants were eligible for an incentive gift for their participation. Students who were interested in participating in the study needed to sign the Student Informed Assent form and have their parents complete the Parent Informed Consent form, returning both to the researcher prior to the start of the study. The researcher provided his contact information on the cover letter, Parent Informed Consent, and Student Informed Assent forms to facilitate contact by parents or students who wished to ask questions.

When a parent was ready to commit his or her child to being a participant, the paper-based Parent Informed Consent and Student Informed Assent were signed and returned to the researcher. When the researcher received the signed Parent Informed Consent and the Student Informed Assent forms, he met with each student individually. These one-on-one meetings occurred during the student's study hall class during the

school day. The purpose of the meeting was to ensure that the student understood the expectations and commitment of the study. At the end of the meeting the researcher provided an opportunity for the student to remove his or her name from the list of participants. One student asked to be removed from the participation list. There was no further contact with parents or students in regards to the study if they did not wish to participate. Refer to Appendix B for a copy of the invitation letter, Parent Informed Consent, and the Student Informed Assent forms.

Due to the time constraints of the academic school year and the approval process to conduct experimental research, there was a finite period of time for recruitment of the participants. When the researcher reached the end of the recruitment period he began the intervention regardless of the number of participants that were recruited. Out of the 101 students that were eligible to participate in the study, only 20 students agreed to receive the intervention.

### **Group Selection**

"The optimal method for assigning participants to study conditions is through random assignment" (Gersten et al., 2005, p. 155). Randomization of participants to treatment conditions creates "a more sensitive measure of the experimental manipulation" (Fields, 2009, p. 17). In order to randomly split the 20 participants into two groups, the researcher assigned a unique number to each participant. Only the researcher had a key that matched the participant's unique identification number to his or her name.

Participants for the treatment and waitlist control groups were randomly selected based on the unique number given to them at the beginning of the study. The random

selection was done by writing the unique numbers on separate pieces of paper and placing them in a jar. Then the researcher pulled out a piece of paper with a unique number and added that number to either the treatment group or the waitlist control group. The researcher alternated group assignment each time he drew a number; assigning the first number pulled to the treatment group and the second number withdrawn assigned to the waitlist control group. This alternating process was continued until all 20 numbers were pulled out of the jar. Each group, treatment and waitlist control, had 10 participants.

## **Materials**

The materials used for this study consisted of one mp3 player (a portable music device), set of headphones, notebook, and yoga mat for each participant, and a set of mindfulness-based stress reduction compact disks. The materials were used during each meditation intervention session by the participants. The mp3 player, headphones, and yoga mat were used by the participants during each of the 10 meditation sessions. At the end of each meditation session a voice recording on the mp3 player prompted the participants to write his or her thoughts and experiences related to that day's session in the provided notebook.

**Participant incentives.** The \$25 iTunes gift cards were used as an incentive gift for the participants to complete the study. For each participant to be eligible for the incentive gift, they had to attend all of the pretest, posttest, and follow-up dependent measurement sessions and at least seven of the ten intervention treatment sessions.

**Teacher incentives.** The role of the English and mathematics teachers of the participants involved in the study are described later in this chapter. The English and mathematics teachers' incentives were based on the number of teacher observation dependent measurements that each teacher completed. Each dependent measure completed by a teacher earned \$2 towards a Visa gift card. For example, if a teacher completed 10 dependent measures for participants in the study they would receive a \$20 Visa gift card.

**Mindfulness meditations.** Professional audio recordings of mindfulness meditations by Kabat-Zinn (2005) were used for the meditation intervention. Each meditation was 20 minutes in duration. Prior to each intervention session, the mindfulness meditation was copied on to each of the mp3 players. In addition, an audio file known as a podcast (a multimedia digital file that can be recorded to a portable media player) was made by the researcher to provide instructions for the participants. Three different guided meditations were used throughout the ten weeks of the intervention study. Guided meditation is the process by which an individual is led by an outside source, teacher, or recording, through a visualization exercise to use their imagination for the purpose of tapping into the symbolic and metaphorical aspects of the mind for relaxation or problem solving (Hart, 2004). A more detailed explanation of the mindfulness meditations will be discussed later in the chapter.

**Research assistants.** Two research assistants were used to help implement the intervention. Both research assistants were school psychologists with advanced degrees in school counseling. Both research assistants had been professionally trained in

collecting data for on-task and off-task behaviors. One of the research assistants was used to monitor the fidelity of treatment. Her training consisted of two parts. First, she read through the meditation intervention and script to understand the process and asked questions for clarification. Second, using a sample script, she monitored the lead researcher as he used the sample script to demonstrate when he was following the script and not following script. This research assistant was also trained in how to collect the dependent measures from the participants and the teachers.

The second research assistant was used to track the on-task and off-task behavior of the participants during the intervention. Her training consisted of reading through the definitions of on-task and off-task behavior, as defined by the lead researcher, and asked questions for clarification. The research assistant and lead researcher were not able to practice tracking on-task and off-task behavior related to meditation until the intervention began.

### **Independent Variable**

The independent variable was the contemplative technique of mindfulness meditation. Even though the intervention is based on a contemplative technique, each intervention session was structured to follow a sequence of events. The intervention occurred when after-school programs met, twice a week (Tuesdays and Wednesdays) for 45 minutes per session. During intervention sessions, participants received a five-minute overview of the upcoming meditation, participated in a 20-minute mindfulness meditation, and completed a five-minute journaling activity. Ten minutes were allotted for the participants to gather and put away their intervention materials and ask questions.

The intervention materials were marked with each participant's unique designated number, which was assigned as they entered the study.

**Start of the intervention session.** Participants reported to the same classroom, each Tuesday and Wednesday, after school between 3:50 p.m. and 4:05 p.m., where they were greeted by the researcher. The reason that the participants had 15 minutes to report to the classroom was because the school day ended at 3:48 p.m. and most after-school programs did not start until 4:00 p.m. Upon entering the classroom, each participant would collect his or her designated intervention supplies. As stated, the intervention supplies consisted of an mp3 player, headphones, notebook, and yoga mat for individual use during the intervention session. Each participant's intervention supplies were designated with the same number assigned to the participant at the beginning of the study. The participants had the option of sitting in a chair, on the floor, or lying on the yoga mat on the floor during the 45-minute intervention session. Participants who arrived between 3:50 p.m. and 4:00 p.m. were encouraged to sit or lay quietly until the intervention started.

Starting at 4:05 p.m., the researcher provided a brief introduction to the day's meditation lesson, asked the participants to get settled, and checked for questions. The researcher would tell the participants what type of meditation they would be listening to and what they may experience during the meditation. The researcher would also answer any questions the participants had, such as what was the best way to do the meditation, by sitting or lying down on the floor. At approximately 4:15 p.m., the researcher prompted the participants to put on their headphones, and turn on their mp3 players to start the

guided meditation lesson that had been preloaded prior to the day's lesson. Each meditation session lasted approximately twenty minutes, ending at approximately 4:35 p.m.

**Description of the mindfulness meditation.** Prior to the 20-minute meditation starting the participants would hear a short one-minute podcast. The purpose of the podcast was to give the participants a chance to settle into their positions and begin to transition their attention to the task of meditating. A different podcast was recorded for each meditation session. Below is an example of one of the podcasts:

In a few moments the meditation intervention will begin. This is a time for you to relax. As you listen to the guided meditation please try and sit quietly as you hear the speaker's words. Try and visualize in your mind what the speaker says. Remember to breathe in your normal rhythm and focus on the meditation intervention. If your thoughts wander to other things, do not worry. Try and stop the thoughts and focus on the speaker's words. Over time this will become easier to do. Please be respectful of the other participants in the room by staying quiet and not moving during the meditation. Now take a slow deep breath and enjoy the meditation.

Immediately after the opening podcast the guided meditation would begin. The purpose of each meditation session was to teach the participant how to change his or her relationship with stressful thoughts and events, by reducing the emotional attachment and reaction to the stressful event through a cognitive assessment of the situation (Gold et al., 2010). For example, by listening to the guided meditation the participant may learn how



to become more aware of his or her moment-to-moment experiences and decrease his or her sense of "going through the motions".

The three different mindfulness meditations chosen for this study were to instruct participants on how to better understand the purpose of sitting or lying quietly without falling asleep and how to focus on one event at a time (Kabat-Zinn, 2005). Each of the mindfulness meditations had been developed and narrated by Kabat-Zinn (2005) for use in the practice of a mindfulness meditation program. The three meditations were referred to as the sitting meditation, mountain meditation, and lake meditation. Refer to Appendix C for a full description of each of the three meditations. Each meditation was designed to be practiced, or heard, while in a seated or lying position, and each meditation was 20-minutes long. The use of the same three meditations over the course of five weeks provided the participants with repetition of what to expect at each intervention session. Every Tuesday, the participants listened to the sitting meditation. Every Wednesday, the participants alternated between the mountain and lake meditations.

The sitting meditation was designed to introduce how mindfulness can be brought into a person's everyday life. For example, a student with ED could use the sitting meditation to calm down from a verbal confrontation they may have had with a teacher. The mountain and lake meditations are used to strengthen a person's understanding of a mindfulness practice through the development of intention, attention, and attitude towards a person's awareness. To illustrate, the mountain meditation is designed for the practitioner to find the commonalities between themselves and a mountain, such as identifying the characteristics of strength, durability, persistence, and pride. The lake

meditation is similar in design, but is geared towards finding acceptance, such as acceptance of oneself, family and friends, current situation, or uncertain future. Below is a sample of the mountain meditation that the participants heard.

You are simply allowing yourself to be where you already are and to feel whatever is here, to be felt in this moment, observing and accepting whatever is here simply because it is already here. A part of your experience in this moment, regardless of whether it feels pleasant, unpleasant or neutral. Give full care and attention to each moment, a continual seeing and letting go, seeing and letting go. And in the last few moments of the sitting recommitting yourself to being fully awake and focused, fully in your body, sitting with the majesty, the beauty, the stability of a mountain and also perhaps committing yourself, bringing mindfulness to the various situations and activities you will encounter today. So that you can respond consciously rather than automatically to the various events and occurrences in your life and perhaps find a way to live all your moments with greater harmony and effectiveness, including those in which you are faced with obstacles and challenges (Kabat-Zinn, 2005).

While the participants were engaged in the meditation exercise from approximately 4:15 p.m. to 4:35 p.m., the researcher and a research assistant sat in front of the participants and listened to an audio-recording through headphones to observe and record each participant's time on-task by momentary time-sampling. The researchers would listen to a recording that prompted them every 20 seconds to scan the room of participants and mark if each participant was on-task or actively off-task with the

meditation intervention. The definitions for on-task and off-task behavior are defined later in this chapter.

**Journaling activity.** When the meditation ended at approximately 4:35 p.m. the participants were prompted by a second podcast to use his or her notebook to write down or draw any thoughts or feelings they may have experienced during or after the meditation. Due to the time constraints of the study, the journaling activity was intended to replace the common contemplation practice of a group discussion after the meditation. The researcher believed it was important for the participants to have an outlet for any thoughts or feelings that may have surfaced during the meditation. In addition, the podcast at the end of the meditation was intended to help the participants transition from a moment of quiet reflection to the journaling activity.

The notebooks were kept in a secure locked cabinet between sessions and were not part of the data collection process and were not analyzed. The researcher briefly reviewed the entries to ensure they did not include reference to self-harm, suicide ideation, or harming another person. The participants received the same prompt from the podcast to help guide them on what to put in their notebooks. A different writing prompt was provided each session. The participants were given five minutes to complete the written activity. Below is an example of a journal writing prompt heard at the end of a meditation:

Before opening your eyes, take a moment to familiarize your thoughts, and your emotions. When prompted, open your eyes and feel your awareness spread throughout the room. Open your notebook and take a few moments to write down

any thoughts or words that come to your mind. You can use this time to record your impressions or emotions related to the meditation exercise either in words or pictures. Your thoughts and emotions will not be shared with anyone. Take a slow deep breath and then open your eyes and begin.

**End of the intervention session.** At 4:40 p.m., the researcher instructed each participant to return his or her intervention materials and then they were allowed to leave. The researcher provided after-school activity bus passes to participants, if needed. At 5:00 p.m., the researcher ended the meditation intervention session. A summary of the events and the time allocated to each event during the 45-minutes sessions is found in Table 3.

**Table 3**

*Sequence of Events During Intervention Sessions*

Time	Activity
3:50 pm to 4:05 pm	<ul style="list-style-type: none"> <li>• Participants reported to the classroom where the intervention was being administered.</li> <li>• The participants collected their intervention materials and sat quietly.</li> </ul>
4:05pm to 4:15 pm	<ul style="list-style-type: none"> <li>• There was a brief introduction to the session's meditation lesson.</li> <li>• Participants were given an opportunity to ask questions about the previous session or the current session.</li> </ul>

4:15 pm to 4:35 pm	<ul style="list-style-type: none"> <li>• The participants were prompted to put on their headphones, turn on their mp3 players, and start the guided mindfulness meditation lesson.</li> </ul>
4:35 pm to 4:40 pm	<ul style="list-style-type: none"> <li>• The participants were prompted by their mp3 player to use their notebook to write down or draw any thoughts or feelings they may have experienced.</li> </ul>
4:40 pm to 4:50 pm	<ul style="list-style-type: none"> <li>• The participants were instructed to return their intervention materials.</li> <li>• Bus passes were distributed, if necessary.</li> <li>• Participants were dismissed.</li> </ul>

**Completers v. non-completers.** The participants were expected to attend all 10 intervention sessions and complete all of the dependent variable measurements. However, if the participants did not attend all of the sessions it was necessary to determine how many sessions a participant could complete to have received the intervention. Bogels et al. (2012) considered a participant to have received the full dosage of treatment and to be a completer of the program if they attended at least five out of eight intervention sessions. This equates to 63% attendance by the participants. Lee et al. (2008) defined a completer as completing at least eight out of twelve intervention sessions. This equates to 66% attendance by the participants.

Based on the definitions outlined by Bogels et al. (2012) and Lee et al. (2008), for the purpose of this study, participants were considered to have received the full dosage of treatment by completing at least seven of the ten intervention sessions and complete all of the dependent variable measurements. This equates to 70% attendance by the

participants. These participants were considered "Completers" If the participants attended less than seven sessions or did not complete the dependent variable measurements they were considered "Non-completers."

### **Dependent Variables**

The dependent variables were the participants' mindfulness, perceived stress, anxiety, and classroom behavior. These four dependent variables were measured through three different self-reporting assessments and one teacher assessment. The data from each of these assessments were intended to provide the information necessary to answer the three research questions related to this study.

**Mindful awareness.** The *Child Acceptance and Mindfulness Measure (CAMM;* Greco, Baer, & Smith, 2011; Greco, Dew, & Ball, 2005) was used to assess each participants' mindful awareness. The CAMM is a self-reporting 10-item Likert scale which measures the degree of mindfulness related to a child's or adolescent's (a) internal experiences, (b) acting with awareness, and (c) acceptance of internal experiences without judging them (Ciarrochi & Bilich, 2006). The respondents were asked to rate how true each of the 10 items reflected their experience, using a 5-point scale ranging from 0 (Never true) to 4 (Always true). A summary score ranged between 0-40, with higher scores indicating higher levels of mindfulness awareness (Ciarrochi & Bilich, 2006). The CAMM demonstrates good internal consistency, with Cronbach's alpha = .87 (Ciarrochi & Bilich, 2006; Greco et al., 2011; Thompson & Gauntlett-Gilbert, 2008). Refer to Appendix D for a sample of the CAMM.

**Perceived stress.** The *Perceived Stress Scale (PSS)* (Cohen et al., 1983) was used to assess each participants' perceived stress. The PSS is a self-reporting 10-item Likert scale which measures the degree to which situations in a person's life over the past month are appraised as stressful. The PSS is not a diagnostic instrument, but is intended to make comparisons of a person's perceived stress related to current, objective events (Cohen & Williamson, 1988). The scale measures the degree to which situations in a person's life over the past month are rated as unpredictable, uncontrollable, and overwhelming (Carmody & Baer, 2008). The respondents are asked to rate how true each of the 10-items reflect their experience using a 5-point scale ranging from 0 (Never) to 4 (Very often). The PSS demonstrates good internal consistency, with Cronbach's alpha = .85 (Cohen et al., 1983; Cohen & Williamson, 1988). Refer to Appendix D for a sample of the PSS.

**Anxiety.** The *Revised Children's Manifest Anxiety Scale, Second Edition (RCMAS-2)* (Reynolds & Richmond, 1978; Reynolds, 1985) was used to assess each participants' anxiety. The RCMAS-2 is a self-reporting 49-item scale which measures the level and nature of a child's anxiety, and can lead to an accurate diagnosis for children and adolescents with social-emotional problems (Denzine, 2010). The revised scale provides a total anxiety score and three sub-domain scales, which include physiological anxiety, worry, and social anxiety (Denzine, 2010). The reliability of the Total Anxiety scale is reported to have a Cronbach's alpha = .92 and the test-retest reliability with a 1-week delay is reported at .76 (Denzine, 2010). Refer to Appendix D for a sample of the RCMAS-2.

**Classroom behavior.** The *Teacher Observation of Classroom Adaptation - Checklist (TOCA-C*; Koth, Bradshaw, & Leaf, 2009) was used to assess each participants' classroom behavior. The TOCA-C is a teacher report, 21-item scale designed to rate a student's classroom behavior in order to assess the impact of school-based preventive interventions on that student's behavior (Koth et al., 2009). The TOCA-C consists of a summary score and three sub-domain scores, which include concentration problems, aggressive and disruptive behavior, and pro-social interaction. The English and mathematics classroom teachers of each participant were asked to rate each of the 21-items using a 6-point scale ranging from 1 (Never) to 6 (Almost Always) (Koth et al., 2009). The TOCA-C demonstrates high internal consistency, with Cronbach's alpha = .96 and a good validity correlation between subscales, with Cronbach's alpha = .80 (Koth et al., 2009). Refer to Appendix D for the TOCA-C.

### **Research Questions**

The data collected from the four dependent measures directly answered the three research questions driving the study. The three research questions were:

- 1) After a student is taught how to use mindfulness meditation, is there a statistically significant increase in his or her level of mindfulness awareness?
- 2) From the pretest measurements to the posttest (and follow-up) measurements, is there a statistically significant change in the student's perceived stress levels and anxiety?
- 3) Do the English and mathematics teachers observe a statistically significant (a) decrease in concentration problems, (b) disruptive or aggressive behavior in the



classroom, and (c) an increase in positive social interactions from the beginning to the conclusion and the follow-up of the intervention?

**Research questions linked to dependent variables and measurements.** The dependent variable of mindfulness, as measured by the CAMM, directly answered the first research question. The dependent variables of perceived stress, as measured by the PSS, and anxiety, as measured by the RCMAS-2, directly answered the second research question. Lastly, the dependent variable of classroom behavior as measured by the TOCA-C through the English and mathematics teachers directly answered the third research question.

**Data analysis of research questions.** The data collected from the four dependent variable measurements were analyzed with the Statistical Package for Social Sciences (SPSS), Version 19 software package. The analysis of the data included descriptive statistics, standard deviations, Levene's test for equal variances, and Q-Q plot distribution. The pretest scores for the treatment and waitlist control groups was analyzed through a univariate analysis of variance (ANOVA) to determine if there was a significant difference in the pretest scores between the two groups. If there was a significant difference between the pretest scores of the treatment and waitlist control group the data would be analyzed through a 2 (treatment vs. waitlist control group) X 3 (pretest, posttest, and follow-up) mixed factorial ANOVA repeated-measures test (Dimitrov, 2008). If there was no significant difference in the pretest scores between the treatment and waitlist control group, the two groups could be collapsed down to one larger group and then analyzed. If the two groups were combined into one larger group

then the data could be analyzed through a multivariate ANOVA repeated-measures test to determine sphericity. Sphericity determines the variance of data taken from the participant are equal. Through an ANOVA repeated measures test, if level of dependence between experimental conditions is equal then it is assumed there is no difference in the outcome measures. If the data is not equal than there could be a significant difference in the outcome measures (Fields, 2009).

**Data collection procedure.** When Group A (treatment group) and Group B (waitlist control group) were established, the researcher met with each participant individually or in small groups during a non-academic class to administer the dependent measures. The pretest data collection occurred prior to the start of Week 1. The posttest data collection for both groups occurred between the Wednesday of Week 5 and the Tuesday of Week 6. It should be noted that the data were not collected on the weekends, which meant the data collection process between Week 5 and Week 6 occurred on Thursday, Friday, and Monday. The posttest measurement data collection for Group B and the five-week follow-up data collection for Group A occurred after Week 10. The researcher collected the posttest data for all participants by the Friday of Week 10.

The TOCA-C, was completed by each participant's English and mathematics teachers, resulting in two different teacher in-school measurements, in two different settings. The researcher collected the teacher-reported measurements at the same time that the participants completed their self-reporting assessments. Meaning, the teachers completed the TOCA-C prior to the start of Week 1, between Weeks 5 and 6, and at the

conclusion of Week 10. Table 4 provides a timeline of when the data collection for the dependent variable measurements were completed during the study.

**Table 4**

*Timeline for Data Collection of Dependent Variable Measurements*

	Treatment Group	Waitlist Control Group	
	Group A	Group B	Group B
Prior to Week 1	Pretest	Pretest	
Between Week 5 and Week 6	Posttest	Posttest	Pretest
After Week 10	Follow-up		Posttest

**Procedural reliability.** The purpose of standard procedures when collecting data is to ensure that the same process is used each time the intervention is taught. With the use of reliable procedures there is a better chance that the scores from the measurements will be stable and consistent (Creswell, 2008). A set of guidelines and checklists to administer the three dependent measures to the participants and the one dependent measurement to the teachers was developed to ensure that the same procedure was followed each time.

The researcher administered the assessments to each participant, individually or in a small group setting. A research assistant was present to observe the data collection process. Refer to Appendix E for the checklists that were used during the data collection process. The researcher retrieved the participant from a non-academic class, such as study hall, and brought him or her to a designated classroom. The research assistant was

waiting in the designated classroom with the three self-reporting assessments. If a study hall class had more than one participant, the researcher would bring them all in and administer the dependent measures to them at the same time. The researcher distributed the first assessment and explained to the participant that the assessment was not scored for an academic grade and all of his or her answers would be kept confidential. The researcher then read the directions out loud to the participant and asked him or her to begin. When the participant completed the first assessment they were instructed to write their identification number on the top of the assessment and return it to the researcher. This process was repeated for the second and third assessments. When all three assessments were completed the researcher escorted the participant back to his or her study hall class. Based on the observation checklists as completed by the research assistant, the researcher was in 100% compliance in administering the three dependent variable measurements of the CAMM, PSS, and RCMAS-2 during the pretest, posttest, and follow-up.

For the teachers, a checklist was created for a research assistant to follow to ensure consistency in collecting the data from the teachers. Refer to Appendix E for the checklist to administer the TOCA-C dependent variable measurement to the teachers. The researcher sent an electronic message to each of the teachers informing them that one or more of their students were participating in a study. The researcher asked for their assistance in completing the teacher-reported assessment. The researcher then hand delivered the assessments to each teacher in a sealed envelope and asked them to return the completed assessments within 48 hours of receipt. When the teachers returned the

completed assessments to the researcher he would ask the teacher to initial and date a receiving form to track that the assessment was returned. The researcher would then record the date on the assessment when it was returned. The research assistant would compare the dates. Based on the checklists completed by the research assistant, the researcher was in 100% compliance in administering the dependent variable measurement of the TOCA-C to the English and mathematics teachers during the pretest, posttest, and follow-up.

### **Fidelity of Treatment**

The fidelity of treatment refers to the delivery of the intervention as designed by the researcher (Swanson, Wanzek, Haring, Ciullo, & McCulley, 2011). Collecting and reporting fidelity data is imperative to demonstrate that the intervention treatment was implemented as intended by the researchers.

To monitor that the intervention was being delivered as designed by the researcher, a script was developed to be used to ascertain the accuracy of the intervention sessions. Refer to Appendix F to review the mindfulness meditation intervention script and the data collection sheet used by the researcher to implement the intervention with the participants. The script specified the sequence of events for the participants and the researcher. As the researcher followed the script, a research assistant followed along with the same script to observe if the intervention was being implemented as described by the script.

Using a prerecorded audio-recording with 30-second intervals, a research assistant wrote a slash mark in the box if the researcher was (a) following the sequence of the

script, and (b) engaging the participants. Following the sequence of the script meant that the researcher was following the intervention as outlined in Appendix F. Engaging the participants meant the researcher made eye contact with the participants, answered questions, and collected on-task data during the meditation exercise. If the researcher was not doing one of the two actions listed, then the observer left the box on the data collection form blank. Immediately at the end of the observation period the research assistant calculated a percentage for each of the two categories specified, then calculated an overall percentage for both of the items across the entire observation period. The fidelity of treatment data were analyzed by calculating the percentage of times that the researcher followed the sequence of the script and engaged the participants. Then an overall percentage was calculated for both of the items across all cells (i.e., for the entire observation period).

### **On-task Behavior**

An area of concern with the meditation intervention was determining if the participant was meditating during each session. For the purpose of this study, the researcher tracked each participant's on-task behavior while meditating, for informational purposes only. A participant may appear to be on-task, however, could be passively off-task. Passive off-task behavior is defined as performing another activity than the one required, but doing so quietly (Kemp & Carter, 2006). For example, if the participant is lying quietly with his or her eyes closed and sleeping, this would be considered passive off-task behavior. In contrast, active off-task behavior is defined as the participant actively performing a different task than the one that is required (Kemp & Carter, 2006).

For example, if the participant is walking around the room when they are supposed to be sitting quietly, this would be considered actively off-task because they are performing a task different than the one required.

Active off-task behavior was not specifically tracked during this study. If a participant was passively off-task during the meditation intervention the researcher would record his or her behavior as on-task. This is because it would be too intrusive and disruptive to determine if the participant is passively off-task by sleeping quietly. However, if the participant was snoring, this behavior was considered actively off-task behavior because of the potential disruption to the other participants and a clear indication they were performing a different task than the one assigned. Therefore, they were not marked as being off-task.

**Definition of on-task behavior during meditation.** For the purpose of this study the definition of on-task behavior during meditation included the following characteristics.

- Participant is sitting or lying down quietly.
- Participant's eyes are closed or, if open, fixed on a single point.
- Participant is breathing comfortably, in slow even breaths.
- Participant's body is relatively still (small itches or repositioning of sitting or lying position are acceptable).
- Participant's headphones are on his or her ears.
- He or she is not talking or whispering.
- There are no other electronics in the participant's personal space.

**Definition of off-task behavior during meditation.** For the purpose of this study the definition of off-task behavior during meditation included the following characteristics.

- Participant is walking or moving around the room.
- Participant's eyes are open and looking around the room.
- Participant is snoring.
- Participant's body parts (arms, legs, and head) are fidgeting beyond repositioning to a more comfortable position.
- Participant's headphones are not on his or her ears.
- He or she is whispering or talking.
- There are other electronics in his or her personal space.

**Momentary time sampling.** Participants' time on-task was collected by the use of momentary time sampling. Reynolds and Kamphaus (2003) define momentary time sampling as the process of the observer recording the presence of a defined target behavior if it occurs at the moment the interval begins. This form of time sampling is used when the observer is required to monitor or record a variety of behaviors and events. To reduce sampling error with momentary time sampling, the observer should use shorter intervals to increase the size of the sample during an observation session (Reynolds & Kamphaus, 2003). For the purpose of this study, the percentage of intervals for the on-task behavior of meditating was recorded. For example, if a participant is observed at 20-second intervals using momentary time sample, for a total of 20 minutes, and the



participant is on-task for meditating for 50 of the 60 intervals, the participant's meditation behavior will be recorded as on-task for 83% of the observed intervals.

**Time on-task data collection procedure.** Participants were instructed to sit or lay down in a comfortable position, but visible to the researcher and research assistant. For example, participants were prohibited from hiding behind a group of chairs. The researcher and the research assistant sat in the front two corners of the room so that they could have an unobstructed view of all of the participants through the duration of the meditation session. At 4:15 p.m., when the researcher instructed the participants to begin the meditation session, the researcher and the research assistant put on a set of headphones and began a recording of time prompts. Using copies of the same data collection form, the researcher and research assistant both listened to the same recording, but on two different mp3 players. The recording of time prompts consisted of a bell sound at every 20-second interval for the duration of the 20-minute meditation. At each 20-second interval the researcher and research assistant scanned the room and observed the actions of each participant. Using a time-sampling chart, the researcher and research assistant recorded if each individual participant was on-task for that 20-second interval. Refer to Appendix G for the corresponding data collection sheet.

At the end of each session, the researcher and research assistant analyzed the data by using a cell by cell comparison of each other's results to determine the degree of agreement between the two of them. If the researcher and research assistant were not in agreement for a particular cell they would discuss the difference and referred to the on-task and off-task definitions for clarification. In either event of agreement or non-

agreement, the data were not changed. Then the percentage of intervals for the on-task behavior of meditating was calculated for each participant by the researcher and research assistant. Lastly, the two percentage of intervals as observed by the researcher and research assistant were averaged together to get an overall percentage of on-task behavior for each participant, per intervention session. In addition, a Kappa value was calculated to determine the interrater agreement related to the time on-task data collected. Based on Landis and Koch (1977), a Kappa value less than 0.00 is poor agreement, 0.00 to 0.20 is slight agreement, 0.21 to 0.40 is fair agreement, 0.41 to 0.60 is moderate agreement, 0.61 to 0.80 is substantial agreement, and 0.81 to 1.00 is almost perfect agreement. Due to time-constraints and the unique on-task and off-task behavior definitions the researcher and research assistant were unable to practice collecting the data prior to the authentic setting.

### **Social Validity**

A week after each group, Group A and Group B, completed the meditation intervention they were given a questionnaire in an envelope to measure the social validity of the intervention. Refer to Appendix H to review the social validity scale. The researcher asked the participants to complete the social validity scale and seal it in the envelope before returning it to the researcher. Statements on the questionnaire were worded in a way that students could agree or disagree with the statement. The statements focused on (a) ease of using meditation, utility of meditation to participants, and effectiveness of increasing mindfulness awareness; (b) reduction in stress, anxiety, aggressive and disruptive behaviors; and (c) an increase in positive social interactions and

concentration. The data from the social validity scale were analyzed by generating the percentage of answers received for each question.

### **Summary**

In summary, the purpose of this study was to examine the effectiveness of mindfulness meditation used by secondary students who receive special education services under the classification of an emotional disability, learning disability, or other health impairment. Specifically, the three research questions asked if a student is taught how to use mindfulness meditation will there be a significant increase in his or her mindfulness, a decrease in his or her stress and anxiety, and an improvement in classroom behavior. Eligible participants were engaged in a quantitative experimental, pretest-posttest, follow-up, randomized waitlist control group study designed. The meditation intervention occurred twice for two consecutive five-week periods that spanned ten weeks. The intervention consisted of the participants engaging in a mindfulness meditation and completing a journaling activity. The meditation intervention occurred when after-school programs met, twice a week, for 45 minutes per session. The dependent variables were the participants' mindfulness, perceived stress, anxiety, and classroom behavior. Three dependent variables of mindfulness, perceived stress, and anxiety were assessed with a self-reporting measurement completed by the participants. The fourth dependent variable, classroom behavior, was assessed with a teacher-report measurement by each participant's English and mathematics teachers. The results for each research question are reported in Chapter Four.

## **4. RESULTS**

This chapter provides a description of the participants, the fidelity of treatment in regards to implementing the intervention, and participant's time on-task while meditating. Because a treatment and waitlist control group received the intervention for this study, preliminary analyses needed to occur to determine whether both groups' data should be analyzed as a whole or separately. As such, a series of analyses comparing the two groups to make this determination are presented next. Because these preliminary analyses indicated the two groups could be analyzed as one group, the multivariate omnibus test for all three research questions is described next. Then each of the three research questions is further answered using data from the omnibus test. Finally, this chapter presents results from the social validity scale completed by the participants.

### **Sample Description**

The participants in the study were secondary students who were identified for receiving special education services. Those services included students with an emotional disability (ED), specific learning disability (SLD), and other health impairment (OHI). All of the participants attended the same suburban high school in the mid-Atlantic region. Students were recruited from a sample population of over 101 eligible participants based on the type of special education services they were currently receiving. There was a finite period of time to recruit eligible students in order to allow sufficient time for the

intervention before the end of the school year. Of the 101 students recruited, 20 ( $n = 20$ ) students qualified to receive the intervention treatment. Of the 20 participants who received the mindfulness meditation treatment, 10 ( $n = 10$ ) of the participants completed seven or more sessions. Although the number is lower than anticipated for the study, because this was designed as a group study, data analyses as described in Chapter 3 were used as originally planned.

Per the criteria outlined in Chapter 3, participants were expected to participate in all 10 of the intervention sessions and complete all of the dependent variable measurements. If a participant completed seven or more of the intervention sessions and all dependent variable measurements they were considered a "completer." A participant who did not meet these requirements was considered a "non-completer." The data collected for the Completers were analyzed. The data for the Non-completers were not analyzed because they may not have received a sufficient amount of the intervention. In the intervention treatment group (Group A), five participants were Completers. In the waitlist control group (Group B), five participants were Completers.

The Completers of the study ( $n = 10$ ) consisted of 70% male adolescent and 30% female adolescent. The age range for the sample was between 14-18 years of age (mean = 16.0, with a SD = 1.25). Of the 10 participants, 70% were Caucasian as compared to the 53% of Caucasians in the school's population. Twenty percent were African American as compared to the 7% of African Americans in the school's population. Lastly, 10% were Hispanic as compared to the 8% of Hispanics in the school's population. There was a relatively even distribution of participants across grade level,

with 30% Freshmen, 20% Sophomores, 30% Juniors, and 20% Seniors. As compared to the school's demographics each grade level has approximately 25% of the school population.

Under socio- economic status, a "yes" answer meant that the participant received a free or reduced lunch during the school day. A "no" answer meant that the participant did not receive a free or reduced lunch during the school day. Ten percent of the participants received free or reduced lunch. The researcher is unable to compare this datum due to the school's refusal to release the percentage of students who receive free or reduced lunch.

Each participant's grade point average was calculated based on a 4.0 grading scale, with the grades reported on the final grade reports via the school districts transcript service. An A equals a 4.0, B is equal to a 3.0, C is equal is a 2.0, D is equal to a 1.0, and F is equal to 0.0. The participants' grade point average (GPA) ranged from 2.18 to 3.50 (mean = 2.67, SD = .431) on a 4-point grading scale.

Each participant's percentage of special education services was calculated based on the participant's level of special education services. If the participant was enrolled in a self-contained class he or she would be receiving 13% of special education services. If the participant was enrolled in an inclusive class he or she would be receiving 6% of special education services. For example, if a participant was enrolled in a total of eight courses with two self-contained classes and one inclusive class, the participant's percentage of special education services would be 32%. The percentage of special education services received by the participants ranged from 1% to 100%, with an average

of 33.6% (SD = 29.39). Fifty percent of the participants received services for SLD, whereas 30% received services for ED, and 20% for OHI. Table 5 presents the demographics of the participants and Table 6 presents the special education demographics of the participants.

**Table 5**

*Participant Demographics*

Student	Gender	Ethnicity	Age (Years)	Socio-economic Status	Grade	GPA
1	Male	Caucasian	17	No	12 <sup>th</sup>	2.75
6	Female	Caucasian	15	No	9 <sup>th</sup>	3.07
8	Male	African-American	15	No	9 <sup>th</sup>	2.48
9	Male	Hispanic	14	Yes	9 <sup>th</sup>	2.71
10	Male	Caucasian	17	No	11 <sup>th</sup>	2.98
12	Male	Caucasian	16	No	10 <sup>th</sup>	2.18
14	Male	Caucasian	16	No	11 <sup>th</sup>	2.61
17	Female	Caucasian	18	No	12 <sup>th</sup>	3.50
19	Female	African-American	17	No	11 <sup>th</sup>	2.19
20	Male	Caucasian	15	No	10 <sup>th</sup>	2.21

**Table 6***Participant Special Education Demographics*

Student	Gender	Special Education Category	Percentage of Special Education Services	Achievement Data
1	Male	OHI	1%	IQ - NR <sup>1</sup> , Reading - NR, Writing - NR, Math - NR
6	Female	SLD	7%	IQ - NR, Reading - NR, Writing - NR, Math - NR
8	Male	ED	38%	IQ <sup>2</sup> - 102, Reading - NR, Writing - NR, Math - NR
9	Male	OHI	31%	IQ - NR, Reading <sup>3</sup> - 110, Writing <sup>3</sup> - 96, Math <sup>3</sup> - 70
10	Male	ED	38%	IQ <sup>4</sup> - 99, Reading - NR, Writing - NR, Math - NR
12	Male	SLD	51%	IQ <sup>4</sup> - 87, Reading <sup>5</sup> - 70, Writing <sup>6</sup> - 59, Math <sup>6</sup> - 61
14	Male	ED	100%	IQ - NR, Reading <sup>7</sup> - 100, Writing <sup>7</sup> - 97, Math <sup>7</sup> - 110
17	Female	SLD	1%	IQ - NR, Reading - NR, Writing - NR, Math - NR
19	Female	SLD	25%	IQ - NR, Reading - NR, Writing - NR, Math - NR
20	Male	SLD	44%	IQ - NR, Reading <sup>3</sup> - 60, Writing <sup>3</sup> - 54, Math <sup>3</sup> - 83

<sup>1</sup>Not Reported, <sup>2</sup>Wechsler Preschool and Primary Scale of Intelligence-Third Edition (WPPSI-III), <sup>3</sup>Woodcock-Johnson III, Normative Update (WJ III NU), <sup>4</sup>Wechsler Intelligence Scale for Children-Fourth Edition (WISC-IV), <sup>5</sup>Kaufman Test of Educational Achievement, Second Edition, Form A (KTEA-II), <sup>6</sup>Wechsler Individual Achievement Test - II (WIAT-II), <sup>7</sup>Wechsler Individual Achievement Test - Third Edition (WIAT-III)

**Fidelity of Treatment**

The importance of fidelity of treatment is to demonstrate that the intervention has been delivered as developed by the researchers (Swanson et al., 2011). To monitor that the intervention was being delivered as designed, a script was developed to determine the



extent to which the researcher deliver the intervention as planned. The mindfulness meditation intervention script specified the sequence of activities for the participants and the researcher. The sequence of activities are identical to the activities listed in Table 3 of Chapter 3. The activities within the script included the participant's set-up time, introduction to the session's meditation lesson, data collection of participants' on-task behavior as the participants listened to the meditation, the prompted journaling activity from the mp3 player, and participant's clean-up time. The researcher had to follow the script during each 45-minute intervention session.

A research assistant, who was a school psychologist with advanced degrees in school counseling, observed the researcher and collected data in regards to the fidelity of treatment during both of the intervention cycles. The research assistant indicated on a chart every 30 seconds whether or not the researcher was following the script of the meditation intervention. Using a prerecorded audio-recording with 30-second intervals, the research assistant observed if the researcher was: (a) following the script, and (b) engaging the participants. If the researcher performed these two tasks at the 30-second interval then the research assistant would mark the data collection sheet with a slash mark. If the research was not performing either of these two tasks than no slash mark was made. At the end of the observation period (intervention session) the research assistant calculated the percentage for each of the two categories specified, then calculated an overall percent for both of the categories across the entire observation period. The percentage for each category was calculated by dividing the number of cells with a slash mark by the total number of cells. Then the overall percentage for each

intervention session was calculated by adding the percentage of each category and dividing by two. Refer to Appendix F to review the mindfulness meditation intervention script and the data collection sheets.

**Results.** The results for fidelity of treatment indicated that during the first intervention cycle with the treatment group, the researcher followed the intervention as developed 100% of the time. The results for the first intervention cycle included following the sequence of the script 100% of the time and engaging the participants 100% of the time. During the second intervention cycle with the waitlist control group, the researcher followed the intervention as developed 99% of the time. The results from the second intervention cycle included following the sequence of the script 99% of the time and engaging the participants 99% of the time.

### **On-task Behavior**

As stated in Chapter 3, for the purpose of this study the researcher tracked each participant's on-task behavior while meditating for informational purposes only. The researcher and a second research assistant, who was also a school psychologist with advanced degrees in school counseling, observed the participants during each 20-minute meditation session at the same time. The researcher would signal to the research assistant when to begin tracking the on-task behaviors. Using copies of the same data collection form, the researcher and research assistant recorded each participant's time on-task based on the same on-task and off-task definition as defined in Chapter 3.

At the end of each 20-minute session, the researcher and research assistant analyzed the data by using a cell by cell comparison of each other's results to determine

where there were agreements and disagreements. If the researcher and research assistant were not in agreement for a particular cell they would discuss the difference and referred to the on-task and off-task definitions for clarification. In either event of agreement or non-agreement the data were not changed. Then the percentage of intervals for the on-task behavior of meditating was calculated for each participant by the researcher and research assistant. This data were calculated by adding the number of cells that were marked to be on-task by the total number of cells. Lastly, the percentage of on-task behavior as calculated by the researcher and the percentage of on-task behavior as calculated by the research assistant were added together and divided by two in order to get the overall percentage of on-task behavior for each participant per intervention session.

**Results.** The researcher and research assistant observed 110 different meditation sessions over the course of 10 weeks. The 110 different observations is based on the number of participants engaged each intervention session. For example, if five participants attended session 1, the researcher and research assistant observed five different individual meditation sessions. Based on the 110 individual observations of all of the participants to complete a meditation session, the participants were 94% on-task based on the observed intervals. The 10 participants that are considered Completers of the program had an on-task percentage of 94% based on the observed intervals. In addition, the on-task behavior observations were broken down to the first six-minute and 40 second intervals, second six-minute and 40 second intervals, and third six-minute and 40 second intervals. Based on the observations for all of the participants who completed

a meditation session, the participants were on-task 93% of the time during the first interval, 97% of the time during the second interval, and 93% during the third interval. The Completers received the same results for each of the three different intervals.

At the conclusion of the 10-week study a Kappa value was calculated to determine the interrater reliability between the researcher and a second research assistant for time on-task. Kappa is the statistic value used to report the results of interrater reliability (McMillan, 2008). The interrater reliability between the researcher and research assistant was found to be  $Kappa = .15$  ( $p < .0000$ ), which is considered to be only in slight agreement when measuring each participant's time on-task while meditating. Based on Landis and Koch (1977), a Kappa value less than 0.00 is poor agreement, 0.00 to 0.20 is slight agreement, 0.21 to 0.40 is fair agreement, 0.41 to 0.60 is moderate agreement, 0.61 to 0.80 is substantial agreement, and 0.81 to 1.00 is almost perfect agreement. Even though the researcher and research assistant were only in slight agreement to the participants' time on-task the information was never meant to be used as a measurement, but only for informational purposes.

### **Preliminary Analyses of Groups' Scores**

Prior to analyses of the research questions the researcher first determined whether the pretest scores between Group A (treatment group) and Group B (waitlist control group) were or were not statistically different. If the pretest scores are not statistically different, then it would be possible to pool the participants from both groups into one larger group for further analysis. However, if the pretest scores are statistically different,

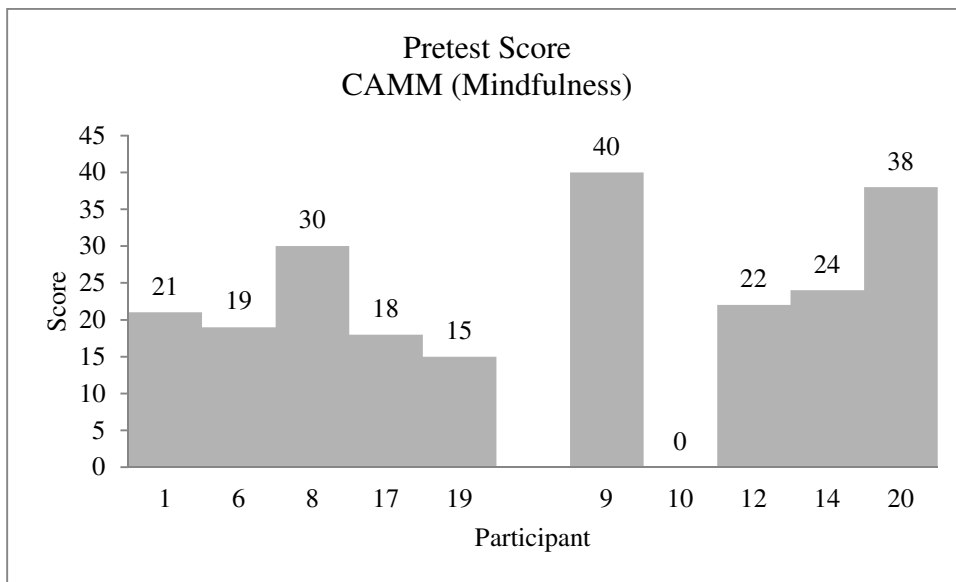
then each dependent variable measurement for each group would be analyzed separately to determine if there was a significant change.

Of the 10 participants considered Completers, five were from the treatment group and five were from the waitlist control group. Each of the Completers completed pre and posttests to evaluate three different dependent variables. The three dependent variables were mindfulness awareness (CAMM), perceived stress (PSS), and anxiety (RCMAS-2). In addition to the three dependent variables being evaluated, each participant was evaluated on his or her classroom behavior in his or her mathematics and English classes with pre and posttest evaluations using the TOCA-C. Only the Completers in the treatment group completed the 5-week follow-up measurements because they received the treatment first and there was time during the school year for them to complete the follow-up measurements. The Completers from the waitlist control group did not complete the 5-week follow-up measurements because the school year ended and the researcher no longer had access to the participants.

In the next sections, pretest scores for each of the 10 participants are analyzed based on the reported measurements for each of the dependent variables to determine whether there were statistically significant differences between the groups. The treatment group was comprised of participants 1, 6, 8, 17, and 19. The waitlist control group was comprised of participants 9, 10, 12, 14, and 20.

**Mindfulness.** The total score for the CAMM is based on a reverse scoring system of 0 to 40. The closer a participant scored to 40 indicated that the individual was more mindful of his or her internal and external environment. Figure 5 graphically displays the

total pretest score for each of the Completers in the treatment group and waitlist control group.



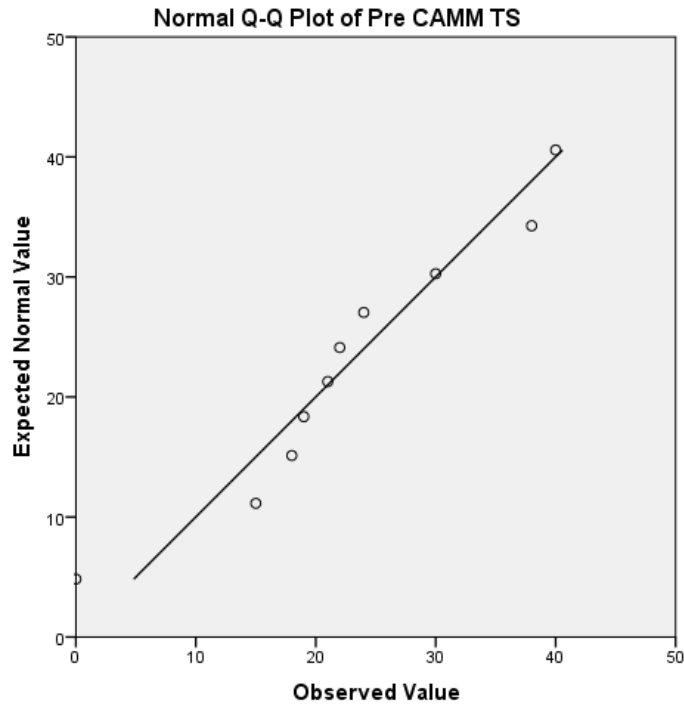
**Figure 5.** Pretest CAMM score.

The means and standard deviations of the CAMM scores for the treatment group and waitlist control group are identified in Table 7. The results from the Levene's test indicate that the homogeneity of variance assumption is met,  $F(1, 8) = 2.54, p = .150$ . The normal Q-Q plot for the pretest CAMM scores as shown in Figure 6 indicate that the score distribution is approximately linear. The ANOVA  $F$ -test results show that there was no significant difference in mindfulness as measured by the CAMM at the time of the pretest between the treatment and waitlist control groups,  $F(1, 8) = .305, p = .596$ .

**Table 7**

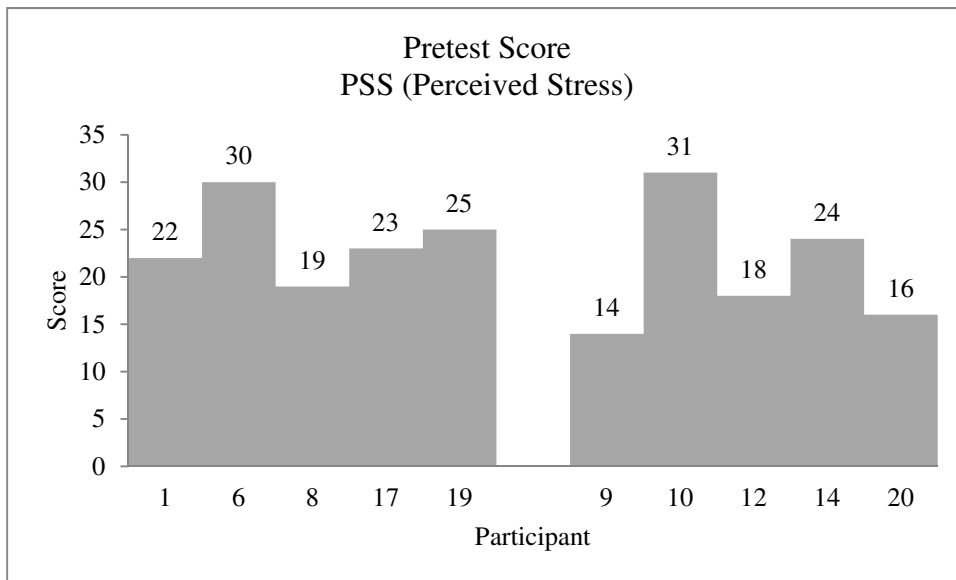
*Pretest Means and Standard Deviations (CAMM)*

Group	N	M	SD
Treatment	5	20.60	5.68
Waitlist Control	5	24.80	16.04



**Figure 6.** Normal Q-Q plot of pretest CAMM score.

**Perceived Stress.** The total score for the PSS is based on a scoring system of 0 to 40. A total score that was near 40 indicated that the individual was experiencing a high-level of stress within the past 30 days. A total score below 20 indicates that the individual is experiencing low levels of stress. Figure 7 graphically displays the total pretest score for each of the Completers in the treatment group and waitlist control group.



**Figure 7.** Pretest PSS score.

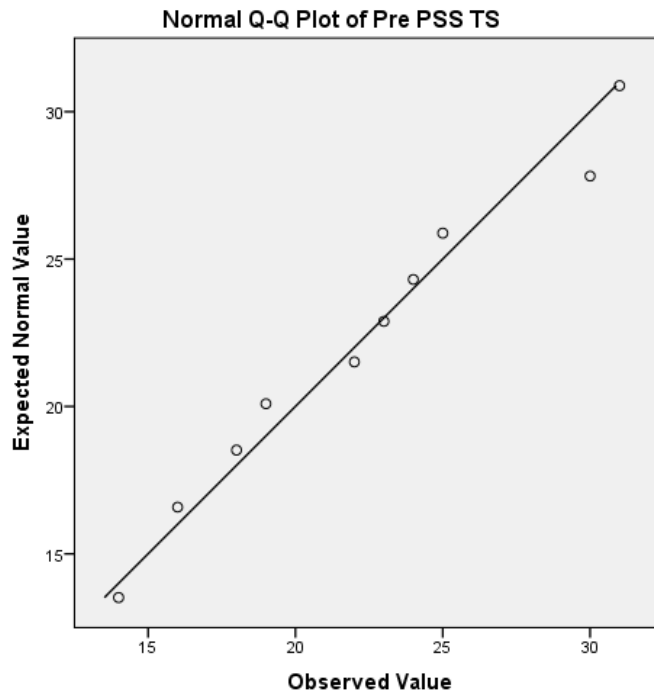
The means and standard deviations of the PSS scores for the treatment group and waitlist control group are identified in Table 8. The results from the Levene's test indicate that the homogeneity of variance assumption is met,  $F(1, 8) = 2.12, p = .184$ . The normal Q-Q plot for the pretest PSS scores as shown in Figure 8 indicated that the score distribution is approximately linear. The ANOVA  $F$ -test results show that there is no significant difference in perceived stress as measured by the PSS at the time of the pretest between the treatment and waitlist control groups,  $F(1, 8) = .794, p = .399$ .

**Table 8**

*Pretest Means and Standard Deviations (PSS)*

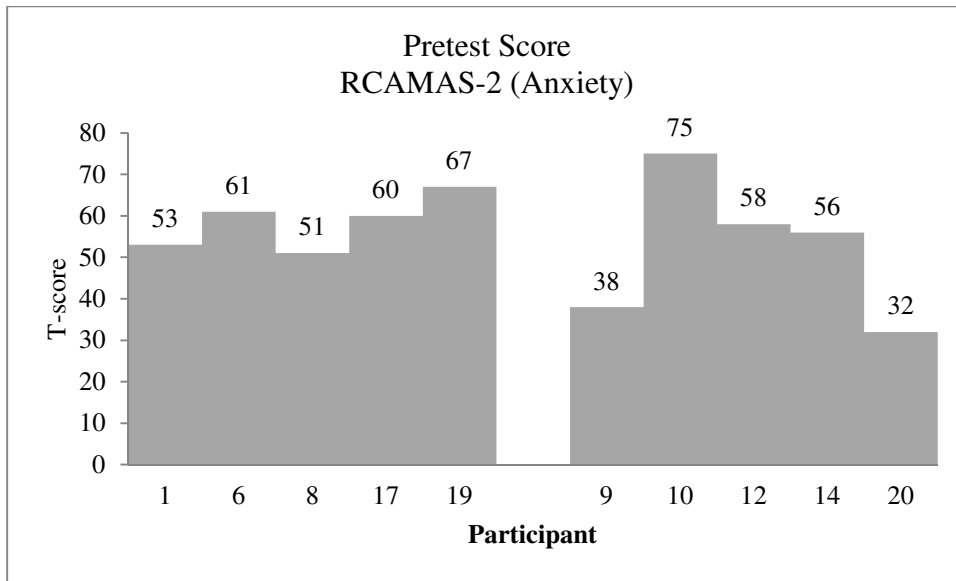
Group	N	M	SD
Treatment	5	23.80	4.09





*Figure 8.* Normal Q-Q plot of pretest PSS score.

**Anxiety.** The total score for the RCMAS-2 is based on a T-score calculated from the raw score. A T-score above 60 indicated that the individual was experiencing some form of anxiety. Figure 9 graphically displays the total pretest T-score for each of the Completers in the treatment group and waitlist control group.



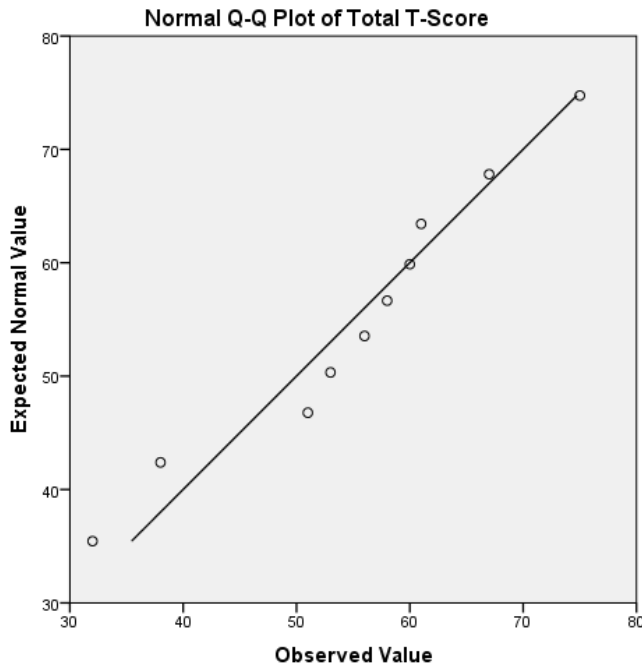
**Figure 9.** Pretest RCAMAS-2 score.

The means and standard deviations of the RCAMAS-2 scores for the treatment group and waitlist control group are identified in Table 9. The results from the Levene's test indicate that the homogeneity of variance assumption is met,  $F(1, 8) = 4.47, p = .067$ . The normal Q-Q plot for the pretest RCAMAS-2 scores as shown in Figure 10 indicated that the score distribution is approximately linear. The ANOVA  $F$ -test results show that there is no significant difference in anxiety as measured by the RCAMAS-2 at the time of the pretest between the treatment and waitlist control groups,  $F(1, 8) = .648, p = .444$ .

**Table 9**

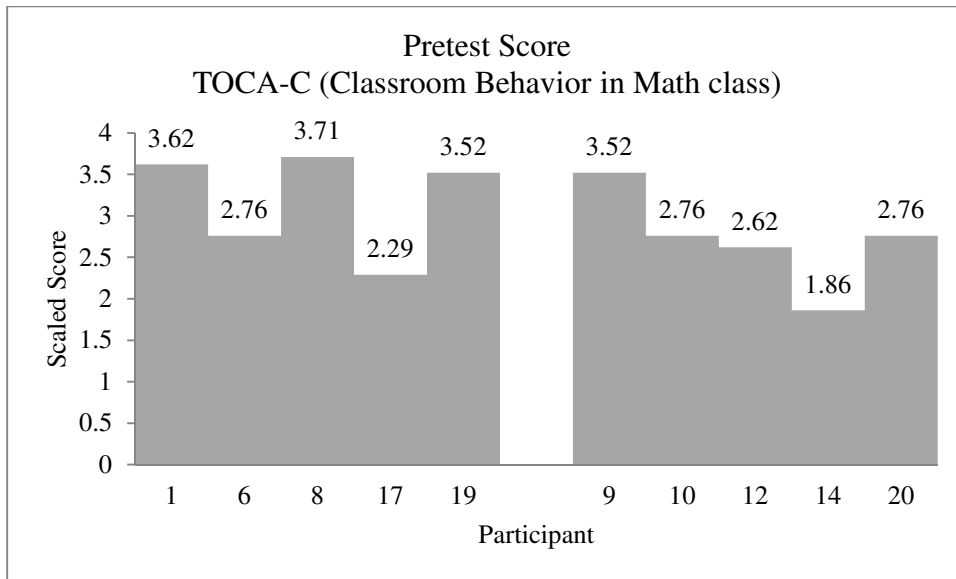
*Pretest Means and Standard Deviations (RCMAS-2)*

Group	N	M	SD
Treatment	5	58.40	6.47
Waitlist Control	5	51.80	17.15



*Figure 10.* Normal Q-Q plot of pretest RCMAS-2 score.

**Classroom behavior in mathematics class.** The total score for the TOCA-C is based on a scaled scoring system of 0 to 4. A total scaled score close to 4 indicated that the individual was currently displaying appropriate behavior in the classroom as observed by the mathematics teacher. A lower total scaled score of 2 or below indicates that the individual is displaying inappropriate behavior in the classroom as observed by the teacher. Figure 11 graphically displays the total score for each of the Completers in the treatment group and waitlist control group.



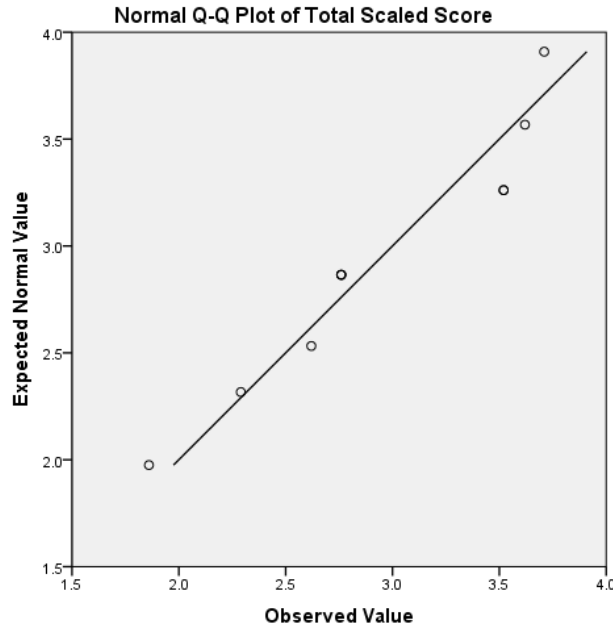
**Figure 11.** Pretest TOCA-C score in mathematics class.

The means and standard deviations of the TOCA-C scores as evaluated by the participants' mathematics teachers for the treatment group and waitlist control group are identified in Table 10. The results from the Levene's test indicate that the homogeneity of variance assumption is met,  $F(1, 8) = .526, p = .489$ . The normal Q-Q plot for the pretest TOCA-C scores as evaluated by the participants' mathematics teachers and shown in Figure 12 indicated that the score distribution is approximately linear. The ANOVA *F*-test results show that there is no significant difference in classroom behavior in mathematics class as measured by the TOCA-C at the time of the pretest between the treatment and waitlist control groups,  $F(1, 8) = 1.54, p = .250$ .

**Table 10**

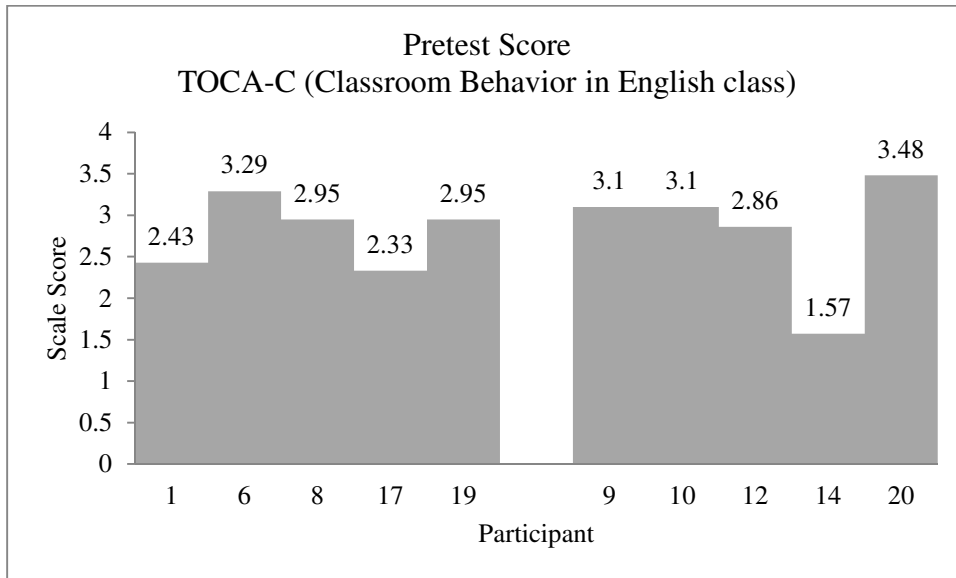
*Pretest Means and Standard Deviations in mathematics class (TOCA-C)*

Group	N	M	SD
Treatment	5	3.18	.624
Waitlist Control	5	2.70	.590



**Figure 12.** Normal Q-Q plot of pretest TOCA-C score from mathematics teachers.

**Classroom behavior in English class.** The total score for the TOCA-C is based on a scaled scoring system of 0 to 4. A total scaled score close to 4 indicated that the individual was currently displaying appropriate behavior in the classroom as observed by the English teacher. A lower total scaled score of 2 or below indicates that the individual is displaying inappropriate behavior in the classroom as observed by the teacher. Figure 13 graphically displays the total score for each of the Completers in the treatment group and waitlist control group.



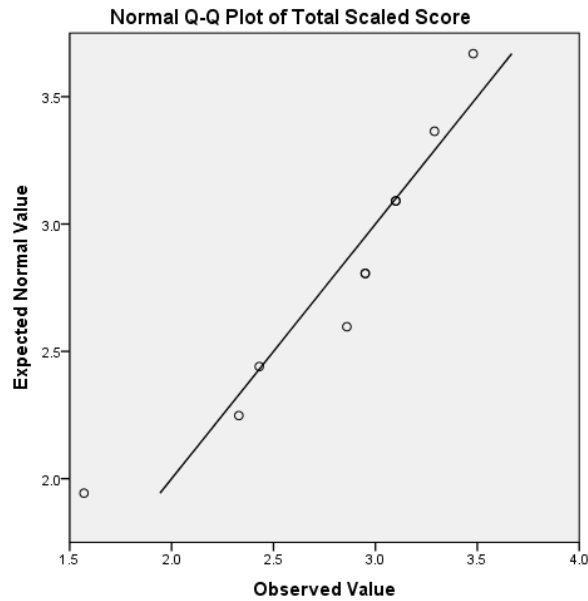
**Figure 13.** Pretest TOCA-C score in English class.

The means and standard deviations of the TOCA-C scores as evaluated by the participants' English teachers for the treatment group and waitlist control group are identified in Table 11. The results from the Levene's test indicate that the homogeneity of variance assumption is met,  $F(1, 8) = .593, p = .463$ . The normal Q-Q plot for the pretest TOCA-C scores as evaluated by the participants' English teachers and shown in Figure 14 indicated that the score distribution is approximately linear. The ANOVA  $F$ -test results show that there is no significant difference in classroom behavior in English class as measured by the TOCA-C at the time of the pretest between the treatment and waitlist control groups,  $F(1, 8) = .007, p = .934$ .

**Table 11**

*Pretest Means and Standard Deviations in English class (TOCA-C)*

Group	N	M	SD
Treatment	5	2.79	.401
Waitlist Control	5	2.82	.734



**Figure 14.** Normal Q-Q plot of pretest TOCA-C score from English teachers.

**Posttest means.** For comparison purposes, Table 12 provides the means and standard deviations of the pretest and posttest measurements for each of the dependent variables. Further analysis of the significant difference between the pretest and posttest measurements will be discussed later in this chapter.

**Table 12**

*Pretest and Posttest Means and Standard Deviations for All Dependent Measurements*

Measurement	Group	Pretest		Posttest	
		M	SD	M	SD
Mindfulness (CAMM) <sup>1</sup>	Treatment	20.60	5.68	23.80	6.91
	Waitlist Control	24.80	16.02	22.00	15.12
Perceived Stress (PSS) <sup>2</sup>	Treatment	23.80	4.09	22.40	5.86
	Waitlist Control	20.60	6.91	16.60	5.41
Anxiety (RCMAS-2) <sup>3</sup>	Treatment	58.40	6.47	46.80	12.52
	Waitlist Control	51.80	17.15	57.40	14.76
Classroom Behavior (Mathematics; TOCA-C) <sup>4</sup>	Treatment	3.18	.624	3.24	.597
	Waitlist Control	2.70	.590	2.78	.654
Classroom Behavior (English; TOCA-C) <sup>5</sup>	Treatment	2.79	.401	2.61	.430
	Waitlist Control	2.82	.734	2.68	.670

<sup>1</sup>Increase desired to show improvement, <sup>2</sup>Decrease desired to show improvement,  
<sup>3</sup>Decrease desired to show improvement, <sup>4</sup>Increase desired to show improvement,  
<sup>5</sup>Increase desired to show improvement

**Pooled.** The purpose of the one-way ANOVA comparison of the pretest scores is to determine whether there is a significant difference in the scores between the treatment and waitlist control group. If there is a difference between the two groups on the pretest scores, then each group would be analyzed individually to answer the research questions. If there is no difference between the pretest scores between the two groups then the two groups would be collapsed into one larger group for further analysis to answer the research questions. Based on the one-way ANOVA analysis of the pretest scores, there is no significant difference between the pretest scores between the treatment and waitlist control group. Therefore, because there was no significant difference in the test scores



between the two groups, the groups were collapsed into one larger group for further data analysis to answer the research questions.

### **Research Questions**

The purpose of this study was to examine the effectiveness of mindfulness meditation used by secondary students who receive special education services in a public school setting. The following questions were asked:

- 1) After a student is taught how to use mindfulness meditation, is there a statistically significant increase in his or her level of mindfulness awareness?
- 2) From the pretest measurements to the posttest (and follow-up) measurements, is there a statistically significant change in the student's perceived stress levels and anxiety?
- 3) Do the English and mathematics teachers observe a statistically significant (a) decrease in concentration problems, (b) disruptive or aggressive behavior in the classroom, and (c) an increase in positive social interactions from the beginning to the conclusion and the follow-up of the intervention?

**Data analysis.** Based on the one-way ANOVA of the pretest scores indicating that there were no statistical difference between the two groups, the Completers from both the treatment group and waitlist control group were condensed to one larger group of 10 participants. Each dependent variable was not analyzed through separate ANOVA calculations because of the repeated-measures that were collected from the pretest to posttest to follow-up. Rather, a multivariate ANOVA repeated measures test was used to determine if the level of dependence between experimental conditions is equal, also

called sphericity (Fields, 2009). Sphericity determines the variance of data taken from the participant are equal. An ANOVA repeated-measure tests for sphericity and, if the data are not equal, then there could be a significant difference in the outcome measures. However, if the data are equal, then it is assumed there is no difference in the outcome measures (Fields, 2009).

Using the combined group of participants ( $n = 10$ ) who completed the intervention treatment, a multivariate ANOVA repeated-measures test was completed to determine if there was a significant difference between the dependent variables. The multivariate ANOVA repeated-measures test reported no statistically significant difference for any of the dependent variables at the .05 level. Specifically, the Mauchley's Test of Sphericity did not obtain homogeneity with a Wilk's  $\Lambda = .237$ ,  $F(5,5) = 3.21$ ,  $p = .113$ . Because Mauchley's Test of Sphericity was non-significant it is assumed that the variances of differences between the conditions of the dependent variables are equal and result in no significant difference (Fields, 2009). This means that for each of the three research questions, there was no change in the participants' mindfulness, perceived stress, anxiety, or classroom behavior as a result of practicing a mindfulness meditation.

**Research question #1.** After a student is taught how to use mindfulness meditation, is there a statistically significant increase in his or her level of mindfulness awareness? Based on the dependent variable mindfulness there is a non-significant difference from the pretest to the posttest after the participants have received the treatment. The  $F$ -test with the Greenhouse-Geisser correction for degrees of freedom is

not statistically significant at the .05 level,  $F(1,9) = .007, p = .993$ , with an  $ES = .02$ , using  $SD_{pooled}$ . Based on Cohen (1977) an ES of  $d = .02$  means there was no observable change in the participants' mindfulness after practicing mindfulness meditation.

**Research question #2.** From the pretest measurements to the posttest (and follow-up) measurements is there a statistically significant change in the student's perceived stress levels and anxiety? Based on the dependent variables of perceived stress and anxiety there is a non-significant difference from the pretest to the posttest after the participants have received the treatment. For perceived stress, the  $F$ -test with the Greenhouse-Geisser correction for degrees of freedom is not statistically significant at the .05 level,  $F(1,9) = 1.86, p = .205$ , with an  $ES = -.46$ , using  $SD_{pooled}$  and for anxiety, the  $F$ -test with the Greenhouse-Geisser correction for degrees of freedom is not statistically significant at the .05 level,  $F(1,9) = .604, p = .457$ , with an  $ES = -0.22$ , using  $SD_{pooled}$ . Even though there was no significant difference in either dependent variable perceived stress or anxiety, the effect size for the variable of perceived stress fell just below the moderate range with  $d = -0.46$ . This effect size indicates that the participant's level of stress may have decreased due to the intervention. The effect size for anxiety was in the low range with  $d = -0.22$ , which indicates the participant's level of anxiety may have decreased due to the intervention. Therefore based on effect size, there may have been an observable change in the participants' perceived stress or anxiety as a result of practicing mindfulness meditation.

**Research question #3.** Do the English and mathematics teachers observe a statistically significant decrease in concentration problems, disruptive or aggressive

behavior in the classroom, and an increase in positive social interactions from the beginning to the conclusion and the follow-up of the intervention? Based on the dependent variable of classroom behavior as reported by the mathematics and English teachers there is a non-significant difference from the pretest to the posttest after the participants have received the treatment. As reported by the mathematics teachers, the  $F$ -test with the Greenhouse-Geisser correction for degrees of freedom is not statistically significant at the .05 level,  $F(1,9) = .326, p = .582$ , with an  $ES = .09$ , using  $SD_{\text{pooled}}$ . As reported by the English teachers, the  $F$ -test with the Greenhouse-Geisser correction for degrees of freedom is not statistically significant at the .05 level,  $F(1,9) = 4.92, p = .054$ , with an  $ES = -.31$ , using  $SD_{\text{pooled}}$ .

The overall effect size for classroom behavior in a mathematics class was  $d = .09$ , which is an indication that the intervention had no effect on improving participants' classroom behavior within a mathematics class. However, the effect size for classroom behavior in an English class was  $d = -.31$ , which is an indication that there may be evidence a low to moderate observable change in participants' classroom behavior in an English class may occur from practicing a mindfulness meditation. But if the effect size for classroom behavior in both mathematics and English classes is averaged the effect size drops to  $d = -.11$ , which is lower than Cohen's (1977) range of low observable effect of  $d = .20$ . Therefore, there may have been no observable change in participants' classroom behavior after practicing mindfulness meditation.

Table 13 summarizes the tests within-subjects contrast for all five dependent variables. The table provides the degrees of freedom, *F*-value, level of significance and effect size for each of the dependent variables.

**Table 13**

*Summary of Tests Within-Subjects Contrast*

Source	<i>df</i>	<i>F</i>	<i>p</i>	<i>ES</i>
Mindfulness	1	.007	.933	.02
Perceived Stress	1	1.86	.205	-.46
Anxiety	1	.604	.457	-.22
Classroom Behavior (Mathematics)	1	.326	.582	.09
Classroom Behavior (English)	1	4.92	.054	-.31

### **Social Validity**

A week after the treatment group and waitlist control group completed the meditation intervention, a questionnaire to measure the social validity of the intervention was mailed home to each participant. Refer to Appendix H for a sample of the social validity scale. To ensure that the feedback was confidential, the researcher asked the participants to complete the social validity scale and seal it in an envelope before returning it to the researcher. All 10 of the Completers returned the social validity scale for a 100% return rate.

Based on the results from the social validity scale, 40% of the Completers practiced meditation on their own outside of the study during the 10-week period. Since the completion of the study, 30% of the Completers continued to practice on their own.

Of the Completers that did continue to practice on their own after the study, 20% said they sit quietly for at least five minutes twice a week.

The Completers were asked if they felt it was easy to meditate at school. Seventy percent indicated that it was very easy to meditate at school and 30% indicated that it was kind of easy. The Completers were also asked if they would use meditation as a way to manage their emotions. Sixty percent of the Completers indicated that they may use meditation to help regulate their emotions. Thirty percent of the Completers shared they would most definitely use meditation to help with their emotions and 10% said that they would use meditation sometimes to help with their emotions.

Also on the social validity scale, queries related to three of the dependent variables (mindfulness, stress, and anxiety) were included. On the social validity scale the Completers were asked if they felt less stressed, less anxious, and more aware at the conclusion of the meditation intervention. Eighty percent of the Completers felt less stressed and less anxious, and 70% felt more aware. Lastly, 60% of the Completers believed that meditation would benefit other students.

## **Summary**

In summary, there was a non-significant difference for each of the dependent variables from pre to the posttest. Due to the non-significant difference between the pre and posttest for the total scores of all five of the dependent variables, there was no reason that the sub-scores for the RCMAS-2 and TOCA-C should be evaluated for a statistical difference. Lastly, due to the non-significant difference between the pre and posttest scores there was no reason that the follow-up measurement scores should be evaluated

and compared to the pre and posttest scores. However, based on Cohen's (1977) definition of effect size, which is the magnitude of an observed effect, the effect size for perceived stress falls just below the moderate range with  $d = -0.46$ , indicating that the participants' level of stress may have decreased due to the intervention. In addition, the effect size for anxiety is in the low range with  $d = -0.22$ , indicating the participants' level of anxiety also may have decreased due to the intervention.

## 5. DISCUSSION

This chapter provides a review of the purpose of the study, the research questions, and the design of the study. In addition, this chapter will present conclusions and a discussion based on the results of the data analysis. Lastly, this chapter will present the limitations of the study and recommendations for future research.

### **Research Overview**

The purpose of this study was to examine the effectiveness of mindfulness meditation, a contemplative technique, used by secondary students who received special education services in a public school setting. The researcher hypothesized that through the use of mindfulness meditation the participants may experience an increase in mindful awareness, and lower levels of stress and anxiety, which in turn would increase each participant's classroom performance. Based on the research evidence of the 19 studies reviewed, after practicing mindfulness meditation the participants may learn how to identify their emotions and actions in a nonjudgmental way and help break the counterproductive cycle of stress and anxiety that students who receive special education services often experience on a daily basis. Lastly, the purpose of this study was to determine if students who receive special education services do benefit from practicing mindfulness meditations on a regular basis.

The study was guided by three research questions:



- 1) After a student is taught how to use mindfulness meditation, is there a statistically significant increase in his or her level of mindfulness awareness?
- 2) From the pretest measurements to the posttest (and follow-up) measurements, is there a statistically significant change in the student's perceived stress levels and anxiety?
- 3) Do the English and mathematics teachers observe a statistically significant (a) decrease in concentration problems, (b) disruptive or aggressive behavior in the classroom, and (c) an increase in positive social interactions from the beginning to the conclusion and the follow-up of the intervention?

Over 100 students from a mid-Atlantic, suburban secondary school, who receive special education services under the classification of an emotional disability, specific learning disability, or other health impairment were recruited to participate in the meditation study. Twenty students responded with permission by the recruitment deadline to participate in the study. The participants were randomly assigned to a treatment group and a waitlist control group. The treatment group received the meditation intervention immediately. The waitlist control group waited five weeks to receive the intervention. The meditation intervention was delivered as an after-school program, twice a week, for 45 minutes per session. The duration of the entire study lasted for ten weeks, with two, five-week intervention cycles administered consecutively. The independent variable of the study was mindfulness meditations. The dependent variables were the student's mindful awareness, perceived stress, anxiety, and classroom behavior. The dependent variables of mindful awareness, perceived stress, and anxiety

were measured by three separate assessments completed by the students. The dependent variable of classroom behavior was measured by an assessment that was completed by the student's English and mathematics teachers. The dependent variables of mindfulness, perceived stress, anxiety, and classroom behavior were assessed through pre, posttest, and follow-up measurements completed by the students and teachers. Only students in the treatment group completed the follow-up measurements because they received the treatment first and there was time during the school year for them to complete the follow-up measurements.

Participants who completed seven or more of the ten meditation intervention sessions were considered "Completers" for purposes of data analyses. That is, they had received at least 70% of the intervention. Out of the 20 participants who participated in the study, 10 participants completed seven or more meditation sessions. Five of these participants were from the treatment group and five were from the waitlist control group. Prior to analyses of the research questions the researcher determined whether the pretest scores between the two groups of five participants were or were not statistically different. The pretest scores were not statistically different; therefore, it was possible to pool the participants from both groups into one larger group of 10 participants. The data collected to measure the four dependent variables on these 10 participants were used to determine if there was a significant change in the dependent variables due to the intervention.

### **Summary of Results**

**Research Questions.** Using the combined group of participants ( $n = 10$ ) who completed the intervention treatment, a multivariate ANOVA repeated-measures test was

completed to determine if there was a significant difference between the dependent variables. The multivariate ANOVA repeated-measures test reported no statistical significant difference for any of the dependent variables at the .05 level. In terms of the three research questions, there was no significant change in the participants' mindfulness, perceived stress, anxiety, or classroom behavior as a result of practicing a mindfulness meditation.

**Research question #1.** After a student is taught how to use mindfulness meditation, is there a statistically significant increase in his or her level of mindfulness awareness? Based on the results of the dependent variable measurement on mindfulness there was no statistically significant increase or observable change as reported by effect size in participants' level of mindfulness after receiving the intervention.

**Research question #2.** From the pretest measurements to the posttest (and follow-up) measurements is there a statistically significant change in the student's perceived stress levels and anxiety? Based on the results of dependent variables of perceived stress and anxiety there is no statistically significant change in participants' levels of perceived stress or anxiety. However, based on effect size, there may have been a moderate observable change in the participants' perceived stress and a low observable change in anxiety as a result of receiving the intervention.

**Research question #3.** Do the English and mathematics teachers observe a statistically significant decrease in concentration problems, disruptive or aggressive behavior in the classroom, and an increase in positive social interactions from the beginning to the conclusion and the follow-up of the intervention? Based on the results

of dependent variables of classroom behavior as reported by the English and mathematics teachers there is no statistically significant change in participants' levels concentration problems, disruptive or aggressive behavior in the classroom, and social interactions after receiving the intervention. Based on effect size as reported by English teachers there may have been a low to moderate observable change in the participants' behavior in English classrooms. Based on effect size as reported by mathematics teachers there was no observable change in participants' behavior in mathematics classes. When the two effect sizes from both teachers were averaged together there was no observable change in participants' behavior in the classroom as a result of receiving the intervention.

### **Program versus Technique**

This section provides a review of the difference between a contemplation program and contemplation technique. Those differences include the definitions of a contemplation program and contemplation technique, components of a program versus a technique, and the amount of time and frequency per session.

**Contemplation program versus contemplation technique.** As defined by the Garrison Institute Report (Schoeberlein et al., 2005), a contemplative program specifically teaches principles of mindfulness through instructional activities, mindfulness meditation, and group discussions through a pedagogical approach. The lessons of a contemplation program are taught typically organized into eight class sessions between 90 and 120 minutes in length, similar to the Mindfulness-Based Stress Reduction program by Kabat-Zinn (1990) or Mindfulness-Based Cognitive Therapy by

Segal et al. (2001). Outcomes associated with contemplative programs include an increase in mindfulness and attention.

A contemplative technique, as defined by the authors of the Garrison Report, are techniques that include training to increase attention, meditation, and yoga, but are not associated with a program structure. For example, a contemplative technique may be the practice of meditating for 20 minutes twice a week. Outcomes associated with contemplative techniques include increased mindfulness, self-awareness, and emotional intelligence (Schoeberlein et al., 2005).

**Components.** A contemplative program such as MBSR is taught through a pedagogical approach that includes lessons about the principles of mindfulness through instructional activities, mindfulness meditation, group discussions, and weekly homework. The instructional lessons may include activities that involve using all five senses to experience an object. For example, like eating a raisin with all five of our senses. This would include touching, hearing, looking, smelling, and tasting the raisin before it is swallowed. Mindfulness meditations include breathing exercises, yoga poses, walking meditations, and guided meditations. Group discussions include the participants in the class being asked to share personal experiences related to using the principles of mindfulness in their everyday life and accepting advice and feedback from the instructor and classmates. Homework assignments include activities similar to the raisin activity to increase the ability to become more mindful of our surroundings, thoughts, and emotions.

A contemplative technique does not contain any components. The practice of meditating for 20 minutes is a standalone activity.

**Amount of time and frequency per session.** A contemplation program such as a typical MBSR class is typically 120 minutes per class for eight weeks and a one day silent retreat for six hours. The classes are held once a week during the eight weeks and the one day silent retreat is held between the sixth and seventh week (Kabat-Zinn, 1990). Excluding the one day silent retreat, a student in a MBSR class would receive approximately 960 minutes of instruction. Whereas, a contemplation technique such as practicing meditation for 20 minutes, twice a week would provide the practitioner with approximately 320 minutes of practice.

### **Discussion of Results**

This section compares the results of the research questions as they relate to mindfulness, perceived stress, anxiety, and classroom behavior to the 19 studies reviewed in Chapter Two. In addition, the comparisons are linked to how the key components of contemplation programs and techniques may have or have not contributed to the outcome of the study.

**Comparing results to previous studies.** The purpose of this study was to examine if a participant's mindfulness, perceived stress, anxiety, and classroom behavior were statistically different after practicing a contemplative technique such as mindfulness meditation. The results of the study revealed no significant changes in any of the four dependent variables in the sample population. However, two of the dependent variables, perceived stress and anxiety, showed promise by evidence of a low to moderate effect size.

**Mindfulness.** The results from this study did not demonstrate a significant difference in the dependent variable of mindfulness. The overall effect size was  $d = .02$ . This is an indication that the contemplative technique, mindfulness meditation, practiced twice a week for five weeks had no effect on increasing a participant's mindfulness. These results are similar to van der Oord et al. (2012), who used a contemplation program, and van de Weijer-Bergsma et al. (2012), who used a contemplation technique, also reported no statistical significant difference for mindfulness in both of their studies. In contrast, studies by Lau and Hue ( $p = .01$ ) (2011), Bogels et al. ( $d = 0.5$ ) (2008), and Brown et al. ( $d = .61$ ) (2011) all demonstrated significant changes in a participant's mindfulness. All three of these research studies consisted of interventions that were structured contemplation programs such as MBSR or MBCT.

Comparing the results of this study with Lau and Hue (2011), Bogels et al. (2008), and Brown et al. (2011) there may be evidence that participants are more successful at increasing their mindfulness with a contemplative program; such as MBSR. With one of the major differences between a structured program like MBSR and practicing mindfulness meditation outside of a structure is the group discussion of experiences. The discussion of the meditation experience helps the practitioner link what he or she felt to the principles of mindfulness; therefore, possibly leading to an increase in overall mindfulness. The results from this study, which did not include a discussion of the participants experience, may lead to the conclusion that the group discussion component of a contemplation program may be increasing a person's level of mindfulness.

*Perceived stress.* The results from this study did not demonstrate a significant difference in the dependent variable of perceived stress. However, the overall effect size ( $d = -.46$ ) was the highest observable change out of all four dependent variables. This effect size is an indication that there may be evidence that a moderate observable decrease in a participant's stress levels could occur from practicing mindfulness meditation on a regular basis. Based on the findings of Lau and Hue (2011), who used an MBSR program, there was no significant change in the dependent variable of stress. Whereas, Biegel et al. (2009), who used an MBSR program, reported a significant change with a large effect size of  $d = .89$ .

Lau and Hue (2011) and Biegel et al. (2009) used a structured contemplative program, such as MBSR, which included an opportunity for the participants to discuss their meditation experiences. A difference between the Lau and Hue study, and the Biegel et al. study was the duration of the intervention interaction time. Interaction time is defined as the number of minutes the participants spend with the researcher or instructor during the intervention. The Lau and Hue study included six sessions at 120 minutes per session for a total of 720 minutes of interaction time. The Biegel et al. study was eight sessions for 120 minutes per session for a total of 960 minutes of interaction time. This is in contrast to the current study of ten sessions for 45 minutes per session for a total of 450 minutes of interaction time, resulting in a 240 minute difference between the Lau and Hue and Biegel et al. studies and a 510 minute difference between the current study and the Biegel et al. study. With the Biegel et al. study producing



significant results in the reduction of stress it may be that participants in the current study needed more interaction time than 450 minutes allotted.

*Anxiety.* The results from this study did not demonstrate a significant difference in the dependent variable of anxiety, but produced a low effect size of  $d = -.22$ . This effect size is an indication that there may be evidence that a low observable decrease in a participant's anxiety levels could occur from practicing a contemplative technique, or mindfulness meditation.

Based on the 19 studies reviewed there is inconsistency of whether mindfulness meditations can reduce anxiety for children and adolescents. Three studies reported no significant change in anxiety (Lee et al., 2008; Liehr & Diaz, 2010; Lau & Hue, 2011), whereas three studies reported significant decreases in anxiety (Napoli et al., 2005; Beauchemin et al., 2008; Biegel et al., 2009). More specifically, Biegel et al. (2009) reported a high effect size for state anxiety ( $d = .70$ ) and trait anxiety ( $d = .79$ ) and Napoli et al. (2005) reported a small effect size for overall anxiety ( $d = .39$ ).

A factor that may have contributed to the study not reporting a significant difference in the dependent variable of anxiety may be because the participants did not have clinically elevated T-scores as reported by the RCMAS-2 to indicate a clinical condition of anxiety. This is similar to findings in the Lee et al. (2008) study. Of the 10 Completers in this study, four of the participants could have been considered to have a clinically elevated score for anxiety as reported by the RCMAS-2. Therefore as Lee et al. stated, a reduction in the score "may not be clinically relevant even with the overall trend of decreased symptoms" (2008, p. 24). If the participant did not report signs of anxiety to

begin with any further reduction in anxiety symptoms would not be captured by the reporting measure, RCMAS-2.

*Classroom behavior.* The results from this study did not demonstrate a significant difference in the dependent variable of classroom behavior as observed by English and mathematics teachers. The overall effect size for classroom behavior in a mathematics class was  $d = .09$ , which is an indication that the intervention had no effect on improving a participant's classroom behavior within a mathematics class. However, the overall effect size for classroom behavior in an English class was  $d = -.31$ . This effect size is an indication that there may be evidence a low to moderate observable change in a participant's classroom behavior in an English class may occur from practicing a mindfulness meditation. However, if the effect size for classroom behavior in both an English and mathematics class is averaged the effect size drops to  $d = -.11$ , which is lower than Cohen's (1977) range of low observable effect of  $d = .20$ . This is an indication that the contemplative technique, mindfulness meditation, practiced twice a week for five weeks had no effect on improving a participant's classroom behavior in multiple settings.

From the 19 studies reviewed, nine of the studies measured participants' behavior and reported a statistical difference due to learning a contemplation program or contemplation technique. The results from these nine studies are based on the significant results of the dependent variables related to social skills and impulsivity as reported by a teacher or parent. The dependent variables from these nine studies is comparable to the three subscales of the TOCA-C; concentration, disruptive behavior, and pro-social skills,

which was used in this study and reported by two different teachers. Results from this study do not support that learning a contemplative technique improves classroom behavior.

The main difference between these nine studies is that six of the studies employed a sample population of elementary age children. The six studies that used a sample population of elementary age children may support Bradley et al.'s (2008) speculation that students with disabilities may become resistant to interventions as they reach higher grade levels because of the frequency school-based intervention programs change. Regardless of the number of school-based intervention programs a student who receives special education services experiences, he or she still may have a difficult time accepting that a program or an individual can help them. For example, a student with OHI because of ADHD may have a difficult time attending to the instruction of the intervention program (Mastropieri & Scruggs, 2010). Or a student with SLD may be too depressed because of poor grades to be open to learning an intervention program (Elbaum & Vaughn, 2003). Or a student with ED may not trust teachers and therefore does not respond positively to a teacher when they try to teach an intervention program (Hallahan & Kauffman, 2006). Therefore, the elementary age children in the six studies who did improve classroom behavior may have been because they had not built up resistance to trying new interventions as compared to older adolescents.

One study, Beauchemin et al. (2008) did report a statistical difference in social skills ( $p < .05$ ) for adolescents with SLD. The Beauchemin et al. study used a contemplative technique that consisted of the participants meditating for five to ten

minutes at the beginning of every class, five days a week, for five consecutive weeks. With the Beauchemin et al. study producing significant results in improving social skills with an adolescent population with SLD it may be that participants in the current study needed to practice the intervention over an extended period of time and on a consistent basis.

**Summary.** This study did not show a significant difference in the four dependent variables measured. After closer examination of the results from this study and the studies reviewed, four potential factors may have contributed to why this study did not report significant results. Those four factors may be (a) the intervention interaction time, (b) the type of independent variable, (c) the sample population, and (d) the type of dependent variable measurement.

***Interaction time and type of independent variable.*** The intervention interaction time refers to the number of minutes a participant was engaged in the contemplative program or technique. The type of independent variable refers to the use of a contemplative program or a contemplative technique. Therefore, both factors will be discussed together. Based on the 19 studies reviewed, the most successful studies were the independent variables that provided over 700 minutes of interaction time during the intervention. For example if the participants were with the researcher or instructor for 120 minutes for eight sessions they received 960 minutes of interaction time. Evidence of a successful study is based on the evidence of a moderate to high effect size as defined by Cohen (1977). For example, Bogels et al. (2008) reported an effect size of  $d = 0.5$  related to mindfulness and  $d = 0.9$  related to externalizing and internalizing behaviors and

Biegel et al. (2009) reported an effect size of  $d = .89$  for perceived stress and  $d = .79$  for trait anxiety. The research studies that employed an intervention of at least 700 minutes of interaction time delivered the intervention once or twice a week for six to 12 weeks. Unfortunately, due to time constraints of trying to implement the intervention before the end of the school year the study was unable to provide more than 450 minutes of intervention interaction time to the participants.

In conjunction with the 700 minutes of interaction time, the interventions were also delivered as structured contemplation programs, such as MBSR or MBCT. As stated earlier there are several differences between a contemplation program and a contemplation technique. One of the major differences is that during a contemplation program the participants engage in a group discussion. During the group discussion the participants are able to ask questions about the principles of mindfulness, their experiences with meditation, and connect the principles of mindfulness to real world scenarios. Due to time constraints, this study did not provide an opportunity for group discussion. The study was conducted as an after-school program, which constrained the researcher to meet with the participants for 45 minutes, twice a week. Based on MBSR programs, group discussion typically last 20 to 30 minutes. Therefore, the researcher did not believe there would be sufficient amount of time in 45 minutes to provide a 20-minute meditation and 20-minute group decision. In place of the group discussion, the participants completed a five-minute journaling activity. The journaling activity was designed to substitute for the group discussion. However, the journaling activity did not

provide the engagement or interaction necessary for the participants to understand why mindfulness is important for everyday life.

***Sample population.*** At this time there is not sufficient evidence that adolescents who receive special education services under the classification of an emotional disability, specific learning disability, or other health impairment benefit from learning a contemplative program or technique. Of the 19 studies reviewed, only Cullen-Powell et al. (2005) and Powell et al. (2008) targeted children with a classification equivalent to an emotional disability and only Beauchemin et al. (2008) and Lee et al. (2008) targeted children with a classification equivalent to a learning disability. Out of those four studies, only Beauchemin et al. used a sample population equivalent to the current study, with the participants mean age of 16.61 years old. Therefore, more research may provide sufficient evidence that students who receive special education services may benefit from learning a contemplation program or technique.

***Type of dependent variable measurement.*** Compared to the Lee et al. (2008) study, a factor that may have contributed to the study not reporting a significant differences in the dependent variable of anxiety was because the measurement is used to clinically diagnosis individuals with anxiety. A majority of the scores reported by the participants did not indicate a clinical condition for anxiety. Therefore, any changes in anxiety due to the intervention may not have been detected because of the type of measurement. However, this factor may be more of a limitation of the study as opposed to a major contributing reason why the study did not report significant results.

In conclusion, the evidence from the current study is consistent with Kabat-Zinn's (2003) caution that mindfulness meditation, or contemplative techniques, may have limited effectiveness if contemplative techniques are taught outside of a structured program. Therefore, in order to determine whether adolescents with an emotional disability, specific learning disability, or other health impairment may benefit from a mindfulness meditation intervention they may need to have at least 700 minutes of interaction time and participate in group discussion related to mindfulness. These conclusions echo Flook et al. (2010), when they stated that the format for delivery of the intervention and the optimal time duration of the intervention should be examined to determine the most effective intervention.

### **Limitations**

There were eight limitations to this study. First, this study did not incorporate a different intervention to determine if a similar intervention would produce similar or different results. A different or comparable stress management program or a school-based behavior intervention may produce similar or more significant changes compared to the contemplation programs and techniques reviewed in this study. Lee et al. (2008) suggest incorporating comparison conditions that match treatment conditions, such as both conditions employing teacher-led discussion groups.

A second limitation, similar to Lee et al. (2008) was the subclinical symptoms of anxiety as measured by the RCMAS-2. The use of a clinical assessment to measure the anxiety of participants who did not have a clinical diagnosis of anxiety may have caused a floor effect. A floor effect would make it difficult to detect any change due to the

intervention, over time from the pretest measurement to the posttest measurement.

Therefore, the anxiety instrument used in this study may not have been the best match for the sensitivity needed to detect anxiety changes in this sample population.

A third limitation to the study was the time constraint. The number of sessions, weeks, and minutes available for the intervention were constrained by the school schedule. Once research approval was acquired by the university and the participating school district, there were 13 weeks left in the school year, which included one week for Spring Break and two weeks for final exams and standardized state assessments.

A fourth limitation to the study was the after-school bus schedule. With the intervention being administered as an after-school program the researcher had to adhere to the bus schedule's after-school hours, which was 45 minutes. Therefore, the amount of time for each individual session had to be limited to 45 minutes.

A fifth limitation to the study was that the journaling activity was used in place of the group discussion, with the latter being a component of most contemplation programs. Due to the 45-minute time constraints, the researcher determined there was insufficient time to incorporate a group discussion into the intervention. In place of the group discussion a journaling activity was used as a means to provide an outlet for the participants to share their experiences and thoughts. However, processing thoughts via the journal activity may not have had the same effect as a group discussion.

The sixth limitation to the study is the attrition of the participants. The study started with 20 potential participants. Participants were expected to attend the 10 intervention sessions and complete all of the dependent measurements. Any participant



who attended less than seven intervention sessions or did not complete all of the dependent measures was considered a "non-completer" of the intervention. Ten participants were considered Non-completers; therefore, attributing to a 50% attrition rate.

The seventh limitation to the study is the sample size. Ten participants was too small to produce statistically significant results. Even though the dependent variables of perceived stress and anxiety produced a moderate or low effect size, a larger sample size may have produced statistically significant results for perceived stress and anxiety.

The last limitation to the study may be the participants receiving the meditation sessions through a mp3 player and not through listening to a teacher. Based on the social validity scale of the participants, the participants indicated that they did not like the voice of Kabat-Zinn and often times found it distracting. Several of the participants indicated that they preferred the researcher's voice on the pre and post-meditation instruction recordings to that of Kabat-Zinn.

### **Recommendations for Future Study**

There are four recommendations for future study. The first recommendation for future study would be to use a sample population of adolescents who receive special education services for an emotional disability, specific learning disability, and other health impairment. Currently, there are only four published studies that outline significant changes experienced by students who receive special education services. Out of these four studies, there are less than 50 adolescent students between the years of 13 and 18 involved with those studies. Therefore, more studies using a contemplative

program or technique with adolescents who receive special education services should be conducted to expand the research with this student population.

The second recommendation is a direct comparison between contemplative programs and techniques. Based on the 19 studies reviewed, there is strong evidence that an intervention based on a contemplative program report significant results as compared to a contemplative technique, like the one used in this study. Therefore, there should be a direct comparison between a contemplative program, such as MBSR, and a contemplative technique, such as mindfulness meditation, using a sample population with adolescents who receive special education services to determine if one intervention is more effective than the other.

The third recommendation is to analyze the number of intervention interaction time an adolescent who receives special education services should participate in the intervention to see an effect. This includes the total number of minutes across the entire intervention, number of minutes per session, number of sessions across the entire intervention, and the number of sessions per week. There may be enough evidence to show that the number of minutes is more important than the number of sessions. However, the number of minutes of the intervention should be spread out over a long enough period of time to be delivered on a consistent basis. With the minutes spread out over a consistent time frame, this may provide the participants more time to incorporate what they learn into everyday life situations. Similarly related, no studies reported how time within a session was used, although all researchers reported the amount of time that was used. Researchers should begin reporting the sequence of activities, how long each

activity or task lasts, and what participants are doing across the entire session length. For replication of studies, researchers need to be explicit in noting what occurs during each of the sessions so it is clear exactly what constitutes the intervention.

Lastly, the fourth recommendation is to analyze the type of components used during the intervention. For example, a research study could investigate if incorporating the group discussion component into a contemplative program or technique intervention is beneficial for adolescents receiving special education services. For adolescents who receive special education services, the group discussion may provide the key ingredient for linking the principles of mindfulness and how those principles relate in everyday life situations.

## **Conclusion**

The purpose of this study was to examine the effectiveness of mindfulness meditation, a contemplative technique, used by secondary students who receive special education services for an emotional disability, specific learning disability, or other health impairment as an after-school activity. This research is one of the few mindfulness-based studies to focus on adolescents who receive special education services. The researcher hypothesized that through the use of mindfulness meditation the participants may experience an increase in mindful awareness, and lower levels of stress and anxiety, which in turn might increase each participants' classroom performance. Although no statistically significant results were found relevant to each of the research questions, there was evidence indicating that secondary students with emotional disabilities, specific learning disabilities, or other health impairments may have experienced lower levels of

stress and anxiety. These findings are based on the effect size of  $d = -.49$  for perceived stress and  $d = -.22$  for anxiety. Based on these effect sizes for stress and anxiety, these may be preliminary evidence that research conducted with more adolescents, incorporating group discussions, and over lengthier periods of time may have a greater impact than was found in this study.

Ritchart and Perkins (2000) argue that the real potential for mindfulness in an educational setting is to increase student motivation and engagement and foster the development of self-directed learners. However, for mindfulness to be incorporated into an educational setting, researchers must first determine whether consistent results affect the academic and behavioral performance of adolescents who receive special education services. Meiklejohn et al. (2012) concluded that researchers need to continue to demonstrate the connection between mindfulness and improvement in academic achievement, improved social skills, and a reduction in disruptive school behaviors. Researchers must continue to demonstrate how a contemplative program or technique may help improve the academic scores and behavior achievement of an adolescent who receives special education services for an emotional disability, specific learning disability, or other health impairment.

## **APPENDIX A: Review of Mindfulness Interventions**

## Review of Mindfulness Interventions

(19 Studies from 1990 to 2012)

Authors	Independent Variable	Duration of the Study	N =	Age	Disability	Setting	Number of Sessions	Dependent Variables
<b>Elementary Students with Disabilities - No Control Group</b>								
Semple et al. (2005)	MBSR	6 weeks	5	7 to 8	Anxiety	Public School	5	Behavior & Anxiety
<b>Elementary Students with Disabilities - Control Group</b>								
Cullen-Powell, et al. (2005)	Self-Discovery Program	School Year	18	6 to 8	Behavior	Public School	8	Behavior
Napoli et al. (2005)	Attention Academy Program	24 weeks	228	Not Reported	Not Reported	Public School	12	Anxiety & Attention
Powell et al. (2008)	Self-Discovery Program	12 weeks	107	8 to 11	Not Reported	Not Reported	12	Behavior
Flook et al. (2010)	Mindfulness Intervention	8 weeks	64	7 to 9	Not Reported	Public School	16	Behavior
Liehr & Diaz (2010)	Mindfulness Intervention	2 weeks	18	9	Not Reported	Summer Camp	10	Mood & Anxiety
<b>Elementary Students with Disabilities - Waitlist Control Group</b>								
Mendelson et al. (2010)	Mindfulness Intervention	12 weeks	97	9 to 10	Not Reported	Public School	48	Stress, Coping, Depression, Emotions, Social Skills
Lee et al. (2008)	MBCT-C	12 weeks	25	9 to 12	LD	Not Reported	12	Behavior, Anxiety, & Depression
Saltzman & Goldin (2008)	MBSR	8 weeks	31	Not Reported	Not Reported	Not Reported	8	Attention, Emotion, & Mood
Schonert-Reichl & Lawlor (2010)	Mindfulness Intervention	Not Reported	139	Not Reported	Not Reported	Public School	Not Reported	Optimism, Emotion, & Social Skills
Van der Oord et al. (2012)	Mindfulness Intervention	8 weeks	16	8 to 12	Multiple	Therapeutic School	8	Behavior, Mindfulness, Attention

**Review of Mindfulness Interventions Continued  
(19 Studies from 1990 to 2012)**

<b>Authors</b>	<b>Independent Variable</b>	<b>Duration of the Study</b>	<b>N =</b>	<b>Age</b>	<b>Disability</b>	<b>Setting</b>	<b>Number of Sessions</b>	<b>Dependent Variables</b>
<b>Secondary Students with Disabilities - No Control Group</b>								
Zylowska et al. (2007)	Mindfulness Intervention	8 weeks	8	15	ADHD	Not Reported	Not Reported	Attention
Beauchemin et al. (2008)	MI	5 weeks	32	Not Reported	LD	Therapeutic School	25	Anxiety, Social, & Behavior
Sibinga et al. (2011)	MBSR	8 weeks	33	13 to 21	Not Reported	Not Reported	8	Behavior
Van de Weijer-Bergsma et al. (2012)	Mindfulness Intervention	8 weeks	10	11 to 15	ADHD	Not Reported	0	Behavior, Mindfulness, & Happiness
<b>Secondary Students with Disabilities - Control Group</b>								
Broderick & Metz (2009)	Learning to BREATHe	5 weeks	137	17	Not Reported	Private School	6	Behavior, Emotions, & Rumination
Lau & Hue (2011)	MBSR	6 weeks	48	14 to 16	Not Reported	Public School	6	Mindfulness, Stress, Anxiety, Well-being
<b>Secondary Students with Disabilities - Waitlist Control Group</b>								
Bogels et al. (2008)	MBCT	8 weeks	14	11 to 18	Multiple	Not Reported	8	Happiness, Goal, & Mindfulness
Biegel et al. (2009) & Brown et al. (2011)	MBSR	8 weeks	102	14 to 18	Multiple	Medical Related	8	Stress, Anxiety, Behavior, Self-esteem, & Mindfulness

## **APPENDIX B: Recruitment Package**



Cover Letter to participate in a meditation research study

Dear Parent/Guardian:

Your child is being invited to take part in a meditation research study. The purpose of the meditation study is to determine how your child responds to practicing a form of a meditation on a regular basis. This project is being conducted by me as my dissertation study through George Mason University and with permission from Loudoun County Public Schools.

The research study will last 10 weeks and participants will be asked to attend two meditation sessions a week after school for five weeks. The participants will also be asked to complete three different self-assessments at three different time points over the 10-week period. The type of meditation that will be used throughout the study is a non-religious form of meditation that has been used in the medical and psychology fields for the past 20 years to help individuals improve his or her overall quality of life. Your child will be videotaped during each meditation session and during the self-assessment sessions, for later observation by the researchers. The video and self-assessments will be used for data analysis purposes only and will be kept entirely confidential.

I am writing to request that your child be allowed to participate in this research study. The Parent Informed Consent is included with this cover letter authorizes the participation of your child in the research study. If you agree to allow your child to participate in this research study please complete the Parent Informed Consent form and return to me by **TBD**.

If you or your child has any questions concerning this research project, please contact me, Ernest Solar, through email at [esolar@masonlive.gmu.edu](mailto:esolar@masonlive.gmu.edu) or by telephone at 703-862-3942.

Sincerely,

Ernest Solar, M.Ed.  
Doctoral Candidate at George Mason University  
mobile tel: 703.862.3942  
e-mail: [esolar@masonlive.gmu.edu](mailto:esolar@masonlive.gmu.edu)

Enclosed

## **PARENT PERMISSION FOR PARTICIPATION IN RESEARCH INFORMED CONSENT**

The Effects of Mindfulness Meditation on Adolescents with High-Incidence Disabilities

**RESEARCH PROCEDURES:** This research project is being conducted to determine whether meditation has positive effects on secondary students who receive special education services. The entire research project will consist of two sessions once a week for 5-weeks over the course of 10-weeks. At three different time periods your son or daughter will be asked to complete three self-assessments related to his or her stress, anxiety, and mindfulness awareness. Your son or daughter's English and math teacher will also complete a teacher observation assessment at three different time points throughout the study. Next, your son or daughter will be asked to sit or lay in a comfortable position for at least 20 minutes, but no longer than 30 minutes, during each meditation session (10 total sessions). During the meditation, students will be guided through a meditation sequence by listening to a mp3 player. At the end of the session your son or daughter will be asked to write down his or her thoughts and feelings in a notebook. After your son or daughter completes the writing exercise and puts away his or her meditation material they will be allowed to leave.

We would also like to review your son or daughter's school record to acquire descriptive information about his or her characteristics (e.g., age, gender, ethnicity, grade, grade point average, socioeconomic status, achievement data, disability label, and percentage of special education services). All information this is collected through review of your son or daughter's school record and information collected throughout the study will be kept confidential and locked in a cabinet only to be accessed and viewed by the project staff. Once the information is collected all information will be coded and any personal identifiable information will be discarded.

**VIDEO RECORDING:** Your son or daughter will be video recorded during each meditation session and during the self-assessment sessions. The purpose of the video recordings is to determine if the meditation intervention was administered as developed. The video recordings will only be accessible to the researcher and research assistants. The video recordings will be kept in a locked cabinet in a locked room and destroyed after three years.

**RISKS:** There is no foreseeable physical, emotional, or mental risk to your son or daughter for participating in this research study.

**BENEFITS:** The direct benefits to your son or daughter may be that they will learn how to meditate, develop new coping skills to manage his or stress and anxiety, learn new ways to concentrate and focus, and a new way to relax.

**CONFIDENTIALITY:** The data in this study will be confidential. All information collected during this study will be identifiable through a coded identification number. A coded identification number unique to your son or daughter will be placed on the collected data and self-assessments and your son or daughter's name will not be included on the data collected. The coded identification number will be the only link to your son or daughter's identity and only the researcher will have access to the identification key. All data will be kept in a locked cabinet in a locked room.

**PARTICIPATION:** Your son or daughter's participation is voluntary, and he or she may withdraw from the study at any time and for any reason. If your son or daughter decide not to participate or if your son or daughter withdraws from the study, there is no penalty or loss of benefits to which your child are otherwise entitled. There are no costs to you or your son or daughter to participate.

**CONTACT:** This research is being conducted by Ernest Solar, a doctoral candidate at George Mason University and a Special Education Teacher at Freedom High School, and Dr. Margaret King-Sears from the College of Education and Human Development at George Mason University. They may be reached at (703) 862-3942 or esolar@masonlive.gmu.edu (Mr. Solar), (703) 993-3916 or mkingsea@gmu.edu (Dr. King-Sears); for questions or to report a research-related problem.

You may contact the George Mason University Office of Research Subject Protections at (703) 993-4121 if you have any questions or comments regarding the rights as a participant in the research. This research has been reviewed according to George Mason University procedures governing your participation in this research.

**CONSENT:** I have read this form and agree that my son or daughter may participate in this study.

\_\_\_\_\_ I agree that my son or daughter may be audio (video) recorded.

\_\_\_\_\_ I do not agree that my son or daughter may be audio (video) recorded.

\_\_\_\_\_  
Parent's Signature

Print Child's Name

\_\_\_\_\_  
Parent's Printed Name

\_\_\_\_\_  
Date of Signature

Version date: February 4, 2013

## STUDENT INFORMED ASSENT

### The Effects of Mindfulness Meditation on Adolescents with High-Incidence Disabilities

**RESEARCH PROCEDURES:** This research project is being conducted to identify the positive effects of meditation on secondary students who receive special education services. The entire research project will consist of two meditation sessions for five weeks over a period of 10 weeks. At three different times you will be asked to complete self-assessments related to your levels of stress, anxiety, and mindfulness awareness. At the same three different times, your English and math teacher will report your behavior in the classroom to the project leader. For each meditation session, you will be asked to sit or lie in a comfortable position for at least 20 minutes and participate in a guided meditation session through a mp3 player. At the end of the session you will be asked to record your thoughts and feelings in a journal that will be kept in a locked cabinet. At the end of the session you will be asked to put away your meditation material before leaving.

**RISKS:** There is no foreseeable physical, emotional, or mental risk to you for participating in this research study.

**BENEFITS:** You may learn how to meditate, manage stress, and relax in a new way. There is no reward or money being paid in this study; however, you may qualify for an incentive gift.

**VIDEO RECORDING:** You will be video recorded during each meditation session and during the self-assessment sessions. The purpose of the video recordings is to determine if the meditation intervention was administered as developed. The video recordings will only be accessible to the researcher and research assistants. The video recordings will be kept in a locked cabinet in a locked room and destroyed after three years.

**CONFIDENTIALITY:** The data in this study will be confidential. All information collected during this study will be identifiable through a coded identification number. A coded identification number unique to you will be placed on the collected data and self-assessments and your name will not be included on the data collected. The coded identification number will be the only link to your identity and only the researcher will have access to the identification key. All data will be kept in a locked cabinet in a locked room.

**PARTICIPATION:** Your participation is voluntary. If you choose not to participate or want to stop after we have started we will not be upset with you.

**CONTACT:** Our names are Mr. Solar and Dr. King-Sears. Dr. King-Sears is a professor at George Mason University and may be reached at (703) 993-3916 or at mkingsea@gmu.edu. Mr. Solar is a special education teacher at Freedom High School and may be reached at (703) 862-3942 or at esolar@masonlive.gmu.edu. You can call us for questions or to report a research-related problem.

George Mason University Office of Research knows about this study and gave their approval. If you have any questions please call (703) 993-4121.

**CONSENT:** I have read this form and agree to participate in this study.

\_\_\_\_\_ I agree to be audio (video) recorded.

\_\_\_\_\_ I do not agree to be audio (video) recorded.

\_\_\_\_\_  
Student's Signature

\_\_\_\_\_  
Date of Signature

Version date: February 4, 2013

## **APPENDIX C: Meditations**

## **Sitting Meditation (Kabat-Zinn, 2005)**

(This script will be used for four of the meditation interventions)

Coming into this period of sitting meditation practice with the firm intention to bring mindfulness and discernment to each moment. Sitting in a posture which for you in this moment embodies feelings of dignity, self reliance and wakefulness, stillness and stability. And when you are ready, bringing attention to settle on the breath as you feel it flowing in and out of your body. Focusing on feeling your belly as it expands gently on the in breath and recedes gently on the out breath. Or on the feeling of the air flowing past your nostrils. Or in being in touch with your breathing wherever you find it most vivid. And just keeping your attention on your breath for the full duration of each in breath and the full duration of each out breath. Riding the waves of your moment breathing as a raft would ride up and down on the waves of the seashore fully in touch with the sensations in the belly or at the nostrils or wherever else. Following breath by breath, moment by moment. Allow the breath to remind you over and over again to be fully present to be right here, right now.

If at any time you find that your attention has waned or has wandered off the breath entirely, notably your mind has gone and what it is preoccupied with once you come notice it. Gently, without condemning yourself for it and without either clinging to the content of your thoughts or feelings or rejecting it and suppressing it, just letting go and bringing your attention back to the breath. In doing this, and doing this over and over again. Each time the mind loses its focus momentarily and moves away from the breath.

Notice this breath coming in, just this breath going out. Use the breath as an anchor to keep your attention right here in the present moment. And if you feel comfortable with it at a certain point expanding the field of your awareness around the breath until it includes a sense of the body as a whole sitting here breathing. Opening to the full spectrum of feelings associated with your body as you sit here. Awareness filling the body, allowing whatever sensations arise to be held in awareness moment by moment watching them come and go without reacting to them as best you can. Just observing the play of any and all perceptions sensations, thoughts and feelings along with your breath as you sit here fully in touch with this moment.

And here too continually bringing your focus back to the body as a whole sitting and breathing. Each time it fades or is carried off by the stream of thoughts or feelings or sensations that run through the mind. Perhaps reminding yourself from time to time that you are not trying to get anywhere or feel anything special, even relaxation. You are simply allowing yourself to be where you already are and to feel whatever is here, to be felt in this moment, observing and accepting whatever is here simply because it is already here. A part of your experience in this moment, regardless of rather it feels pleasant, unpleasant or neutral. Give full care and attention to each moment, a continual seeing and letting go, seeing and letting go. And in the last few moments of the sitting recommitting yourself to being fully awake and focused, fully in your body, sitting with the majesty, the beauty, the stability of a mountain and also perhaps committing yourself

bringing mindfulness to the various situations and activities you will encounter today. So that you can respond consciously rather than automatically to the various events and occurrences in your life and perhaps find a way to live all your moments with greater harmony and effectiveness, including those in which you are faced with obstacles and challenges. And as the recording comes to end you might also want to congratulate yourself for the discipline and the effort it takes to practice in this way and for your commitment to devote some time each day to nourishing your own being to non-doing and wakeful stillness.



## **Mountain Meditation (Kabat-Zinn, 2005)**

(This script will be used for three of the meditation interventions)

Coming to this period of sitting meditation practice with the firm intention of bringing mindfulness discernment to each moment it is helpful to bring to the sitting posture itself the sense of dignity with your head, back and neck rigid have decided to focus on.

### The Mountain

For this meditation, if it is possible for you, sitting on the floor on a firm cushion that raises the buttocks off the floor and allow the knees to be in contact with the floor itself, slightly below the hips so that the bottom half of your body makes a stable base out of which the upper half rises with a straight back but not stiff. The head held directly above the neck and shoulders, allowing the shoulders to be fully relaxed. You might try lifting your shoulders up slightly, then letting them drop and placing your hands either on your knees or together in a comfortable way on your lap. Of course, it is fine to use a chair if sitting on the floor is a strain. When you feel comfortable with your position, allow your eyes to close gently as you bring your attention to the flow of your breathing. Feeling each in breath and each out breath, just observing your breathing without trying to change it or regulate it in anyway. Allowing the body to be still and sitting with a sense of dignity, a sense of resolve, a sense of being complete. Whole in this very moment with your posture reflecting their sense of wholeness.

As you sit here, picture as best you can the most beautiful mountain that you know or have seen or can imagine. Just holding the image and the feeling of this mountain in your mind's eye, letting it gradually come into greater focus observing its overall shape, its lofty peak high in the sky, a large base rooted in the rock of the earth's crust, it's steep of gently sloping sides, noticing how massive it is. How solid, how unmoving, how beautiful, both from afar and up close. Perhaps your mountain has snow at the top and trees on the lower slopes. Perhaps, there is one prominent peak, perhaps a seamless of peaks or a high plateau. Whatever its shape or appearance, just sitting and breathing the image of this mountain. Observing it, noting its qualities, and when you are ready to feel that you can bring the mountain into your own body so that your body is sitting within the mountain in your mind's eye. Become one, so that as you sit here, your share in your massiveness and stillness and the majesty of the mountain, you become the mountain rooted in the sitting the posture. Your head becomes the lofty peak supported by the rest of the body and affording a panoramic vista, your shoulders and arms the sides of the mountain, your buttocks and legs are the solid base rooted to your cushion or to your chair. Experience in your body, a sense of uplift from deep within your pelvis and spine, with each breath as you continue sitting becoming a breathing mountain, unwavering in your stillness, completely what you are beyond words and thought, a centered rooted, unmoving presence. Now as you sit, becoming aware of the fact that as the sun travels across the sky, the light and shadows and colors are changing virtually moment by moment in the mountains granite stillness. Night follows day and day follows night,

canopy of stars, the moon, then the sun through the mountain. Just sit experiencing the change in each moment, constantly changing. With all the change the mountain remains still. If the seasons flow into one another and as the weather changes moment by moment and day by day. In the summer, there's no snow on the mountain, except perhaps the very peaks, shielded from the direct sunlight. In the Fall, the mountain may wear a coat of brilliant fire colors and winter a blanket of snow and ice. In any season, it may find itself, at times, shrouded in clouds or fog or pelted by freezing rain. People may come to see the mountain and comment on how beautiful it is or how it is not a good day to see the mountain, it is too cloudy or rainy or foggy or dark. None of this matters to the mountain which remains at all times its essential self. Clouds may come and clouds may go, tourist may like it or not. The mountain's magnificence and beauty are not changed one bit by whether people see or not or by the weather. Seen or unseen, in sun or clouds, broiling or frigid, day or night. It just sits being itself. At times visited by violent storms, buffeted by violet storms, buffeted by snow or rain and rains of unthinkable magnitude, through it all, the mountain sits. Spring comes, the birds sing in the trees once again, leaves return, flowers bloom in high meadows and on the slopes, streams overflow with the waters of melting snow. Through it all, the mountain continues to sit unmoved by the weather, by what happens on the surface, by the world of appearances.

As we sit and in meditation, we can learn to experience the mountain, we can embody the same unwavering stillness and rootedness in the face of everything that changes in our own life, over seconds, over hours, over years. In our life and in our meditation practice we experience constantly the changing nature of mind and body and of the outer world. We have our own periods of light and darkness, our moments of color and our moments of sadness. Certainly we experience storms of varying intensity and violence in the outer world and in our own minds and bodies buffeted by high winds, like cold and rain. We endure periods of darkness and pain as well as the moments of joy and uplift. Even our appearance change constantly experiencing the weather of its own. By becoming the mountain in our meditation practice, we can link up with its strength and stability adopting for our own, we can use its energies to support our energy, to encounter each moment with mindfulness and clarity. It may help us to see that our thoughts and feelings, our preoccupations, our emotional storms and crisis, and even the things that happen to us are very much like the weather on the mountain. We tend to take it all personally, but its strongest characteristic is in person, the weather of our own life is not to be ignored or denied. It is to be encountered, honored, felt, known for what it is, and held in awareness and in holding it in this way we come to know a deeper stillness and wisdom. Mountains have this to teach us and much more if we can listen. So if you come to find you resonate in some way with the strength and stability of the mountain in your sitting, it may be helpful to use it from time to time in your meditation practice to remind you of what it means to sit mindfully with resolve and wakefulness in true stillness. And so in the time that remains continuing to sustain the mountain meditation on your, in silence, moment by moment until you hear the sound of the bells.

### **Lake Meditation (Kabat-Zinn, 2005)**

(This script will be used for three of the meditation interventions)

Let us take a few moments to sit down in a comfortable place where we can feel supported and undisturbed. Just touch base with the flow of our breathing and a sense of the body as a whole sitting here. And when you feel ready picturing in your mind's eye a lake, a body of water, large or small held in a receptive basin by the earth itself. Noting in the mind's eye and in your own heart that water likes to pool in low places. It seeks its own level, asks to be held, contained. The lake you are invoking may be deep or shallow, blue or green, muddy or clear with no wind. The surface will be flat mirror like it reflects trees, rocks, sky and clouds and holds everything in itself momentarily. Wind stirs up waves, reflections distort and disappear. The sunlight may still sparkle in the ripples and dance on the waves in a play of shimmering diamonds and when night comes it's the moons turn to dance on the lake; or when the surface is still to be reflected in it along with outline of trees and shadows. In the winter, the lake may freeze over yet may be teeming with movement and life below.

As you lie here breathing, as you establish this image of a lake in your mind's eye allowing yourself when you feel ready to bring it inside yourself completely so that your being merges with the lake, becomes one with it so that all your energies from this moment are held in awareness with openness and compassion for yourself in the same way that the lake's waters are held by the receptive and the accepting basin of the earth herself. Breathing as the lake, feeling its body as your body, allowing your mind and your heart to be open and receptive moment by moment to reflect whatever comes near or to be clear all the way to the bottom. Experiencing moments of complete stillness when both reflection and water are completely clear and other moments perhaps when the surface is disturbed, choppy stirred up reflections in depth lost for a time. And through it all as you sit here, simply observe in the play of the various energies of your own mind and heart the fleeting thoughts and feelings of impulse and reactions which come and go as ripples and waves noting their effects in contact with them just as you are in contact with and feel the various changing energies that play on the lake. The wind, the waves, the light, the shadows, the reflections, the colors, the smells, noticing the effects of your thoughts and feelings. Do they disturb the surface and clarity of the mind's lake? Do they muddy the waters? Is that okay with you? Isn't having a rippling or a wavy surface part of being a lake? Might it be possible to identify not only with the surface of your lake with the entire body of water so that you become the stillness below the surface as well which at most experiences only gentle undulations even when the surface is whipped to frothing?

In the same way, in your meditation practice, and in your daily life, can you be in touch, not only with the changing content and intensity of your thoughts and feelings, but also with the vast unwavering reservoir of awareness itself residing below the surface of your mind? The lake can teach us this, reminds us of the lake within ourselves. If you find this image to be of value, you might want to use it from time to time to deepen and enrich your meditation practice. You might also invite this lake image to empower and guide your actions in the world as you move through the unfolding of each day. Carrying

a vast reservoir of mindfulness within your heart. Dwelling here in the stillness of this moment we can be the lake in silence.

Now for the remaining time signaled by the sound of the bells. Affirming our ability to hold in awareness and in acceptance right now all our qualities of mind and body just as the lake sits held cradled contained by the earth, reflecting sun, moon, stars, trees, rocks, clouds, sky, birds, light caressed by the wind and air which bring out and highlight its sparkle, its vitality, its potential moment by moment.

## **APPENDIX D: Dependent Measures**

### Child Acceptance and Mindfulness Measure (CAMM)

(Greco, L. A., Dew, S. E., & Ball, S. (2005). Acceptance, mindfulness, and related processes in childhood: Measurement issues, clinical relevance, and future directions. Presented at the Association for Behavior and Cognitive Therapies, Washington, D.C.)

**Instructions:** We want to know more about what you think, how you feel, and what you do. Read each sentence. Then, circle the number that tells how often each sentence is true for you.

Student ID#	Date:	Pre Post Post/Fu				
		Never True	Rarely True	Sometimes True	Often True	Always True
1. I get upset with myself for having feelings that don't make sense.		0	1	2	3	4
2. At school, I walk from class to class without noticing what I'm doing.		0	1	2	3	4
3. I keep myself busy so I don't notice my thoughts or feelings.		0	1	2	3	4
4. I tell myself that I shouldn't feel the way I'm feeling.		0	1	2	3	4
5. I push away thoughts that I don't like.		0	1	2	3	4
6. It's hard for me to pay attention to only one thing at a time.		0	1	2	3	4
7. I think about things that have happened in the past instead of thinking about things that are happening right now.		0	1	2	3	4
8. I get upset with myself for having certain thoughts.		0	1	2	3	4
9. I think that some of my feelings are bad and that I shouldn't have them.		0	1	2	3	4
10. I stop myself from having feelings that I don't like.		0	1	2	3	4

*Revised date (4 October 2006)*

### Perceive Stress Scale (PSS)

(Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health & Social Behavior*, 24, 385–396. Retrieved from <http://links.jstor.org/sici?sici=0022-1465%28198312%2924%3A4%3C385%3AAGMOPS%3E2.0.CO%3B2-2>)

**Instructions:** The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate *how often* you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

- 0. Never
- 1. Almost Never
- 2. Sometimes
- 3. Fairly Often
- 4. Very Often

Student ID#	Date:		Pre	Post	Post/Fu
	N	AN	S	FO	VO
1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that happened that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

**Revised Children's Manifest Anxiety Scale: Second Edition (RCMAS-2)**

(Reynolds, C. R., & Richmond, B. O. (1978). What I think and feel: A revised measure of children's manifest anxiety. *Journal of Abnormal Child Psychology*, 6, 271-280. doi:10.1007/BF00919131; Reynolds, C. R. (1985). Multitrait validation of the revised children's manifest anxiety scale for children of high intelligence. *Psychological Reports*, 56, 402-402. doi:10.2466/pr0.1985.56.2.402)

Circle one answer for each sentence.  
Please press hard when marking your responses.

1. Often I feel sick in my stomach. ....	Yes	No
2. I am nervous. ....	Yes	No
3. I often worry about something bad happening to me. ....	Yes	No
4. I fear other kids will laugh at me in class. ....	Yes	No
5. I have too many headaches. ....	Yes	No
6. I worry that others do not like me. ....	Yes	No
7. I wake up scared sometimes. ....	Yes	No
8. I get nervous around people. ....	Yes	No
9. I feel someone will tell me I do things the wrong way. ....	Yes	No
10. I fear other people will laugh at me. ....	Yes	No

**Continue with Item 11 unless you have been told to stop here.**

11. I have trouble making up my mind. ....	Yes	No
12. I get nervous when things do not go the right way for me. ....	Yes	No
13. Others seem to do things easier than I can. ....	Yes	No
14. I like everyone I know. ....	Yes	No
15. Often I have trouble getting my breath. ....	Yes	No
16. I worry a lot of the time. ....	Yes	No
17. I feel bad if people laugh at me. ....	Yes	No
18. I am afraid of a lot of things. ....	Yes	No
19. I am always kind. ....	Yes	No
20. I get mad easily. ....	Yes	No
21. I worry about what my parents will say to me. ....	Yes	No
22. I feel that others do not like the way I do things. ....	Yes	No
23. I am afraid to give a talk to my class. ....	Yes	No
24. I always have good manners. ....	Yes	No

*continue on back page*

**What I Think and Feel  
(RCMAS-2)**

**AutoScore™ Form**

Cecil R. Reynolds, Ph.D., and Bert D. Richmond, Ed.D.

**Directions**

First fill in the background information. If you don't know your ID number, ask your examiner.

The sentences on this form tell how some people think and feel about themselves. Read each sentence carefully, then circle the word that shows your answer. Circle **Yes** if you think the sentence is *true* about you. Circle **No** if you think it is *not true* about you. Give an answer for every sentence, even if it is hard to choose one that fits you. Do not circle both **Yes** and **No** for the same sentence. If you want to change an answer, draw an X through your first answer and then circle your new choice.

There are no right or wrong answers. Only you can tell us how you think and feel about yourself. Remember, after you read each sentence, ask yourself, "Is it true about me?" If it is, circle **Yes**. If it is not, circle **No**.

Date: \_\_\_\_\_

Name or ID number: \_\_\_\_\_

Age: \_\_\_\_\_ Grade: \_\_\_\_\_ Gender:  Girl  Boy

Race/Ethnicity:  American Indian/Alaska Native  
 Asian  
 Black/African American  
 Hispanic/Latino  
 Native Hawaiian/Pacific Islander  
 White  
 Other

School: \_\_\_\_\_

Examiner: \_\_\_\_\_



- |  |     |    |
|--|-----|----|
| 25. It is hard for me to get to sleep at night. ....         | Yes | No |
| 26. I worry about what other people think about me. ....     | Yes | No |
| 27. I feel alone even when there are people with me. ....    | Yes | No |
| 28. I get teased at school. ....                             | Yes | No |
| 29. I am always good. ....                                   | Yes | No |
| 30. My feelings get hurt easily. ....                        | Yes | No |
| 31. My hands feel sweaty. ....                               | Yes | No |
| 32. I worry about making mistakes in front of people. ....   | Yes | No |
| 33. I am always nice to everyone. ....                       | Yes | No |
| 34. I am tired a lot. ....                                   | Yes | No |
| 35. I worry about what is going to happen. ....              | Yes | No |
| 36. Other people are happier than I am. ....                 | Yes | No |
| 37. I am afraid to speak up in a group. ....                 | Yes | No |
| 38. I tell the truth every single time. ....                 | Yes | No |
| 39. I have bad dreams. ....                                  | Yes | No |
| 40. I get angry sometimes. ....                              | Yes | No |
| 41. I worry about being called on in class. ....             | Yes | No |
| 42. I worry when I go to bed at night. ....                  | Yes | No |
| 43. It is hard for me to keep my mind on my schoolwork. .... | Yes | No |
| 44. I sometimes say things I should not say. ....            | Yes | No |
| 45. I worry about someone beating me up. ....                | Yes | No |
| 46. I wiggle in my seat a lot. ....                          | Yes | No |
| 47. A lot of people are against me. ....                     | Yes | No |
| 48. I have told a lie. ....                                  | Yes | No |
| 49. I worry about saying something dumb. ....                | Yes | No |

### Teacher Observation of Classroom Adaptation - Checklist (TOCA-C)

(Koth, C. W., Bradshaw, C. P., & Leaf, P. J. (2009). Teacher observation of classroom adaptation-checklist: Development and factor structure. *Measurement & Evaluation in Counseling & Development*, 42, 15–30. doi:10.1177/0748175609333560)

School Name _____	Teacher Name _____
Student Name _____	Student Gender _____
Grade _____	Date _____

Has this child been present in your classroom for a majority of the time (i.e., at least 8 days) during the last three weeks?            YES            NO

In the last three *weeks*, would you say the following statements were never, rarely, sometimes, often, very often, or almost always true of this child . . .

	Never	Rarely	Some times	Often	Very Often	Almost Always
1. Concentrates	1	2	3	4	5	6
2. Is friendly	1	2	3	4	5	6
3. Pays attention	1	2	3	4	5	6
4. Breaks rules	1	2	3	4	5	6
5. Is liked by classmates	1	2	3	4	5	6
6. Doesn't get along with others	1	2	3	4	5	6
7. Works hard	1	2	3	4	5	6
8. Harms others	1	2	3	4	5	6
9. Shows empathy & compassion for others' feelings	1	2	3	4	5	6
10. Gets angry when provoked by other children	1	2	3	4	5	6
11. Stays on task	1	2	3	4	5	6
12. Yells at others	1	2	3	4	5	6
13. Is easily distracted	1	2	3	4	5	6
14. Is rejected by classmates	1	2	3	4	5	6
15. Fights	1	2	3	4	5	6
16. Lies	1	2	3	4	5	6
17. Has many friends	1	2	3	4	5	6
18. Harms property	1	2	3	4	5	6
19. Completes assignments	1	2	3	4	5	6
20. Teases classmates	1	2	3	4	5	6
21. Learns up to ability	1	2	3	4	5	6

## **APPENDIX E: Procedural Checklists**

## Checklist to Administer Dependent Measures to Student Participants

Instructions for Researcher #1: The researcher administering the assessments will initial each step in column #1 as each step is completed.

Instructions for Researcher #2: The second researcher will be present and witness the data collection process and initial each step in column #2 as each step is completed. Any discrepancies will be discussed between the two researchers.

**Week 1 - Date:** \_\_\_\_\_      **Week 5 - Date:** \_\_\_\_\_      **Week 10 - Date:** \_\_\_\_\_

#1		#2
Initials	Procedures	Initials
	1. The student researcher will retrieve the student participant from his or her study hall class and bring them to a designated classroom.	
	2. The three assessments to measure the dependent variables will be sorted into three different stacks. (One stack for the CAMM, a second stack for the PSS, a third stack for the RCMAS-2)	
	3. Ensure you have a copy of the identification key to match the participant's name to their identification number.	
	4. Provide a pencil or pen to the participant.	
	5. Instruct the participant to keep the assessment turned over, face down until instructed to turn them face up and begin.	
	6. Briefly explain to the participant that the assessments are not scored for an academic grade. Briefly explain that the assessments will be used to measure how they feel emotionally. Explain to the participants that all of their responses will be held in confidence and not shared with anyone. Encourage them to read the questions carefully and answer each question honestly. Instruct the participants that if they have a question during an assessment to raise their hand and wait quietly until you come to their desk. Instruct the participants that when they are done to put their pencil down and turn the assessment over and face-down on their desk.	
	7. Distribute the first assessment face down, the CAMM, to the participant. The assessment will already be prenumbered with the participant's designated number.	
	8. After the participant has received the first assessment, read the directions out loud. Ask if there are any questions. Answer any questions as fully as possible. Then tell them to begin.	
	9. Wait quietly until the participant completes the first assessment. Collect the assessment as the participant finishes. The CAMM should take 10 minutes to complete.	
	10. When the participant is done with the first assessment, distribute the second assessment, the PSS, face down to the participant.	

---

11. After the participant has received the second assessment, read the directions out loud. Ask if there are any questions. Answer any questions as fully as possible. Then tell them to begin.

---

12. Wait quietly until the participant completes the second assessment. Collect the assessment as the participant finishes. The PSS should take 5-10 minutes to complete.

---

13. When the participant is done with the second assessment, distribute the third assessment, the RCMAS-2, face down to the participant.

---

14. After the participant has received the third assessment, read the directions out loud. Ask if there are any questions. Answer any questions as fully as possible. Then tell them to begin.

---

15. Wait quietly until the participant completes the third assessment. Collect the assessments as the participant finishes. The RCMAS-2 should take 5-10 minutes to complete.

---

16. After all three assessments are completed, thank the participant for their participation. Provide the participant with a pass to return to class.

---

**Checklist to Administer Dependent Measures to Participant's Teachers**

Instructions for Researcher #1: The researcher distributing the assessments will initial each step in column #1 as each step is completed and ignore the gray boxes.

Instructions for Researcher #2: The second researcher will initial each step in column #2 as each step is completed and ignore the gray boxes. Any discrepancies will be discussed between the two researchers.

**Week 1 - Date:** \_\_\_\_\_ **Week 5 - Date:** \_\_\_\_\_ **Week 10 - Date:** \_\_\_\_\_

#1	Procedures	#2
Initials		Initials
	1. Researcher 1 will email each of the English and math teachers for each participant giving them notification that they will be receiving the TOCA-C assessment to complete. Researcher 2 will be copied on the email to the participating teachers.	
	2. Researcher 1 will hand deliver the TOCA-C assessment to each participating teacher with an envelope.	
	3. When the teacher receives the TOCA-C for each participant, Researcher 1 will ask the teacher to initial the Receiving form.	
	4. Researcher 1 will remind the teachers that they have 48 hours to complete the assessment and return it to Researcher 2 in a sealed envelope.	
	5. Researcher 1 will give Researcher 2 the Receiving Form with the teacher's initials.	
	6. As Researcher 2 receives the TOCA-C assessments from the teachers he or she will date and highlight the initials of the teacher on the Receiving Form.	
	7. If Researcher 2 does not receive the TOCA-C assessment from a teacher within 48 hours, Researcher 1 will visit the teacher and ask for the completed form.	
	8. When Researcher 2 has received all of the completed TOCA-C assessments, he or she will give Researcher 1 the highlighted Receiving Form and completed assessments.	

### TOCA-C Receiving Form

Instructions: Ask the participating teacher to initial next to student participant's unique identification number and his or her academic subject to acknowledge receipt of the TOCA-C assessment.

**Week 1 - Date:** \_\_\_\_\_

**Week 5 - Date:** \_\_\_\_\_

**Week 10 - Date:** \_\_\_\_\_

	<b>#1</b>	<b>Date</b>	<b>#11</b>	<b>Date</b>
English: Math:			English: Math:	
English: Math:	<b>#2</b>		English: Math:	<b>#12</b>
English: Math:	<b>#3</b>		English: Math:	<b>#13</b>
English: Math:	<b>#4</b>		English: Math:	<b>#14</b>
English: Math:	<b>#5</b>		English: Math:	<b>#15</b>
English: Math:	<b>#6</b>		English: Math:	<b>#16</b>
English: Math:	<b>#7</b>		English: Math:	<b>#17</b>
English: Math:	<b>#8</b>		English: Math:	<b>#18</b>
English: Math:	<b>#9</b>		English: Math:	<b>#19</b>
English: Math:	<b>#10</b>		English: Math:	<b>#20</b>

## **APPENDIX F: Fidelity of Treatment Forms**



## **Mindfulness Meditation Intervention Instructional Script**

(This script will be used for all 10 meditation interventions)

The researcher will use the following script for each of the 10 intervention sessions over the course of each 5-week cycle.

1. At 3:50 p.m. turn on quiet meditation music to set the mood of the classroom as participants enter the classroom.
2. As participants enter the classroom:
  - a. Ask them to collect their meditation intervention material as designated by their unique identification number, and
  - b. Ask them to find their corresponding number in the classroom and sit quietly until the meditation intervention begins.
3. At approximately 4:00 p.m.,
  - a. Remind the participants that they are participating in a meditation exercise.
  - b. Encourage the participants to follow the directions given in the meditation exercise that they will listen to with the mp3 players.
  - c. Let the participants know which meditation they will be listening to for that day. (Tuesdays will be the "sitting meditation" and Wednesdays will be the "Mountain" or "Lake" meditation depending on the week.)
  - d. Encourage the participants to write notes or draw pictures in their journal at the end of the meditation to help process any thoughts or emotions they may experience during the meditation exercise.
  - e. Ask if there are any questions.
    - i. If there are questions, answer them as best as you can before starting the meditation intervention.
    - ii. If there are NO questions, begin the meditation intervention.
4. At approximately 4:15 p.m.,
  - a. Instruct the participants to put on their headphones and play the first audio recording on their mp3 player.
  - b. Begin the "Time On-Task" audio-recording to measure each participants time on-task. (This will be approximately 20 minutes in duration.)
5. At approximately 4:45 p.m.,
  - a. Instruct the participants to return their meditation intervention material.
  - b. Provide bus passes if necessary to students and then dismiss the participants.

# **Mindfulness Meditation Intervention**

## **Fidelity of Treatment Protocol**

**Directions:** Use the instructional script developed for this intervention. The script specifies the sequence of events for the participants and the researcher. The researcher must be following the script, and which the person observing for fidelity of treatment indicates for each 30-second interval whether or not the researcher is following the script. This is the fidelity of treatment: Is the researcher implementing the intervention the way it was planned to be implemented?

Use a prerecorded audio-recording which has 30-second intervals. At the end of each 30-second interval, write a / in the box if the researcher was:

1. Following the sequence of the MMI script.
2. Engaging the participants\*

If the researcher is not doing one of these, leave the box blank. At the end of the observation period, calculate a % for each of the two items, then calculate an overall % for both of the items across all cells (i.e., for the entire observation period).

\*Engaging the participants means looking at the participants when the researcher is talking to the participants, answering questions, and collecting on-task data during the meditation exercise.

## Mindfulness Mediation Intervention Fidelity of Treatment Protocol\*

Researcher:

Person Observing to Determine Fidelity of Treatment:

Date of Observation:

Start time:

Stop time:

Duration of observation:

TOTAL	# of cells with /	Total # of cells	% of each behavior
1. Following the sequence of the MMI script			%
2. Engaging the participants			%
Percentage of / across behaviors:			%

<b>Minutes 1-5 (4:00 to 4:05)</b>	30	60	30	60	30	60	30	60	30	60
1. Following the sequence of the MMI script										
2. Engaging the participants										
<b>Minutes 6-10 (4:05 to 4:10)</b>	30	60	30	60	30	60	30	60	30	60
1. Following the sequence of the MMI script										
2. Engaging the participants										
<b>Minutes 11-15 (4:11 to 4:15)</b>	30	60	30	60	30	60	30	60	30	60
1. Following the sequence of the MMI script										
2. Engaging the participants										

Key: “/” if the answer is “yes”      leave cell blank if answer is “no”

<b>Minutes 16-20 (4:16 to 4:20)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										
<b>Minutes 21-25 (4:21 to 4:25)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										
<b>Minutes 26-30 (4:26 to 4:30)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										

<b>Minutes 31-35 (4:31 to 4:35)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										
<b>Minutes 36-40 (4:36 to 4:40)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										
<b>Minutes 41-45 (4:40 to 4:45)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										

<b>Minutes 46-50 (4:46 to 4:50)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										
<b>Minutes 51-55 (4:51 to 4:55)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										
<b>Minutes 56-60 (4:56 to 5:00)</b>	30	60	30	60	30	60	30	60	30	60
<b>1. Following the sequence of the MMI script.</b>										
<b>2. Engaging the participants</b>										

**APPENDIX G: On-Task Behavior Data Collection Forms**

## Time-Sampling Instructions

### **Instructions:**

1. Participants must be sitting by alphanumeric order.
2. Researcher must be sitting in front of the participants and able to have a clear view of all participants at all times.
3. At 4:15 p.m., when the meditation cycle starts, the researcher will press play on the recording of time prompts.
4. The recording of time prompts will ring a bell every 20 seconds for the duration of each meditation cycle.
5. When the Researcher hears the bell ring he or she will scan the room, starting with Participant #1 to participant #20 and observe if the participant is on-task or off-task for that time sample.
6. If the participant is on-task during that time-sample, the researcher will mark the "O" box on the time-sampling record sheet.
7. If the participant is off-task during that time-sample, the researcher will mark the "F" box on the time-sampling record sheet.
8. This process will continue until the conclusion of the meditation cycle.

### Definitions

#### **On-task behavior:**

1. participant is sitting or laying quietly,
2. participant's eyes are closed or, if open fixed on a single point,
3. participant is breathing comfortably in slow even breaths,
4. participant's body is relatively still (small itches or repositioning of sitting or laying position are acceptable),
5. participant's headphones are on his or her ears,
6. he or she is not talking or whispering, and
7. there are no other electronics in the participant's personal space.

#### **Off-task behavior:**

1. participant is walking or moving around the room,
2. participant's eyes are open and looking around the room,
3. participant is snoring,
4. participant's body parts (arms, legs, and head) are fidgeting beyond repositioning to a more comfortable position,
5. participant's headphones are not on his or her ears,
6. he or she is whispering or talking, and
7. there are other electronics in his or her personal space.

#### **Abbreviations:**

- "O" = On-task
- "F" = Off-task

### Example of Time-Sampling Record Log

		Time Segments																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
P A R T I C I P A N T	1	O																					
		F																					
	2	O																					
		F																					
	3	O																					
		F																					
	4	O																					
		F																					
	5	O																					
		F																					
	6	O																					
		F																					
	7	O																					
		F																					
	8	O																					
		F																					
	9	O																					
		F																					
	10	O																					
		F																					



## **APPENDIX H: Social Validity Scale**

## Social Validity Scale

**Instructions:** Please answer the following questions honestly and truthfully. Your responses will help determine the usefulness of this meditation intervention for future student populations and schools.

1. Did you practice meditation on your own outside of the study?

Yes                  No

2. Do you practice meditation on your own now, since the completion of the study?

Yes                  No

3. If so, how many times a week do you sit quietly and meditate for longer than 5 minutes?

0      1      2      3      4      >5

4. Do you feel it was easy to meditate at school?

Very easy to use      Kind of easy to use      Hard to use      Extremely hard to use

5. After completing the meditation intervention do you feel you will use meditation as a way to manage your emotions?

Most definitely      Sometimes      Maybe      No way

6. After completing the meditation intervention do you feel ....

less stressed?      Yes      Maybe      No      I don't know

less anxious?      Yes      Maybe      No      I don't know

more aware?      Yes      Maybe      No      I don't know

7. Do you think meditation would benefit other students?

Yes      Maybe      No      I don't know

8. Do you have any suggestions for changing the meditation intervention?

## REFERENCES

- Assistance to states for the education of children with disabilities and preschool grants for children with disabilities*; Final Rule, 71 Fed. Reg. 46540 (August 14, 2006) (at 34 C.F.R. pt.300).
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science & Practice, 10*, 125–143. doi:10.1093/cllpsy/bpg015
- Bandura, A. (2006). Adolescent development from an agentic perspective. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 1–43). Greenwich, CT: Information Age Publishing.
- Barnes, V. A., Bauza, L. B., & Treiber, F. A. (2003). Impact of stress reduction on negative school behavior in adolescents. *Health & Quality of Life Outcomes, 1*(1), 1–7. Retrieved from <http://hqlo.com/content/1/1/10>
- Beauchemin, J., Hutchins, T. L., & Patterson, F. (2008). Mindfulness meditation may lessen anxiety, promote social skills, and improve academic performance among adolescents with learning disabilities. *Journal of Evidence-Based Complementary & Alternative Medicine, 13*, 34–45. doi:10.1177/1533210107311624
- Berninger, V. (2006). Research supported ideas for implementing reauthorized IDEA with intelligent professional psychological services. *Psychology in the Schools, 43*, 781-796. doi:10.1002/pits.20188
- Biegel, G. M., Brown, K. W., Shapiro, S. L., & Schubert, C. M. (2009). Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 77*, 855–866. doi:10.1037/a0016241
- Bögels, S., Hoogstad, B., van Dun, L., de Schutter, S., & Restifo, K. (2008). Mindfulness training for adolescents with externalizing disorders and their parents. *Behavioural and Cognitive Psychotherapy, 36*, 193–209. doi:10.1017/S1352465808004190

- Bradley, R., Doolittle, J., & Bartolotta, R. (2008). Building on the data and adding to the discussion: The experiences and outcomes of students with emotional disturbance. *Journal of Behavioral Education, 17*, 4–23. doi:10.1007/s10864-007-9058-6
- Broderick, P. & Metz, S. (2009). Learning to BREATHE: A pilot trial of a mindfulness curriculum for adolescents. *Advances in School Mental Health Promotion, 2*(1), 35–46. doi:10.1080/1754730X.2009.9715696
- Brown, K. W., West, A. M., Loverich, T. M., & Biegel, G. M. (2011). Assessing adolescent mindfulness: Validation of an adapted mindful attention awareness scale in adolescent normative and psychiatric populations. *Psychological Assessment, 23*, 1023–1033. doi:10.1037/a0021338
- Burchinal, M. R., Roberts, J. E., Zeisel, S. A., & Rowley, S. J. (2008). Social risk and protective factors for African American children’s academic achievement and adjustment during the transition to middle school. *Developmental Psychology, 44*, 286–292. doi:10.1037/0012-1649.44.1.286
- Burke, A., & Gonzalez, A. (2011). Growing interest in meditation in the United States. *Biofeedback, 39*, 49–50. doi:10.5298/1081-5937-39.2.09
- Burke, C. (2010). Mindfulness-Based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child & Family Studies, 19*, 133–144. doi:10.1007/s10826-009-9282-x
- Burns, J. L., Lee, R. M., & Brown, L. J. (2011). The effect of meditation on self-reported measures of stress, anxiety, depression, and perfectionism in a college population. *Journal of College Student Psychotherapy, 25*, 132–144. doi:10.1080/87568225.2011.556947
- Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine, 31*, 23–33. doi:10.1007/s10865-007-9130-7
- Carmody, J., Baer, R. A., Lykins, E., & Olendzki, N. (2009). An empirical study of the mechanisms of mindfulness in a mindfulness-based stress reduction program. *Journal of Clinical Psychology, 65*, 613–626. doi:10.1002/jclp.20579
- Ciarrochi, J., & Bilich, L. (2006, October 4). Acceptance and commitment therapy. Measures package. Process measures of potential relevance to ACT. University of Wollongong. Retrieved from <http://www.uow.edu.au/content/groups/public/@web/@health/documents/doc/uow039223.pdf>

- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York, NY: Academic Press.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health & Social Behavior*, 24, 385–396. Retrieved from <http://links.jstor.org/sici?sici=0022-1465%28198312%2924%3A4%3C385%3AAGMOPS%3E2.0.CO%3B2-2>
- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In W. Marelich & J. Erger (Eds.), *The Social Psychology of Health* (pp. 31-67). Thousands Oaks, CA: SAGE Publications.
- Creswell, J. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research (3rd ed.)*. Upper Saddle River, NJ: Pearson Education, Inc.
- Cullen-Powell, L. Barlow, J., & Bagh, J. (2005). The self-discovery programme for children with special educational needs in mainstream primary and secondary schools, emotional and behavioural difficulties. *Emotional and Behavioural Difficulties*, 10, 189-201. doi:10.1177/1363275205056706
- Denzine, G. M. (2010). Review of the revised children's manifest anxiety scale: Second edition. In R.A. Spies, J.F. Carlson, & K.F. Geisinger (Eds.), *The eighteenth mental measures yearbook* (pp. 478-482). Lincoln, NE: The Buros Institute of Mental Measurements.
- Desikachar, T.K.V. (1999). *The heart of yoga: Developing a personal practice*. Rochester, VT: Inner Traditions International.
- Dimitrov, D. M. (2008). *Quantitative research in education: Intermediate and advanced methods*. New York, NY: Whittier Publications, Inc.
- Elbaum, B., & Vaughn, S. (2003). Self-concept and students with learning disabilities. In H.L. Swanson, K.R. Harris, & S. Graham (Eds.), *Handbook of learning disabilities* (pp. 229-241). New York, NY: Guilford.
- Encyclopedia Britannica. (1986). *Webster's third new international dictionary and seven language dictionary: Three volumes*. Chicago, IL: Encyclopedia Britannica.
- Epelbaum, M. (2012). Improvements in tennis serve accuracy through progressive muscle relaxation and mental imagery. *Canadian Young Scientist Journal*, 1, 11-22. Retrieved from <http://cysjournal.ca/>

- Eppley, K., Abrams, A., & Shear, J. (1989). Differential effects of relaxation techniques on trait anxiety: A meta-analysis. *Journal of Clinical Psychology, 45*, 957-974. Retrieved from <http://www3.interscience.wiley.com/mutex.gmu.edu/journal/31171/home>
- Ferguson, P. C. (1976). Transcendental meditation and its potential application in the field of special education. *Journal of Special Education, 10*, 211-220. Retrieved from <http://www.proedinc.com/jse.html>
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Los Angeles, CA: Sage.
- Flanagan, D., Ortiz, S., Alfonso, V., & Dynda, A. (2006). Integration of response to intervention and norm-referenced tests in learning disability identification: Learning from the Tower of babel. *Psychology in the Schools, 43*, 807-825. doi:10.1002/pits.20190
- Fletcher, J. M., Lyon, G. R., Fuchs, L. S., & Barnes, M. A. (2007). *Learning disabilities: From identification to intervention*. New York, NY: The Guilford Press.
- Flook, L., Smalley, S. L., Kitil, M. J., Galla, B. M., Kaiser-Greenland, S., Locke, J., ... Kasari, C. (2010). Effects of mindful awareness practices on executive functions in elementary school children. *Journal of Applied School Psychology, 26*, 70–95. doi:10.1080/1537790093379125
- Gage, N. (2013). Characteristics of students with emotional disturbance manifesting internalizing behaviors: A latent class analysis. *Education and Treatment of Children, 36*, 127-145. Retrieved from <http://wvupressonline.com>
- Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C., & Innocenti, M., (2005). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164. Retrieved from <http://www.cec.sped.org>
- Gethin, R. (2011). On some definitions of mindfulness. *Contemporary Buddhism, 12*, 263–279. doi:10.1080/14639947.2011.564843
- Gold, E., Smith, A., Hopper, I., Herne, D., Tansey, G., & Hulland, C. (2010). Mindfulness-based stress reduction (MBSR) for primary school teachers. *Journal of Child & Family Studies, 19*, 184–189. doi:10.1007/s10826-009-9344-0
- Goldstein, T. R., Axelson, D. A., Birmaher, B., & Brent, D. A. (2007). Dialectical behavior therapy for adolescents with bipolar disorder: A 1-year open trial. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*, 820–830. doi:10.1097/chi.0b013e31805c1613

- Goodwin, C. J. (2009). *Research in psychology: Methods and design (6th ed.)*. Hoboken, NJ: Wiley Publishing.
- Grannis, J. C. (1992). Students' stress, distress, and achievement in an urban intermediate school. *The Journal of Early Adolescence, 12*, 4–27.  
doi:10.1177/0272431692012001001
- Greco, L. A., Baer, R. A., & Smith, G. T. (2011). Assessing mindfulness in children and adolescents: Development and validation of the child and adolescent mindfulness measure (CAMM). *Psychological Assessment, 23*, 606–614.  
doi:10.1037/a0022819
- Greco, L. A., Dew, S. E., & Ball, S. (2005). Acceptance, mindfulness, and related processes in childhood: Measurement issues, clinical relevance, and future directions. Presented at the Association for Behavior and Cognitive Therapies, Washington, D.C.
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of Psychosomatic Research, 57*, 35–43. doi:10.1016/S0022-3999(03)00573-7
- Hallahan, D. P., & Kauffman, J. M. (2006). *Exceptional learners: Introduction to special education*. Boston, MA: Pearson/Allyn and Bacon.
- Hallahan, D. P., Lloyd, J. W., Kauffman, J. M., Weiss, M., & Martinez, E. A. (2005). *Learning disabilities: Foundations, characteristics, and effective teaching*. Boston, MA: Pearson/Allyn and Bacon.
- Hart, T. (2004). *Opening the contemplative mind in the classroom*. *Journal of Transformative Education, 2*, 28-46. doi:10.1177/1541344603259311
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2011). *Acceptance and commitment therapy: The process and practice of mindful change (2nd ed.)*. New York, NY: The Guilford Press.
- Heppner, P., Wampold, B., & Kivlighan, D. (2008). *Research design in counseling: Research, statistics, & program evaluation (3rd ed.)* Independence, KY: Cengage Learning.
- Hitch, G. & McAuley, E. (1991). Working memory in children with specific arithmetical learning difficulties. *British Journal of Psychology, 82*, 375-386. Retrieved from <http://www.wiley.com.mutex.gmu.edu/WileyCDA/>

- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Peaslake: Surrey. Delta Publishing.
- Kabat-Zinn, J. (2003). Mindfulness-Based interventions in context: Past, present, and future. *Clinical Psychology: Science & Practice*, *10*, 144–156.  
doi:10.1093/clipsy/bpg016
- Kabat-Zinn, J. (2005). *Wherever you go there you are: Mindfulness meditation in everyday life*. New York, NY: Hyperion.
- Kauffman, J.M. (2005). *Characteristics of emotional and behavioral disorders of children and youth* (8th ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Kemp, C., & Carter, M. (2006). Active and passive task related behavior, direction following and the inclusion of children with disabilities. *Education & Training in Developmental Disabilities*, *41*, 14–27. Retrieved from <http://www.cec.sped.org/>
- Kirk, M., & Boon, B. (2004). *Hatha yoga illustrated*. Champaign, IL: Human Kinetics.
- Koth, C. W., Bradshaw, C. P., & Leaf, P. J. (2009). Teacher observation of classroom adaptation-checklist: Development and factor structure. *Measurement & Evaluation in Counseling & Development*, *42*, 15–30.  
doi:10.1177/0748175609333560
- Landis, J., & Koch, G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*, 159-174. Retrieved from <http://jstor.org/stable/2529310>
- Lau, N., & Hue, M. (2011). Preliminary outcomes of a mindfulness-based programme for Hong Kong adolescents in schools: well-being, stress and depressive symptoms. *International Journal of Children's Spirituality*, *16*, 315–330.  
doi:10.1080/1364436X.2011.639747
- Lee, J., Semple, R. J., Rosa, D., & Miller, L. (2008). Mindfulness-based cognitive therapy for children: Results of a pilot study. *Journal of Cognitive Psychotherapy*, *22*, 15–28. doi:10.1891/0889.8391.22.1.15
- Liehr, P. & Diaz, N. (2010). A pilot study examining the effect of mindfulness on depression and anxiety for minority children. *Archives of Psychiatric Nursing*, *24*, 69-71. doi:10.1016/j.apnu.2009.10.001
- Linehan, M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY: The Guilford Press.



- Maharishi Foundation, USA. (2012). *The Technique*. Retrieved December 28, 2012, from <http://www.tm.org/meditation-techniques>
- Masoura, E. (2006). Establishing the link between working memory function and learning disabilities. *Learning Disabilities: A Contemporary Journal*, 4, 29-41. Retrieved from <http://www.ldam.org>
- Mastropieri, M., & Scruggs, T. (2010). *The inclusive classroom: Strategies for effective differentiated instruction* (4th ed.). Upper Saddle River, NJ: Merrill.
- McKay, D. (Ed.). (2007). *Handbook of research methods in abnormal and clinical psychology*. Thousand Oaks, CA: SAGE Publications.
- McMillian, J. (2008). *Educational research: Fundamentals for the consumer* (5th ed.). Boston, MA: Pearson.
- Meiklejohn, J., Phillips, C., Freedman, M. L., Griffin, M. L., Biegel, G., Roach, A., ... Saltzman, A. (2012). Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. *Mindfulness*, 3, 291-307. doi:10.1007/s12671-012-0094-5
- Mendelson, T., Greenberg, M. T., Dariotis, J.K., Gould, L.F., Rhoades, B.L., & Leaf, P.J. (2010). Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. *Journal of Abnormal Child Psychology*, 38, 985-944. doi:10.1007/s10802-010-9418-x
- Miller, J. J., Fletcher, K., & Kabat-Zinn, J. (1995). Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders. *General Hospital Psychiatry*, 17, 192-200. doi:10.1016/0163-8343(95)00025-M
- Napoli, M., Krech, P. R., & Holley, L. C. (2005). Mindfulness training for elementary school students: The attention academy. *Journal of Applied School Psychology*, 21, 99-125. doi:10.1300/J008v21n01\_05
- Overton, T. (2006). *Assessing learners with special needs: An applied approach*. Upper Saddle River, NJ: Pearson/Merrill Prentice Hall.
- Pajares, F., & Urdan, T. (Eds.). (2006). *Self-efficacy beliefs and adolescents*. Greenwich, CT: Information Age Publishing.
- Powell, L., Gilchrist, M., & Stapley, J. (2008). A journey of self-discovery: An intervention involving massage, yoga and relaxation for children with emotional

- and behavioural difficulties attending primary schools. *European Journal of Special Needs Education*, 23, 403–412. doi:10.1080/08856250802387398
- Reibel, D. K., Greeson, J. M., Brainard, G. C., & Rosenzweig, S. (2001). Mindfulness-based stress reduction and health-related quality of life in a heterogeneous patient population. *General Hospital Psychiatry*, 23, 183–192. doi:10.1016/S0163-8343(01)00149-9
- Reynolds, C. R. (1985). Multitrait validation of the revised children's manifest anxiety scale for children of high intelligence. *Psychological Reports*, 56, 402–402. doi:10.2466/pr0.1985.56.2.402
- Reynolds, C. R., & Kamphaus, R. W. (2003). *Handbook of psychological and educational assessment of children: Personality, behavior, and context* (2nd ed.). New York, NY: Guilford Press.
- Reynolds, C. R., & Richmond, B. O. (1978). What I think and feel: A revised measure of children's manifest anxiety. *Journal of Abnormal Child Psychology*, 6, 271–280. doi:10.1007/BF00919131
- Saltzman, A., & Goldin, P. (2008). Mindfulness-based stress reduction for school-age children. In L. Greco & S. Hayes (Eds.), *Acceptance and mindfulness treatments for children and adolescents: A practitioner's guide* (140-161). Oakland, CA: New Harbinger Publications.
- Salzberg, S., & Goldstein, J. (2001). *Insight meditation*. Louisville, CO: Sounds True.
- Schoeberlein, D., Koffler, T., & Jha, A. (2005). *Garrison institute report: Contemplation and education: Current status of programs using contemplative techniques in K-12 educational settings: A mapping report* (p. 66). Garrison Institute. Retrieved from [http://www.garrisoninstitute.org/component/docman/doc\\_view/56-contemplative-techniques-in-k-12-education-a-mapping-report?Itemid=66](http://www.garrisoninstitute.org/component/docman/doc_view/56-contemplative-techniques-in-k-12-education-a-mapping-report?Itemid=66)
- Schonert-Reichl, K., & Lawlor, M. (2010). The effects of a mindfulness-based education program on pre and early adolescents' well-being and social and emotional competence. *Mindfulness*, 1, 137-151. doi:10.1007/s12671-010-0011-8
- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2001). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York, NY: The Guilford Press.
- Semple, R. J., Reid, E. F. G., & Miller, L. (2005). Treating anxiety with mindfulness: An open trial of mindfulness training for anxious children. *Journal of Cognitive Psychotherapy*, 19, 379–392. Retrieved from <http://www.springerpub.com>

- Semple, R., Lee, J., Rosa, D., & Miller, L. (2010). A randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. *Journal of Child & Family Studies, 19*, 218–229. doi:10.1007/s10826-009-9301-y
- Shapiro, S. L., Brown, K. W., & Astin, J. A. (2011). Toward the integration of meditation into higher education: A review of research evidence. *Teachers College Record, 113*, 493–528. Retrieved from <http://www.tcrecord.org/library>
- Shapiro, S., Carlson, L., Astin, J., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology, 62*, 373-386. doi:10.1002/jclp.20237
- Sibinga, E., Kerrigan, D., Stewart, M., Johnson, K., Magyari, T., & Ellen, J. (2011). Mindfulness-based stress reduction for urban youth. *Journal of Alternative and Complementary Medicine, 17*, 1-6. doi:10.1089/acm.2009.0605
- Smalley, S. L., Loo, S. K., Hale, T. S., Shrestha, A., McGough, J., Flook, L., & Reise, S. (2009). Mindfulness and attention deficit hyperactivity disorder. *Journal of Clinical Psychology, 65*, 1087–1098. doi:10.1002/jclp.20618
- Swanson, E., Wanzek, J., Haring, C., Ciullo, S., & McCulley, L. (2011). Intervention fidelity in special and general education research journals. *The Journal of Special Education, 47*, 3-13. doi:10.1177/0022466911419516
- Swanson, H. L. (1996). Informational processing: An introduction. In D.K. Reid, W.P. Hresko, & H.L. Swanson (Eds.), *Cognitive approaches to learning disabilities* (pp. 32-64). Austin, TX: Pro-Ed.
- Swanson, H.L., & Jerman, O. (2006). Math disabilities: A selective meta-analysis of the literature. *Review of Educational Research, 76*, 249-274. Retrieved from <http://www.jstor.org/stable/3700590>
- Thompson, M., & Gauntlett-Gilbert, J. (2008). Mindfulness with children and adolescents: Effective clinical application. *Clinical Child Psychology & Psychiatry, 13*, 396–408. doi:10.1177/1359104508090603
- Torgesen, J. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities Research & Practice, 15*, 55-64. Retrieved from <http://dx.doi.org.mutex.gmu.edu/10.1111/j.1540-5826.2005.00128.x>
- van de Weijer-Bergsma, E., Formsma, A., de Bruin, E., & Bogels, S. (2012). The effects of mindfulness training on behavioral problems and attentional functioning in

adolescents with ADHD. *Journal of Child and Family Studies*, *21*, 775-787.  
doi:10.1007/s10826-011-9531-7

van der Oord, S., Bogels, S. M., & Peijnenburg, D. (2012). The effectiveness of mindfulness training for children with ADHD and mindful parenting for their parents. *Journal of Child and Family Studies*, *21*, 139–147. doi:10.1007/s10826-011-9457-0

Zylowska, L., Ackerman, D., Yang, M., Futrell, J., Horton, N., Sigi Hale, T., . . . Smalley, S. (2008). Mindfulness meditation training in adults and adolescents with ADHD: A feasibility study. *Journal of Attention Disorders*, *11*, 737-746.  
doi:10.1177/1087054707308502

## **CURRICULUM VITAE**

Ernest L. Solar, II graduated from McLean High School, McLean, Virginia, in 1992. He received his Bachelor of Sciences from East Carolina University in 1996 and his Masters of Education from George Mason University in 2008. He was employed as a teacher at the Inova Kellar School for three years and Loudoun County Public Schools for six years.