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Abstract

Title of Dissertation: Effect of a Nurse-Led Mindfulness Intervention with At-Risk Adolescents

Kristen Rawlett, Doctor of Philosophy, 2014

Dissertation Directed by: Sue A. Thomas, PhD, RN, MS, FAAN

Introduction:

At-risk behaviors are related to poor outcomes among adolescents. Increasing evidence supports adolescence as a vital time to introduce stress reduction techniques to reduce risk and improve mental health. The current study implemented and evaluated a mindfulness based intervention for at-risk adolescents in a randomized control pre-test, post-test design with an attentional comparison group.

Methods:

Participants were sixth grade female students from a public boarding school for at risk youth in Maryland. After informed consent by parents and signing assent, students (N=23) were randomized by dormitory to participate in the mindfulness (MC) group (n=12) or the attentional comparison group (n = 11) once per week for 6 weeks. MC sessions were led by an investigator trained in mindfulness techniques and curriculum. A nurse led the attention only group. Baseline evaluation consisted of demographics plus outcome variable tools administered before and after the program: coping (Response to Stress Questionnaire, RSQ), positive affect (10 item Positive and Negative Affect Scale for Children, PANAS-C) and mindfulness (Mindfulness Attention Awareness Scale, MAAS). Statistical analysis was performed using SPSS version 20.

Results

There were no statistically significant differences between the two intervention groups at baseline. Twenty-two of 23 (95.7%) enrolled participants completed the interventions. Participants completed 86.4% of study measures. In separate repeated measures analyses of variance for each outcome, there were no significant interactions between group and time for primary coping [$F(1,17)=0.48, p=0.498$], positive affect [$F(1,17)=1.285, p=0.273$], or mindfulness [$F(1,17)=0.492, p=0.493$]. Positive affect increased significantly [$F(1,17)=10.675, p<=0.005$], mindfulness scores increased [$F(1,17)=3.117, p=0.095$], and primary coping [$F(1,17)=0.15, p=0.903$] did not change over time.

Discussions & Conclusions

The study demonstrated excellent feasibility for MC in this at risk population. The most important limitations are the size of the sample, potential for intervention cross contamination, homogeneity of the sample, and timing at the end of the school year all limiting the generalizability of the findings. Group interventions were effective at improving mindfulness and positive affect. Implications for nursing practice suggest mindfulness can be a part of reducing risks and improving mental health. Diverse and larger samples with longitudinal measures may guide best practices in using mindfulness with at risk adolescents going forward.

Effect of a Nurse-Led Mindfulness Intervention with At-Risk Adolescents

by
Kristen Rawlett

Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, Baltimore in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2014

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*Whatever you do, work at it with all your heart, as working for the Lord, not men.
Colossians 3:23*

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CHAPTER I INTRODUCTION

The purpose of this study is to evaluate the effectiveness of a nurse led Mindfulness Curriculum (MC) as compared to an Attention Only (AO) intervention on coping, affect and mindfulness in at-risk adolescents. The background, statement of the problem, study significance, theoretical model, study purpose, aims, hypothesis and methodology are discussed.

Background

There is a direct relationship between at-risk behaviors and poor outcomes for adolescents. Activities such as carrying a weapon, current cigarette use, current alcohol use of the individual and in families, being currently sexually active, watching television three or more hours on a school day and physical activity for 60 minutes per day on less than five days per week help define at-risk adolescents and all contribute to poor academic achievement (cdc.gov/HealthyYouth/health_and_academics, 2013). Even after controlling for sex, race/ethnicity and grade level there is a negative association between higher academic achievement and health-risk behaviors. The associations do not indicate causation but highlight the need for future research investigating the specific relationships between health-risk behaviors and low grades or other moderating factors that steer adolescents toward poor outcomes (cdc.gov/HealthyYouth/health_and_academics, 2013).

Few studies have focused on affect in adolescents. Three psychosocial factors: personality, affect, and family interact to place adolescents at risk for aggressive behavior and violence. Using a heterogeneous pool of teenage males at risk for violence, a

hierarchical, agglomerative cluster analysis was implemented to organize the adolescents according to personality characteristics (Coles, Green & Braithwaite, 2002). Results of the study suggest elevated psychopathology among male delinquents is associated with greater anxiety and anger but not family control. Evaluation within the study found specific distinctions between participants on anger expression, trait anger, and trait anxiety, but not family control. Demographic information collected on the present sample indicated that the majority of the sample was African-American. Most of the participants either grew up in a single-parent family or another nontraditional family arrangement, such as a biological parent and a stepparent. Findings provide additional information regarding the interrelations of personality and affective variables among adolescent males. Overall, among male delinquents, increased psychopathology is associated with more anger and anxiety, but not with higher family control (Coles, Green & Braithwaite, 2002). A weakness of the research is that investigators only used males but this is one of the few studies that looked at 'affect' as an outcome. Recommendations for these high-risk adolescents include more intensive and targeted social and psychological services in their schools and communities (Peleg-Oren et al, 2013).

Stress has a negative impact on coping in disadvantaged young people. Stressors in youth increase the risk for social-emotional difficulties, diminished academic performance and manifest as behavioral problems (Mendelson et al, 2010). Long-term psychosocial stress from the breakdown of the family unit, media violence, being bombarded by too much information and poverty results in negative behavior and decreased social skills in youth (Parker & Roy, 2001; Rempel, 2012). Examples of

negative behavior include increased anger and violence against self and others resulting in higher anxiety and diminished social functioning. Additional stress in adolescence comes from unhealthy relationships, having to work to contribute to family income, death of loved ones and suicide. The negative outcomes often seen from stressful life events creates a mandate to find and implement an effective, affordable strategies that will work to decrease stress in the teenage years and teach coping strategies that can be used throughout their lives (Barnes et al, 2003; Rempel, 2012).

Increasing evidence supports adolescence is a vital time to introduce stress reduction techniques ultimately resulting in risk reduction and improve mental health (Broderick & Metz, 2009; Rempel, 2012). Poor mental health among youth is an increasing concern as mental health disorders are on the rise in the adolescent population. Better awareness and diagnosis of mental health disorders in adolescents may account for these increases, but it is more likely due to the increased amount of stress among youth (cdc.gov/HealthyYouth/health_and_academics, 2013).

An early study to investigate psycho-social issues in teenagers ages 14-16 years involved 121 high school students (initially 69 males and 109 females) who participated in a social-cognitive group intervention that focused on prosocial methods for dealing with stressful personal and interpersonal situations. Eight weekly sessions, involved cognitive restructuring, roleplaying, modeling, journaling, and discussion. The experimental group reported significantly greater coping skills and prosocial behaviors and significantly fewer aggressive behaviors as compared with the control group. Significant treatment effects were also found at a three month follow-up assessment. The number of participants to remain in the study for the entire intervention was 121

(Hartman, L., 1979).

Statement of the Problem

Previously unseen, high levels of stress are being experienced by teens (Mendelson et al, 2010). The high level of stress may manifest as anger, depression, anxiety and externalizing behaviors like conduct disorder. Self-confidence and self-esteem are also minimized as adolescence are exposed to increased stress in their lives. Poor school performance resulting from disrupted thinking blocks learning and disrupted thinking is linked to poor mental health and stress (Barnes et al, 2003; Mendelson et al 2010; Rempel, 2012).

Jon Kabat-Zinn (1990, 2003) formulated Mindfulness Based Stress Reduction (MBSR) to teach clients an ancient and transforming practice that would be adjunct to their medical treatments. Mindfulness-based practices are the foremost agent of change in MBSR. Yoga, meditation, mindful eating, and body scan are incorporated into MBSR. The original MBSR course was an 8 week program educating and encouraging patients to take an active role in their own well-being.

Currently, MBSR has been modified specifically for children and adolescents with preliminary success. Modifications for youth include decreased meditation time, mindful eating practice at each session and shortening the course from 8 to 6 weeks duration. Youth participating these Mindfulness programs demonstrate improvements in self-regulation (Zylowska et al, 2008), attention (Lau & Hue, 2011), emotional and social functioning (Schonert-Reichl & Lawlor, 2010; Semple et al, 2010), and overall well-being (Lau & Hue, 2011; Semple et al, 2010). The purpose of this study is to test the feasibility of a Mindfulness Curriculum in at-risk adolescents, conduct program

evaluation and to evaluate levels of coping, affect and mindfulness before and after participation in a six week Mindfulness program or a six week attentional program.

Significance of the Study

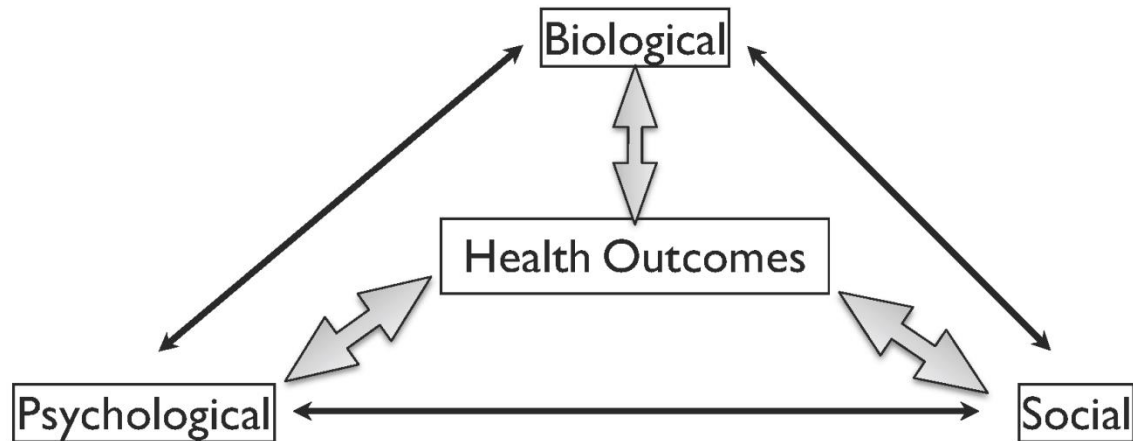
Better attentions to detail, improved concentration, creative influence and higher emotional intelligence are outcomes of mindfulness and meditative practices in adolescents. Engaging in mindfulness increases awareness of thinking that contributes to mental dysregulation and offers a way of coming back into a state of equilibrium when overwhelming emotions arise. Mindfulness enables participants to work with emotions as they are experienced and to have the advantage of noting what is occurring in the present moment. Addressing and acknowledging emotions encourages balance and clarity in mental and overall health. A mindfulness intervention can be utilized alone or with other stress relieving activities to encourage emotional regulation, minimize stress and foster skills to aid in paying attention (Broderick& Metz, 2009).

Currently, no studies have specifically investigated the school-based mindfulness curriculum, Learning to Breathe (L2B), with at-risk adolescents without previous psychiatric diagnoses. The L2B curriculum was established to aid in the formation of emotion mediation skills during adolescence (Broderick, 2013). Regardless of positive, negative or neutral outcomes, this study adds data to existing knowledge about school-based mindfulness interventions with a unique population. Often where the need is greatest (as in high risk youth) the potential benefit of intervening is also great. The research outcomes will be useful to health-care providers along with educators and parents/families.

Theoretical Model and Conceptual Framework

The Biopsychosocial Model (BPS) (Figure 1.1) (Engel, 1977) provides the theoretical foundation and concepts that guide the proposed research.

Figure 1.1: *Conceptual Diagram of the Bio-Psycho-Social Model*



The BPS is applicable across disciplines and considers somatic illness, psychological distress and the patient's social context equal and unable to be separated. The model is an offshoot of general systems theory and assumes that health-related outcomes along with proper diagnosis are intertwined with the subjectivity of a person's experience of illness. The three dimensions of illness/health are biological, psychological and social. In the BPS, a holistic approach to care is used to improve health outcomes in at-risk or vulnerable adolescents.

Concepts within the BPS include biological processes, psychological state and the context of the social environment. Each of the concepts is tied to and interacts with each of the other concepts in the model. The healthcare provider is an important part of the model in that the relationship between provider and patient has a powerful influence over the health outcome, whether positive or negative. One cannot discount the provider's role to help strengthen the patient's peace of mind and ability to tap into their own healing

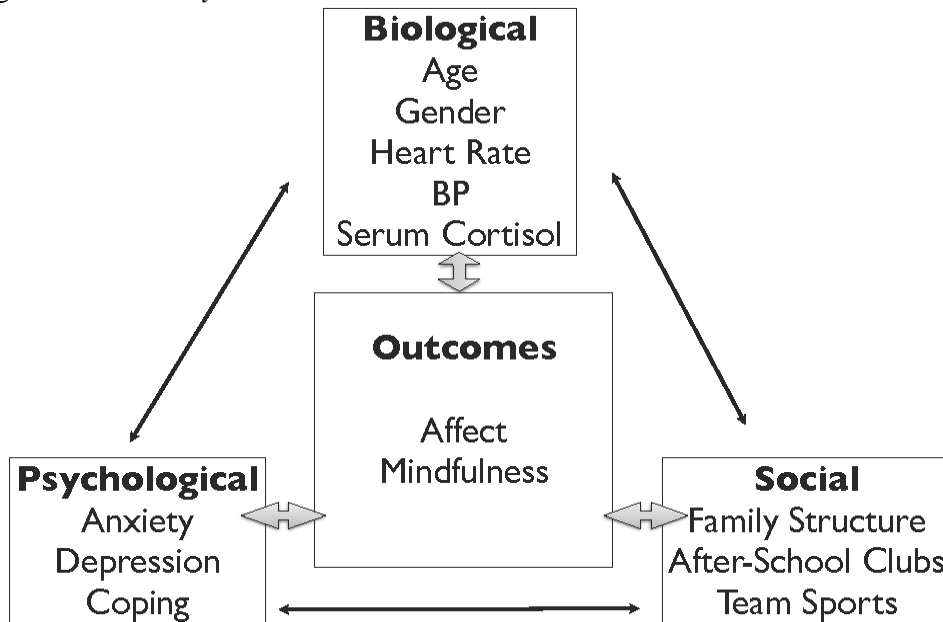
abilities (Engel, 1977). Biological measurements such as blood pressure, weight and heart rate can be influenced by the provider's feedback to the patient. The interaction with the provider is influenced by the patient's previous social experiences and will determine, in part, how the patient perceives the provider. Health care providers also can exacerbate or minimize psychological variables experienced by the patient such as anxiety and fear.

As a metatheory and worldview, the BPS turns away from reductionism and aims to highlight the uniqueness of the individual. This is a good fit with the current study because each adolescent comes with their own experiences and stressors prior to the study. Since the inception of the BPS model the suggestion has been made that it provides a link between traditional science and the humanities. In a personal correspondence from Professor Engel to fellow authors trying to modify his theory for medical practice, he suggests that the biopsychosocial model and medical practice should be coextensive (Biederman, Yeheskel & Herman, 2005).

The BPS model will be the basis for the proposed research study and considers psychological illness (also called distress), physical illness and social context of the individual are equal, intertwined and inseparable. Optimal interventions, like MBSR, address all of the model components which are biological, social and psychological. Addressing all components of the BPS is mandated to truly improve health outcomes and translates into a holistic view of the person. To obtain optimal results in the at-risk adolescent population one must use an approach that encompasses their biological, psychological and social functioning.

There are specific variables related to the proposed study that correlate with overarching concepts in the BPS (Figure 1.2).

Figure 1.2: *Bio-Psycho-Social Model and Associated Variables*

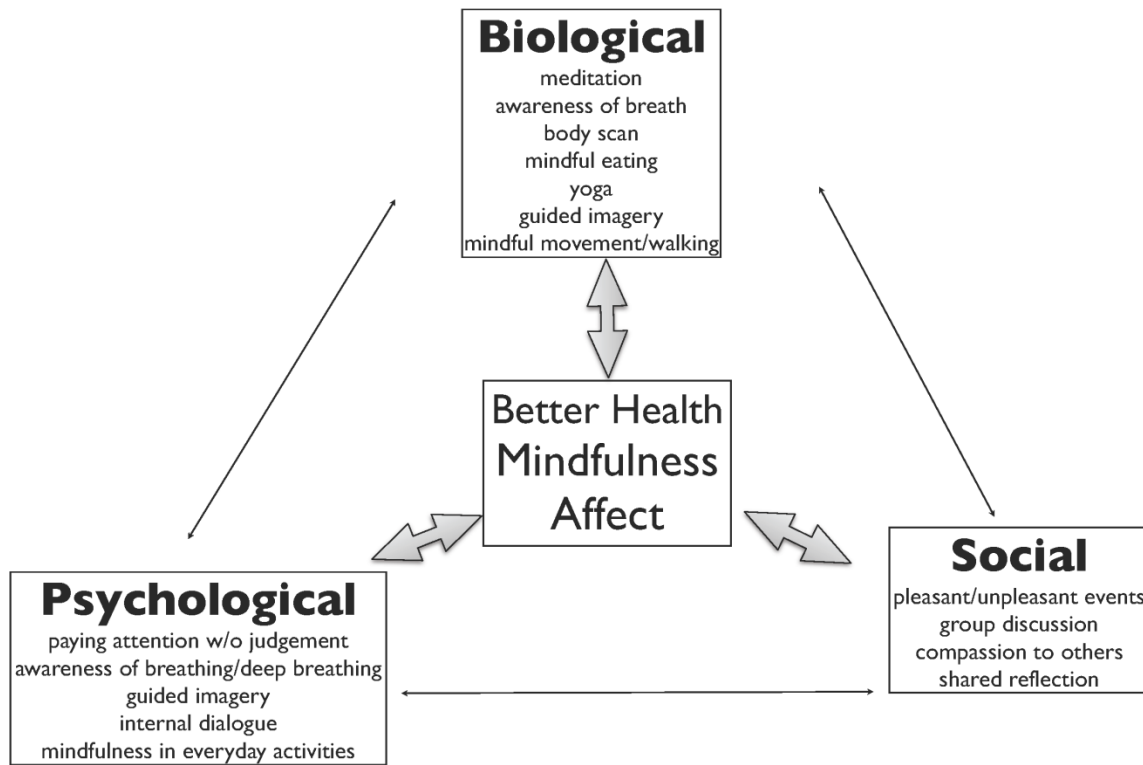


While this study focuses on the psychological, biological, psychological and social realms of a teenager's being are equally important and influence outcomes. The outcomes of interest for this study are coping, affect, and mindfulness and will be detailed later in this proposal.

There are disadvantages of using the BPS. The BPS can be seen as more of an overarching vision than a model (Herman, 1989). It is a general framework to be used as a guide and does not produce a measurable model. Because there is no specific measurement tool born from BPS it is difficult to quantify interactions or the level of variance represented by each of the concepts in the model (Richter, 1999).

In addition, the Mindfulness curriculum to be used in this study addresses each component of the BPS and fits nicely within this model (Figure 1.3).

Figure 1.3: *Intervention and its Relationship to the Bio-Psych-Social Model*



Conclusion

Mindfulness practices have been in existence for thousands of years. As previously articulated, the study purpose is to implement a Mindfulness Curriculum with at-risk, adolescents and to evaluate coping, affect and mindfulness before and after the six week MC or AO. The background, statement of the problem, study significance, theoretical model, and the relationships of outcomes to the MC intervention were presented. In addition, the Mindfulness curriculum to be used in this study addresses each component of the BPS and fits nicely within this model (Figure 1.3). The outcome measures and their relationship to the mindfulness curriculum components are outlined in Figure 1.4.

Figure 1.4: *RSQ, 10 Item PANAS-C & MAAS Outcome Measures and Their Relationship to MBSR Components*

	RSQ							
	Problem Solving	Emotional Regulation	Emotional Expression	Positive Thinking	Cognitive Restructuring	Acceptance	Distraction	
MBSR Intervention								
Meditation, breathing	✓	✓	✓	☐	☐	☐	☐	✓
Yoga	☐	✓	☐	☐	☐	☐	☐	✓
Body Scan	☐	✓	☐	☐	☐	☐	☐	✓
Guided imagery	☐	✓	☐	☐	☐	☐	☐	✓
Pleasant/ Unpleasant Events	✓	☐	✓	✓	☐	☐	☐	✓
Mindful Eating	☐	✓	☐	✓	✓	✓	✓	✓
Mindful Everyday Activities	✓	✓	☐	✓	✓	✓	✓	✓
Internal Dialogue	✓	☐	✓	✓	✓	✓	☐	☐
Paying Attention w/o Judgement	☐	☐	✓	✓	✓	✓	☐	☐

	10 Item PANAS-C										
	joyful	cheerful	happy	lively	proud	miserable	mad	afraid	scared	sad	
MBSR Intervention											
Meditation, breathing	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Yoga	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Body Scan	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Guided imagery	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Pleasant/ Unpleasant Events	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mindful Eating	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Mindful Everyday Activities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Internal Dialogue	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Paying Attention w/o Judgement	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	MAAS										
	Trait Mindfulness	More Autonomous Activity	Lower Levels of Unpleasant Affect	State Mindfulness	Higher Levels of Autonomy	More Intense & Frequent Pleasant Affect	Less Intense & Frequent Negative Affect	Heightened Self-Knowledge	Self-Regulation	Emotional Well-Being	
MBSR Intervention											
Meditation, breathing	✓	☐	☐	✓	☐	☐	☐	✓	✓	✓	✓
Yoga	✓	☐	☐	✓	☐	☐	☐	✓	✓	✓	✓
Body Scan	☐	☐	☐	✓	☐	☐	☐	✓	✓	✓	✓
Guided imagery	☐	☐	☐	✓	☐	☐	☐	✓	✓	✓	✓
Pleasant/ Unpleasant Events	☐	✓	✓	☐	✓	✓	✓	✓	✓	✓	✓
Mindful Eating	✓	✓	✓	✓	☐	✓	✓	✓	✓	✓	✓
Mindful Everyday Activities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Internal Dialogue	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Paying Attention w/o Judgement	✓	☐	✓	✓	✓	☐	✓	✓	✓	✓	✓

CHAPTER II LITERATURE REVIEW

Introduction

The purpose of this study is to evaluate the effectiveness of a nurse led Mindfulness Curriculum (MC) as compared to an Attention Only (AO) intervention on coping, affect and mindfulness in adolescents at-risk for poor social outcomes. The literature review is divided into several sections: first, studies evaluating mindfulness interventions in at-risk adolescents; second are studies evaluating the effect of mindfulness interventions on coping, affect and/or (actual) mindfulness in at-risk individuals.

Mindfulness and At-Risk Adolescents

A scarce number of studies address mindfulness in at-risk adolescents. A preliminary study examined modification and development of a mindfulness-based intervention group program for teenagers (age range 14-17 years) with psychiatric disorders (n=10). They hypothesized that the intervention would improve mindfulness, mental health outcomes and decrease psychological distress and symptoms. Ten adolescents, 7 females and 3 males, from a mental health outpatient treatment setting attended a 5-week group pilot mindfulness-based intervention. Parents and adolescents in the study completed questionnaires at pre- and post-intervention and at a 3-month follow-up visit (Tan & Martin, 2013). After the MBSR intervention, adolescents reported significantly lower psychological distress from baseline and increases in mindfulness and self-esteem. Qualitative data provided feedback from participants that the intervention was engaging and beneficial (Tan & Martin, 2013).

One study (Gould, Dariotis, Mendelson & Greenberg, 2012) detailed a

mindfulness intervention used in a school setting with urban youth. Specifically, the study looked moderators of intervention effects before and after a 12 week mindfulness intervention with participants. Ninety-seven fourth and fifth graders were randomly assigned to either the mindfulness intervention or a 'wait-list' control group. The measures employed include The Short Mood and Feelings Questionnaire- Child Version for depressive symptoms, The Emotion Profile Inventory for positive and negative emotions and The Response to Stress Questionnaire along with the Involuntary Engagement Scale for stress responses.

Four urban, public elementary schools were paired by level of disadvantage (evidenced by lower test scores and a larger proportion of students receiving free lunches) and randomized within each pair to intervention or control group. No intervention components were provided to students in the control condition. Participants within the intervention group participated in a yoga-inspired mindfulness group 4 days a week for 12 weeks during school hours. Each session was 45 minutes long. Along with yoga, instructors for the mindful intervention taught breathing techniques, paying attention to each breath and sending out positive energy. Baseline and post intervention measures were collected in the same setting for the intervention and control groups before the start of the intervention and within two weeks of the intervention completion (Gould et al, 2012).

General linear modeling was used for data analysis. As students within schools resulted in nested data, authors estimated fully unconditional models using multilevel modeling to assess degree of nesting for each outcome variable. Age, grade and gender were entered as covariates in all models. Results suggested no significant interactions in

models for differential impact of the intervention on emotional-regulatory impacts for gender or grade. As compared to students receiving no intervention, the mindful intervention group reduced involuntary engagement stress for both genders. Interestingly, the study can highlight urban youth who would benefit most from a mindfulness program, as students who reported the highest levels of depressive results also demonstrated the biggest improvements in post intervention depressive measures (Gould et al, 2012).

Many self-identified limitations are identified by the researchers. Methodologically, the study by Gould et al (2012) was underpowered in estimating a number of models the authors risk a type I error. Participation was limited to the initial 25 respondents that provided assent & consent. This procedure was bias the study to be generalizable to only the most motivated participants. In not having a control group, there is no way to tease out a placebo effect or suggest that the extra attention, regardless of mindfulness components, is the reason for seeing changes in the outcome variables (Gould et al, 2012).

General acceptability and domains of a potential effect of a MBSR program for HIV infected urban youth considered at-risk has been studied. Ultimately, researchers were interested in effective ways to reduce stress or minimize the effects of stress specific to urban youth. Research was conducted in a pediatric primary care clinic associated with an urban terry care hospital. Youth ages thirteen to twenty-one were assigned to participate in one of four MBSR groups. The MBSR intervention comprised of nine weekly sessions, presumably at the pediatric clinic (Sibinga et al, 2011).

Evaluation encompassed mixed methods of analysis. Attendance, psychological symptoms (Symptom Checklist 90-Revised) and quality of life (Child Health and Illness Profile- Adolescent Edition) were assessed. In-depth interviews provided valuable qualitative data from participants. Overall, thirty-three adolescents attended at least one MBSR session. Twenty-six were ‘program completers’ and attended a majority of the MBSR sessions. The average age for participants was 16.8 years. Of the program completers, all were African American, 77% were female and 11 participants were HIV infected. Specific to outcome variables, there was a significant reduction in hostility ($p=0.02$), general discomfort ($p=0.01$) and emotional discomfort ($p=0.02$). The ten adolescents who participated in in-depth interviews, perceived improvements in interpersonal interactions, school achievement, physical health and decreased stress (Sibinga et al, 2011).

Conclusions from the study suggest MBSR programs for city-dwelling youth can have a positive effect in certain domains. Weaknesses of the study include a small sample size and lack of a control group which can be addressed and improved in future studies (Sibinga et al, 2011).

Working with incarcerated youth as the at-risk population of inquiry researchers tested the feasibility of implementing a 10-week mindfulness intervention. Classes occurred once a week and were an hour long each. Two classes were run simultaneously within the detention center to accommodate the number of participants. Thirty-two participants completed self-report questionnaires: Mindfulness Attention Awareness Scale (MAAS), Perceived Stress Scale 10 (PSS-10) and the Healthy Self-Regulation Scale (HSR). (Himmelstein et al, 2012).

Overall results reflected the study. All 32 participants were male and ranged from 14-18 years old. Nineteen youth were Latino, 5 were African American, 3 were Caucasian, 3 participants were Pacific Islander and 2 were of mixed race descent. Feasibility was achieved because 60% of participants completed the study, 15 participants dropped out due to release from the corrections center (Himmelstein et al, 2012).

A two-factor ANOVA demonstrated no significant differences between the analysis for the MAAS, PSS-10 or HSR. A non-statistically significant increase in MAAS score was seen between pre and post tests. Statistical significance was demonstrated with mean differences decreasing with the PSS-10 and increasing with the HSR from pre to post testing. The biggest limitation of this study is a weak design lacking a control or comparison group. Increasing the sample size would add power and therefore meaning to the results of the study (Himmelstein et al, 2012).

Mindfulness Interventions and Coping Affect and Mindfulness

The feasibility of a Mindfulness Based Stress Reduction (MBSR) program for adolescents with ICDs/pacemakers evaluated anxiety depression and coping before and after a 6 week intervention. The study is dissertation work and the design is a one group pre-posttest prospective study. Self-reported, quantitative measurement of coping along with anxiety and depression were assessed using the Response to Stress Questionnaire (RSQ) and the Hospital Anxiety and depression Scale (HADS), respectively (Freedenberg, 2013).

Ten adolescents recruited from a cardiology clinic participated in the study.

Feasibility was achieved as evidenced by successful recruitment of 10 participants, 100% participation, and 100% completion. There was a significant decrease in anxiety when comparing pre and post intervention changes on the questionnaires. There was a negative relationship between coping skills and anxiety/depression on pre and post self-reported measurement tools (Freedenberg, 2013).

The expanding research literature on mindfulness interventions in adolescents indicates a positive relationship with mindfulness programs on anxiety, depression, and coping. The current dissertation study can be expanded and strengthened by increasing the sample size and altering the design to include a randomized comparison group of adolescents (Freedenberg, 2013).

Another study compared mindfulness practice to an active control group in a randomized control trial. The purpose of the study is to examine unique effects of mindfulness practice and to possibly find the mechanism that drives the beneficial mental health outcomes associated with mindfulness-based interventions. A short-term (4 weeks, seven sessions total) mindfulness intervention (n=46) was compared to two other groups: an active control group (n=40) that received relaxation training and an interactive wait-list group (n=40) (Josefsson, Lindwall, & Broberg, 2014).

Questionnaires gleaned information on self-reported mindfulness and decentering, executive attention, psychological well-being, anxiety, depression and coping style. All participants were adults without previous meditation experience. Results using ANCOVA analysis suggested that the mindfulness group had higher scores than wait-list participants on self-reported mindfulness and psychological well-being. There were no differences between the mindfulness and relaxation groups on any outcome variables; no unique

mindfulness effects could be found. Avenues for improvement for future studies include extending the length of the intervention from the shortened 4 weeks to a full 8 week program as supported in the literature. In addition the content of the active control group needs to be further differentiated than relaxation and mindfulness (Josefsson, Lindwall, & Broberg, 2014).

Researchers in Canada looked at individual mindfulness, coping styles and perceived stress in 135 freshman university students living on campus. Interests were focused on measured differences in the three concepts including positive and negative relationships. Students were randomly selected to fill out the following forms: General Demographic Questionnaire, the Perceived Stress Scale, the Coping Style Questionnaire and the Mindfulness Attention Awareness Scale and placed into a mindfulness group. With a return rate of 13%, the authors acknowledge the number is small but judges it sufficient to run the statistical analysis (Palmer & Rodger, 2009).

Specific to coping, the CSQ scores were separated by gender to look for possible differences in coping as unique coping styles exist among females and males (Palmer & Rodger, 2009). The correlations among perceived stress, coping styles and mindfulness were measured by person's product-moment correlation formula. There was a significant negative correlation between mindfulness and perceived stress meaning persons who report being more mindful will experience less stress as hypothesized by the authors. The hypothesis that individuals who are more mindful will use rational and detached styles of coping, and less mindful individuals will use emotional coping and avoidant coping was supported, exception for detached coping. Contradictory to the author's hypothesis, there

was no correlation found between mindfulness and detached coping (Palmer & Rodger, 2009).

A MANOVA was conducted with sex as the independent variable on the group of outcome variables, mindfulness, perceived stress, and coping styles. A multivariate effect was detected, $F(1, 128) = 7.8, p < .01, \eta^2 = .31$. This is interpreted as 31% of the variance in the collection of the 5 dependent variables is accounted for by sex. Tukey's post hoc comparison tests were conducted with perceived stress and coping in comparing the different levels in mindfulness. With rational and detached coping, significant differences were found between the low mindfulness and high mindfulness groups and the medium and high mindfulness. All levels of mindfulness were significant when compared with avoidant coping. Given that sex was a significant factor in the MANOVA analyses, linear regressions were executed for females and males separately in order to identify any differences in patterns between sexes in predicting mindfulness scores. These separate analyses by sex suggest differences in the prediction path of mindfulness scores where emotional coping is a significant predictor only for females (Palmer & Rodger, 2009).

Strengths, limitations and future implications can be gleaned from the university-based study. Standardized measures and randomization of the intervention groups add strength to the results of the study. Detractors from the study include small sample size, possible bias with self-reported measures and trying to apply results beyond the university setting. Future directions for mindfulness research include use of standardized interventions and better outreach to diverse (age, race, and ethnicity) populations.

Mindfulness-based programming has been used with low-income 7th and 8th grade boys (n=44) in a school-based setting with some success. Participants were randomly assigned by computer to the Mindfulness Based Stress Reduction (MBSR) program or an active control program. Participants, staff and study personnel were blinded to program allocation. The programs consisted of 12 weekly sessions and lasted 50 minutes each during the school day (Sibinga et al, 2013).

Data were collected at three points: baseline, post-program (defined as within two weeks of the program ending) and at a three month follow-up. Self-reported measures scrutinized psychological functioning, coping and mindfulness. Sleep diaries and Actiwatch data was collected. Salivary cortisol was assessed to provide information on the cortisol stress response (Sibinga et al, 2013).

For data analysis, a multivariable linear regression was used for each outcome variable to look for differences between groups. Within group regressions and program effect sizes were evaluated for exploratory purposes. Pre and post intervention salivary cortisol level were evaluated via non-parametric Wilcoxon sign rank test. The three month follow-up data is not reported due to a notable number of students lost to follow-up, the resulting low power and the non-random nature of the lost data. Ten participants lost to follow-up graduated from the school (Sibinga et al, 2013).

Results suggest there were no significant differences between the groups of boys in demographics or outcome variables at baseline. Ninety-eight percent of eligible boys participated (41/42) in the MBSR (n=22) or comparison group (n=19). Most participants were African American (95%) and ages ranged from 11-14 years (mean= 12.5). Overall,

MBSR students had less anxiety ($p=0.01$), less rumination ($p=0.02$) and less negative coping. Of borderline significance, an increase in self-reported anger ($p=0.06$) was reported by the MBSR group. Within the MBSR group, mindfulness subclass were associated with decreased self-reported angry temperament ($p<0.02$) and less anger reactivity ($p=0.05$). Generally, cortisol output was higher after the program ($p=0.05$). The various measures of sleep showed no differences between the two intervention groups (Sibinga et al, 2013).

Latino middle school students participated in a pilot study that evaluated the impact of an 8-session mindfulness structured curriculum on perceived stress, mindfulness, self-compassion and psychological symptoms (Edwards et al, 2014). The study included 8 male and 12 female students recruited through School Based Health Centers and an after school program in a rural area. The age range of participants was 12-17 years. Although 24 of the initial 30 participants completed all group sessions and tools, the researchers only analyzed the 20 students in the final participant sample that were Latino. Their rationale was that little mindfulness research has focused specifically on Latino students (Edwards et al, 2014).

Researchers used a quasi-experimental, extended baseline, repeated measures design. Seven different eight-session cohorts were conducted over the course of 15 months. Data points were collected 2 weeks before the intervention sessions began, immediately before the first session and at the end of the eight session groups. Data was collected via the Mindful Attention Awareness Scale (MAAS), The Self-Compassion Scale (SCS), the Perceived Stress Scale (PSS) and The Symptom Check List-90-R (SCL-90_R). All instruments were self-reported measures (Edwards et al, 2014).

The intervention consisted of a curriculum manual by Gina Biegel “Mindfulness-Based Stress Reduction for Teens” (MBSR-T). The intervention consisted of one session weekly for 8 weeks, lasting 50 minutes per week. The five group facilitators were all professionals with either psychology or counseling backgrounds. Two facilitators were Latino and three facilitators were Caucasian. In addition, Gina Biegel acted as a telephone consultant for feedback and ideas (Edwards et al, 2014).

For statistical analysis of results, One-tailed correlated t-tests with alpha levels set at .10 were used to highlight if there were significant changes in the measures during the two-week baseline period before the sessions began. One-tailed correlated t-tests were also used to assess if significant changes occurred in the measurements following the mindfulness group. A liberal .10 alpha level was used to determine significance due to concerns that the study’s small sample size and brief baseline and intervention periods might result in type II error. There were no significant changes between pre-pretest and pretest scores prior to the mindfulness group intervention on any of the measures. This finding suggests that no significant changes in mindfulness, self-compassion, perceived stress, depression, anxiety or hostility occurred for participants prior the start of the mindfulness group (Edwards et al, 2014).

Results suggests there were increases in participants’ MAAS scores following the mindfulness group intervention (mean change = .32, $t = 1.39$, $p < .10$). Students reported increases on the SCS following the group (mean change = .26, $t = 2.15$, $p < .05$). The group intervention also produced significant reductions in students’ scores on the PSS (mean change = -3.1 , $t = 1.82$, $p < .05$) and the SCL-90-R (mean change = -3.55 , $t =$

1.82, $p < .05$). The reductions in students' scores on the SCL-90-R Hostility (mean change = $-.26$) and Anxiety (mean change = $-.99$) scales of the SCL-90-R were not significant (Edwards et al, 2014).

In contrast to its limitations, results from this small study are promising relating to the possible benefits of mindfulness groups for Latino adolescents in school settings. Geographic, and cultural traditions may limit many Latino students' access to psychological services. Mindfulness groups in schools may defeat these limitations. Mindfulness groups can be offered to all students in schools. Mindfulness-based groups are an effective preventative intervention as they enhance well-being for many persons (Edwards et al, 2014).

Discussion incorporates many realms of the study. MBSR programming appears beneficial to mental health, enhancing self-regulation and reduces maladaptive behaviors. Cortisol can be affected by many factors and the mixed results may be the outcome of midterm exams or other stressors. Incorporating randomization and a comparison group added strength to the study but a small sample size and single study site highlight study limitations. Additional research needs to be done by extrapolating the results and applying them to various populations utilizing innovative methods and design (Sibinga et al, 2013).

In summary, while some studies have been done examining mindfulness in adolescents, most were not randomized-control design and focused on males r students with existing mental health diagnoses. The studies had small sample sizes and often did not offer evaluation of a true comparison group. Additionally, most have not measured affect, coping and mindfulness concurrently. This current study will address these gaps

and expand the science by focusing on girls, utilizing a more rigorous design that allows for a comparison group, and focusing on outcomes related to affect, coping and mindfulness.

CHAPTER III METHODOLOGY

Introduction

The purpose of this study is to evaluate levels of coping, positive affect and mindfulness before and after the L2B program or a six week attention only comparison group. This section will articulate the research methodology. Research design and study population will be described. Theoretical and operational definitions and instruments evaluating psychosocial variables will be presented. Statistical methods and various data analyses for testing aims and assumptions will be discussed.

Research Design

The research study evaluated a mindfulness based intervention to reduce stress in adolescents using a randomized control design with a pre-test, post-test and attentional comparison group that will parallel the MC group. Concepts measured were coping, positive affect, negative affect and mindfulness. Study participants were evaluated prior to the mindfulness intervention and the same measures were re-evaluated at the end of the 6 week intervention. (Shadish, Cook, & Campbell, 2002).

Recruitment occurred from a public boarding school located in Baltimore City. The school houses disadvantaged students living throughout Maryland and has a high quality academic program with a nurturing boarding program. The Seed School defines disadvantaged or at risk youths as those with a household income at 100% or below poverty level, having a primary caregiver that is not a biological parent, living in a single parent household, history of being abused and/or history of being expelled from a previous school. The youth live in campus dormitories Monday through Friday during the school year to provide students with a valuable residential experience and resources they

will need. The target population was approximately 30 of the students residing at the school. The focus of the intervention was sixth grade, female students. According to interviews with staff, female sixth graders have the biggest challenges adjusting to residential school life. Focusing solely on female students prevents confounding of data by gender and highlights the unique developmental process of preteen girls. The MC group received a structured mindfulness-based intervention. The AO group consisted of student directed discussion of their experiences in middle school and as adolescents in a seminar setting. The parallel format of the two groups will strengthen the validity of outcome data while controlling for the effect of attention.

Determination of Sample Size and Power Analysis

It is important to anticipate the effect size in a clinical, behavioral intervention study with adolescents. A large effect size (.20) with a correlation of .80 among repeated measures was used to calculate minimum sample size for power .80 and alpha .05. The sample size was estimated as 11 per group (Cohen, 1992). The large effect size was chosen since at this time no data are available to provide an estimate of effect size and part of the purpose of the study was to establish an effect size for future studies.

Sample

Inclusion and exclusion criteria were as follows:

Inclusion criteria:

1. Age 11-13 years at time of enrollment
2. Age \geq 18 for parent/caregiver
3. Previously selected and attending the SEED school
4. Informed consent of parent/legal guardian as well as assent of study participant

Exclusion Criteria

1. Lack of English language fluency in patient and/or caregiver
2. Inability to complete measurement tools
3. Inability to attend intervention meetings due to school or personal conflicts
4. Currently pregnant
5. Failing 2 or more subjects in school

Definition of Terms

Definitions for variables of interest include the predictor variables; demographic (age, school grade, address and zip code) and outcome variables; coping, affect and mindfulness are presented. Measurement instruments were: the Response to Stress Questionnaire (RSQ) to measure coping, 10 Item Positive and Negative Affect Scale-Children's version(PANAS-C) to measure positive affect and the Mindful Attention Awareness Scale (MAAS) to measure mindfulness. All measures were completed before and after the 6 week interventions.

Demographic Variables

1. Age

Age is defined as the age in years of the student participant at the time the patient was recruited. The operational age is recorded as date of birth on the demographics data sheet.

2. Grade in school

Theoretically, the grade in which the adolescent participates in the majority of classes in school. The operational school grade level is identified by the school and recorded on official student transcripts prior to beginning the study.

3. Home Address

The theoretical definition of home address is the location where students identify as home or where they live when they are not at school. The operational definition is the home mailing address listed on the school record.

4.Coping

The definition of coping is a response or responses to a stressor that are categorized as voluntary, involving conscious effort (Lazarus & Folkman, 1984). In the Five Factor Model of Responses to Stress (Connor-Smith et al, 2000), coping incorporates self-modifications due to stress and involves cognitive, behavioral, emotional and physiological responses.

- a. Voluntary Coping: Consciously performed and aim to manage one's mental, behavioral, biologic and mental responses to a stressor.

6.Positive Affect

Affect is described as a 'temperamental factor' by Ebessutani et al (2012). Positive Affect is a 'Broad affective dimension characterized by feelings of enthusiasm, alertness and activity'. The operational definition will come from using the PANAS-C. Positive affect will be obtained by adding the scores from the 5 item Positive Affect Scale.

7.Mindfulness

The definition of mindfulness provided by Dr. Kabat-Zinn (2003) is 'intentional and nonjudgemental awareness of moment to moment experience'. Brown & Ryan (2003), authors of the MAAS tool, provide the following theoretical definition of mindfulness: A property of consciousness to encourage well-being. Mindfulness is assessed with the MAAS tool and the operational definition of mindfulness will be the final score from the MAAS tool.

Procedure

Baseline evaluation, including demographics, RSQ, PANAS-C & MAAS were gathered from both intervention groups before the 1st session of the mindfulness intervention (Time 1) for initial data. Following implementation of the 6-week L₂B curriculum and the attentional comparison group, the RSQ, the 10-Question PANAS-C and MAAS were re-administered to individuals in both intervention groups. Statistical analysis was performed using SPSS version 20.

Recruitment

Recruitment occurred from a public boarding school located in Baltimore City. The school houses disadvantaged students located throughout Maryland. Students who met the inclusion criteria were approached by the investigator about study participation during the regular school week. Recruitment was performed by Kristen Rawlett, MSN, FNP-BC. Ms. Rawlett discussed the study with students and parents or legal guardian. The school's leadership team, faculty and staff were made aware of the study through email and individual faculty meetings. Teachers were encouraged to identify students for recruitment.

Consent and Assent

The purpose and details of the study were discussed with students. If a student decided to participate, parental & HIPPA will be obtained in person from the parent/guardian and written assent was obtained from the participant. Demographic data was obtained having the student and parent/guardian complete a questionnaire. Informed consent was obtained by Kristen Rawlett, MSN, FNP-BC. The consent and assent forms were signed by the investigator and at least one parent or guardian (consent) and

participate (assent) for all participants. If the participant was not able to complete the consent process at the school, consent and assent (as applicable) was obtained in person at a mutually agreed location. The MC intervention group and the attentional comparison group started approximately 4 weeks following signed consent to allow time for questions to be presented to the investigator and answered.

Data Collection

Demographic information from each participant was self-reported for the following variables: age, race, current grade in school and home address. Students who met the inclusion criteria were invited to participate in the study. The investigator discussed details of the study with the student and parent or guardian in person.

Interventions

Learning to Breathe/ Mindfulness Curriculum Group

Students participated in the MC group or the AO comparison group one a week for 6 weeks. The MC sessions were by led by the investigator (Kristen Rawlett, MSN, FNP-BC), having been trained in Mindfulness techniques and the *L₂B* curriculum. The letters of the word breathe represent the first letters of the components of the MC Intervention Group. The MC intervention included meeting with participants as a group to guide students in **B**ody Awareness, **R**eflection, **E**motional Awareness and Regulation, **F**ostering Attention, Practicing **T**enderness and Awareness of **H**abits. The MC included classroom activities around mindful eating, listening and movement and small group discussion about feelings and emotions including pleasant and unpleasant events (Broderick, 2013). Student workbooks and journals to record daily activities and progress were distributed to each participant.

Attention Only Comparison Group

Students who participated in the attention only comparison group for 6 weeks received a comparable, attention giving activity. The six weekly sessions were led by a Certified Psych/Mental Health Nurse Practitioner. The attentional group included meeting in a group setting to

1. Introduce instructor & members, get to know each other
2. Discuss assertiveness training for adolescents.
3. Present nutrition & practice making good choices.
4. Review previous classes and discuss/practice goal setting.
5. Review previous classes and possible barriers to implementing goals.
6. Review course content and how to stick with long-term goals.

Schedule of Forms Completed

Baseline demographic data and appropriate history was obtained from the student along with parent or guardian before the first session prior to the beginning of the intervention. All students participating in the study completed the RSQ, PANAS-C and MAAS along with interview questions before the first session. The same questionnaires were repeated at the end of the session at week 6. If a student did not attend the final MC or attentional comparison group session, the investigator provided the forms to the school administration to encourage the student to fill out the post-intervention forms the next day during school. The investigator was available in person, via cell phone and email to answer questions related to forms, surveys, etc. There was no monetary compensation for participation in the study.

For both groups of students, the measurement schedule for the RSQ, PANAS-C and MAAS in this study was immediately prior to the intervention (time 1) and again at the end of the 6 week program (time 2). The L₂B Class Outline (Appendix C) and the Attentional Comparison Group Class Outline (Appendix D) give specific schedules and activities for each session. Key points, class objectives, introduction of the lesson theme, activities, practice and suggestions for home activities are presented.

Instruments, Statement of Reliability and Validity

Three tools were used to measure outcome variables. The RSQ measures coping. The ten item PANAS-C measures positive and negative affect. The MAAS measures actual mindfulness. Participants completed the tools before and again immediately after the MC or AO interventions.

Additional Questions

In order to examine adolescent concerns further and to obtain data that may be useful to inform development of future studies, the following open-ended questions were asked before initiating the six week MC and AO interventions and again immediately after completing the six week interventions. Qualitative themes were identified and analyzed within and between the two intervention groups. Qualitative interview questions included:

1. What two words or phrases best describe you (today)?
2. What distracts you in class and other activities that require attention?
3. How do you manage your stress?

Qualitative responses to open-ended questions were independently coded for themes by a senior qualitative researcher and reviewed with the investigator.

Coping

The RSQ was used to measure coping. The instrument formulated by Connor-Smith et al (2000) fills a void of measures related to child and adolescent responses/outcomes from stressors. The RSQ evaluates voluntary and involuntary reactions to stressors. The distinction between the two types of reactions is vital to evaluating inherent ways adolescents respond to stress and conscious methods adolescents use to cope.

The RSQ was formulated according to varied responses to stress and emphasizes the value of both voluntary and involuntary reactions specific to children and adolescents. A multidimensional model provided the foundation for the RSQ with a dual purpose of creating a theoretically based and psychometrically sound measure. Coping is operationalized by the RSQ with 57 items offering inquiry about voluntary and involuntary responses to stressors of adolescence. A total item score is obtained for the total measure and for the 5 subscales. The total score for each subscale is divided by the total measure score to create proportion scores for each subscale (Connor-Smith et al, 2000).

Normative sample for the original adolescent version was developed across studies with 3 separate samples. The first sample consisted of 437 adolescents between 16 and 19 years old (69% female) attending an introductory course at a college in New England, who completed the RSQ and the Youth Adult Self-Report (YASR). The second sample consisted of 364 adolescents between the ages of 12 and 18 (56% female) from a rural area of New England, who completed 2 versions of the RSQ and the Youth

Self-Report (YSR). The last sample consisted of 82 adolescents and parents diagnosed with recurrent abdominal pain, with adolescents ranging from 11 to 17 years in age (70% female) (Connor-Smith et al, 2000).

The RSQ demonstrates good reliability and validity. Reliability was verified through internal consistency of both the participant/student and parent's reports. Test-retest reliability data were obtained 1-2 weeks apart. Reliability coefficients for the 19 parcels contained within the tool had a mean $r=.65$ and a mean $r=.77$ for the five factors contained in the measurement tool. The five factors are primary control, secondary control, disengagement coping, involuntary engagement and involuntary disengagement (Connor-Smith et al, 2000). Internal consistency was $\alpha=0.75$ in the area of primary control coping, $\alpha=0.71$ for secondary coping and $\alpha=0.70$ for disengagement coping (Jaser & White, 2010). In formulating the tool, the authors allowed 1-2 weeks between administration of the tool to affirm reliability. Validity of the RSQ was confirmed by the authors of the questionnaire. Correlations of convergent and discriminant validity were confirmed with a similar, established scale. Self-reported data and parent-reports were correlated for the RSQ to strengthen validity. RSQ scales and heart rate reactivity were also correlated in formulation of the measurement tool (Connor-Smith et al, 2000).

Affect

The 10-item PANAS-C was used to measure positive affect. The shortened version was adapted from the 20-item Positive and Negative Affect scale for children (Laurent et al, 1999) down to 10-items with 5 point (1= very slightly to 5= extremely) likert scale responses. The shortened version of the scale provide intellectual information

regarding affect and can be used in the school or clinic setting. One drawback is that the ten items of the reduced scales access a narrower range of positive and negative affect compared to the original PANAS-C scale (Laurent et al, 1999).

Two sub scales make-up the PANAS-C. The Positive Affect (PA) questions (M=16.9, SD=5.5) focus on joyful, cheerful, happy, lively and proud and the 5-item Negative Affect (NA) realm of the scale (M=9, SD=4.2) focuses on feeling miserable, mad, afraid, scared and sad. The two scales are scored separately to obtain unique values for positive affect and negative affect, respectively. The range for each scale is 5-25 (Ebesutani et al, 2012). Together the two separate 5-item sub scales make-up the 10-item PANAS-C.

Normalized test information curves comparing the original and shortened scales suggest that the shortened scale provides more information per test item than the original scale. ANOVA and ROC analysis comparing the original and shortened scales revealed that accuracy of the assessment and clinical utility were not compromised in transitioning to the revised, shorter scale. In contrast, the reduced item PANAS-C but has had limited use in research and clinical settings due to its recent publication date. It has demonstrated a slightly smaller range of PA and NA than the original 27-item scale but has the advantage of brevity with time and length of assessment being a concern in the adolescent population (Ebesutani et al, 2012).

The newly formulated 10 item tool shows good reliability and validity. Scale development was guided by confirming essential independence of both the Positive Affect and Negative Affect items. Item response theory slope parameter and location estimates provided good discrimination and allowed reducing items in the original tool.

Cronbach Alpha Coefficients for the reduced PA scale were .86 and .82 for the reduced NA scale and were comparable to values reported for the original, full length version of the PANAS-C. Inter-item correlations were evaluated and although the range is slightly smaller than the original scale, the value of the outcomes is not diminished. Divergent validity was confirmed by Fishers z-test for independent correlations and revealed that correlations between the full length scale and the reduced 10-item scale were not significantly different, $z=1.41$, $p=.16$. Scale validation was scrutinized. The PANAS-C revealed good support for convergent and divergent validity. Scale validation was performed by comparing the PA & NA scales with pre-existing self-reported measures of anxiety and depression (Laurent, Catanzaro, Joiner, Rudolph & Potter, 1999).

Mindfulness

Brown and Ryan (2003) formulated the MAAS. A theoretical definition is provided: “An attribute of consciousness long believed to promote well-being” (Brown & Ryan, 2003). The MAAS places a focus on present time attention and awareness, leaving out other dimensions of mindfulness, such as non- judgmental accepting. Items characterize ideas or actions that are not congruent with mindfulness such as being on automatic pilot, preoccupation and being distracted. Likert scale contains fifteen-items ranging from 0 (almost always) to 6 (almost never) to assess mindfulness. The mean overall score for the MAAS before intervention was 54.00 (SD 13.26). For a final score, ratings are reverse coded so that high scores indicate high levels of mindfulness (Baer, 2006). One weakness of the scale is that no operational definition is provided.

The rationale for choosing MAAS instrument is that it has the most enduring

evidence-based track record as an accurate measure of trait mindfulness. There is room for improvement and investigation of the tool as almost all existing information on trait mindfulness comes from using the MAAS with a relatively homogenous samples of college-aged, Caucasian adults. It has been translated into various languages and used in different cultures (Baer, 2006; Wallach et al, 2006)

The instrument was developed via multiple sources identified by the authors including personal experience and existing knowledge of mindfulness, a thorough review of the literature and a detailed assessment of existing scales and instruments measuring mindfulness and other possibly related concepts. Initially 184 items reflecting direct and indirect evaluation of mindfulness. Item reduction was done across five stages in an iterative way (Brown & Ryan, 2003). Possible attitudinal components and mindfulness outcomes were deleted from the scale. Highly specialized terminology was removed as well in hopes that the scale would be able to apply to the general adult population that had no prior knowledge of mindfulness or meditation. The items remaining after the initial screening were rated by eight faculty and graduate students in psychology again using the V statistic. To provide further clarity, items still remaining were evaluated by another separate team of six faculty and graduate students whose feedback was used to further revise the scale. The 55 items that survived the previous evaluations were used in multiple pilot studies with undergraduate students. Further elimination resulted in 24 items retained for consideration in the MAAS before deciding on the final fifteen items (Brown & Ryan, 2003). MAAS demonstrates good reliability (.82- .87) and was validated with a multiple studies that demonstrate validity and sensitivity to change (Wallach et al, 2006).

CHAPTER IV DATA ANALYSIS

Exploratory data analysis was performed. Descriptive statistics were computed on all variables. The data were checked for normality and missingness. Corrective actions were not needed for the analysis. To confirm there was not a significant difference between intervention and control groups, t-test (continuous outcomes) and fisher's exact analysis (categorical) were used to compare groups prior to onset of the study. There was no significant differences between the groups prior to implementing the interventions. The different types of analyses that were used specific to each aim and hypothesis are presented.

Primary Aims

1. To test the feasibility of a MC program for inner-city, at-risk adolescents.
 - a. Recruitment of 11 adolescents from a school setting to participate in the MC program.
 - b. Keep detailed documentation of every participant approached and their reason(s) for non-participation.
 - c. Conduct the 6-session MC program with 66% participation (4/6 sessions) for 80% of the participants.
 - i. Statistical Analysis: Participation data will be analyzed from participation sheets and weekly phone follow-up of those who missed a session, including reason for non-attendance. The goal was for participants to complete at least 4 of the six sessions with the target population. Successful completion of all (>75%) of the measures by the participating adolescents was the study goal.
 - e. Evaluate the completion rate of adolescents participating in the MC program.

2. Conduct program evaluation. Evaluation included the following questions and
3. occurred at the end of the last session, or with a staff member the next day if the
4. participant was not at the last class.
 - a. What about the program was most useful?
 - b. What about the program was least useful?
 - c. What would you want more of in the program?
 - d. What would you eliminate or have less of in the program?

A qualitative data analysis was performed to include overall themes as guidance for future research.

3. Evaluate the effectiveness of the MC intervention at improving primary coping.

Variables: Dependent= primary coping; Independent= MC; seminar sessions.

4. Evaluate the effectiveness of the MC program intervention at improving positive affect.

Variables: Dependent= positive affect; Independent= Mindfulness curriculum; seminar sessions

5. Evaluate the effectiveness of the MC program at improving mindfulness.

Variables: Dependent= mindfulness; Independent= MC; seminar sessions

Hypotheses

H₁: There will be an improvement in primary coping following the MC intervention.

- a. Primary coping will be greater after MC intervention than before the MC program.
- b. Improvement in primary coping will be greater in the MC group than the attentional group.

- c. There is a relationship between initial level and improvement of primary coping in the MC group.

Variables: Dependent= positive coping; Independent= MC program

Analysis: For the hypothesis that only looks at the MC group ($H_1:a$) a related samples t-test was used to confirm adequate sample size and appropriate homogeneity of variance.

For the hypothesis that utilizes the treatment and control groups ($H_1:b$), a separate repeated measures ANOVA was used. For each analysis there was one repeated measure factor with two levels (pre, post) and one between subjects factor with two levels (MC group, attentional group). The interaction between the two factors provides the test of the hypotheses. For $H_1:b$ the outcome variable was positive coping. A repeated measures ANOVA was used to examine differences in change between the two (MC, attentional) groups.

H_2 : There will be an improvement in positive affect following the MC intervention.

- a. Positive affect will be greater after the MC intervention than before the MC program.
- b. Improvement in positive affect will be greater in the intervention group than the control group.
- c. There is a relationship between initial level and improvement in positive affect in the MC intervention group.

Variables: Dependent= positive affect; Independent= L2B intervention; seminar sessions.

Analysis: For the hypotheses that only look at the treatment group ($H_2:a$) a related samples t-test was used if there is adequate sample size and appropriate homogeneity of

variance. For hypotheses that utilize the treatment and control groups ($H_2: c$), a repeated measures ANOVA was used. For each analysis there will be one repeated measure factor with two levels (pre, post) and one between subjects factor with two levels (intervention group, control group). The interaction between the two factors provides the test of the hypotheses. For H_{1c} the outcome variable was positive affect.

H_3 : There will be an improvement in mindfulness following the MC intervention.

- a. Mindfulness will be greater after MC intervention than before the MC intervention.
- b. Improvement in mindfulness will be greater in the intervention group than the control group.
- c. There is a relationship between initial level and improvement of mindfulness in the MC intervention.

Variables: Dependent= mindfulness; Independent= MC program

Analysis: For the hypothesis that only looks at the treatment group ($H_3:a$) a related samples t-test was used to determine if there is adequate sample size and appropriate homogeneity of variance. For the hypothesis that utilizes the treatment and control groups ($H_3:b$), a repeated measures ANOVA was used. For each analysis there was one repeated measure factor with two levels (pre, post) and one between subjects factor with two levels (intervention group, control group). The interaction between the two factors provides the test of the hypotheses. For H_{3b} the outcome variable was mindfulness. The remaining hypothesis ($H_3:c$) uses only data from the intervention group.

Description of Sample

Demographics

A total of 23 participants assented and had parent or guardian consent to participate in the study. One participant dropped out of the study before the first session due to fear of the stigma associated with mental illness and the perception that the study was for ‘mentally ill’ students. The participant that withdrew was the single caucasian student in the study. Remaining participants (n=22) were randomized by dorm to either an attention only group (n=10) or a mindfulness group (n=12). The participants were compared based on intervention group to which they were randomized, attention only or mindfulness group. Table 4.1 includes demographic information on participants and home zip code.

Table 4.1: *Demographic Characteristics of participants in the study sample n=22*

	n (%)	Mean (SD)	Minimum	Maximum
Characteristic				
Age (years)			11	13
Race				
Black/ African American	16(69.6)			
American Indian/ Alaskan Native	1(4.3)			
Native Hawaiian/ Pacific Islander	1(4.3)			
BiRacial/ Multiracial	4(17.4)			
Choose not to answer	1(4.3)			
Zip Code				
Baltimore City	15			
Outside Baltimore City	8			

Group Comparison at Baseline

There were no statistically significant differences between the two intervention groups at baseline. Table 4.2 provides data on number of sessions attended and baseline Response to Stress Questionnaire (primary and secondary coping) scores, baseline 10 item Positive and Negative Affect-child version scores and baseline Mindful Attention Awareness Scores for each group.

Table 4.2: *Comparison of Baseline Characteristics n=22*

	Mindfulness Curriculum Group (n =12)	Attention-Only Group (n=10)	
	N	N	
			fisher's exact
Race			p=.313
Black/ African American	8	8	
Other	4	2	
Baseline Scores			t-test(p)
	Mean(SD)	Mean(SD)	
Age	11(.718)	11(.675)	(20)=-0.446, p=.661
RSQ			
Primary Coping	.1651(.03888)	.1671(.03456)	(19)=-2.39, p=.813
10 item PANAS-C			
Positive Affect	18.5(6.05)	14.70(6.84)	(20)=-1.382, p=.182
MAAS			
Mindfulness	45.2(12.5)	44.3(7.1)	(20)=-.213, p=.834

Program Evaluation

Feasibility

The study demonstrated excellent feasibility with the goal of all participants attending a minimum of four out of six sessions. Twenty-two out of 23 (95.7%) of enrolled participants completed the interventions. One participant dropped out before the first session due to perceived social stigma associated with attendance and participation. All remaining participants attended at least 4 intervention classes, eight participants attended 5 classes and 9 of the 22 participants attended all 6 sessions of the interventions provided. Of the classes missed, reasons include personal illness, previously planned family events and required evening activities at school.

Completion of Measurement Tools

Another criterion for demonstrating feasibility was the successful completion of >75% of the RSQ, 10-item PANAS-C and MAAS measures by the participating adolescents. This criterion was met with 86.4% completion of study measures by participants. Feasibility for this MBSR intervention with this sample of adolescents was demonstrated by successful recruitment of 23 participants, 95.7% participation, one dropouts, and 19 of 22 participants completing study measures.

Interview Questions

Qualitative interview questions included:

1. What two words or phrases best describe you (today)?
2. What distracts you in class and other activities that require attention?
3. How do you manage your stress?

Qualitative responses to open-ended questions were independently coded for themes by the investigator and reviewed by a senior qualitative researcher. In response to the first question (1.) students in the AO group had mixed emotions. In general, negative emotions in the pre-test remained unchanged in the post-test questionnaire. Examples of negative responses include mad, irked and annoyed. The mindfulness group was a mix of students being happy, mad and some angry. In the post-test response all the participants in the mindfulness group reported positive answers with examples being happy, excited, and relaxed. The next question (2.) inquired about distractions. Both the AO group and the MC group indicated auditory interruptions affecting concentration and distractions remained mostly unchanged in the post-test questionnaire. Distractions included people laughing, noises and talking. The last question (3.) asked about managing stress. The AO group did not demonstrate an overall change from pre- to post test. The AO group managed stress by ‘screaming, yelling, hitting and taking it out on stuff’. In comparison, the MC showed a change from pre- to post-test by the way they used the techniques taught in the mindfulness intervention. In post-test responses, the mindfulness group dealt with stress by listening (to music), doing a body scan, breathing and meditating.

Qualitative Program Evaluation

A program evaluation was completed by 19 of the 23 participants which included the following questions:

1. What about the program was most useful?
2. What about the program was least useful?
3. What would you want more of in the program?
4. What would you eliminate or have less of in the program?

5. Any other thoughts or feedback?

Responses from the MC and AO groups were analyzed in partnership with an experienced qualitative research scientist. In describing the most useful aspects of the program, MC participants often referred to specific techniques such as breathing, paying attention, using silence and listening to music to achieve a state of calm. Attention-only participants focused more on how they were impacted. Useful aspects of the AO intervention included talking, being able to express true self and getting the stress out. A useful aspect of the intervention for both groups include learning how to control stress and the support they received from the MC and AO instructors during the course of the 6 week intervention.

Least useful aspects of the program were also identified by participants. Both groups mentioned space, such as wanting to get outside or not having enough space during the individual classes. The type of food used during the classes was not well received. Students had an acute awareness of others in the group and were bothered by the negative behaviors of others such as being disrespectful, arguing, being annoying and yelling.

Hypothesis 1

Analysis of the first hypothesis: *There will be an improvement in primary coping following the MC intervention* failed to reject the null hypothesis. Analysis of variance with repeated measures was used to compare changes in primary coping from before to after the MC in the MC and attention-only intervention groups. The ANOVA had a 2 level time (pre-post) within subjects factor and a 2 level intervention group between

subjects factor. The result of the analysis revealed no significant interaction ($p = .498$) between group and time (see Table 4.3).

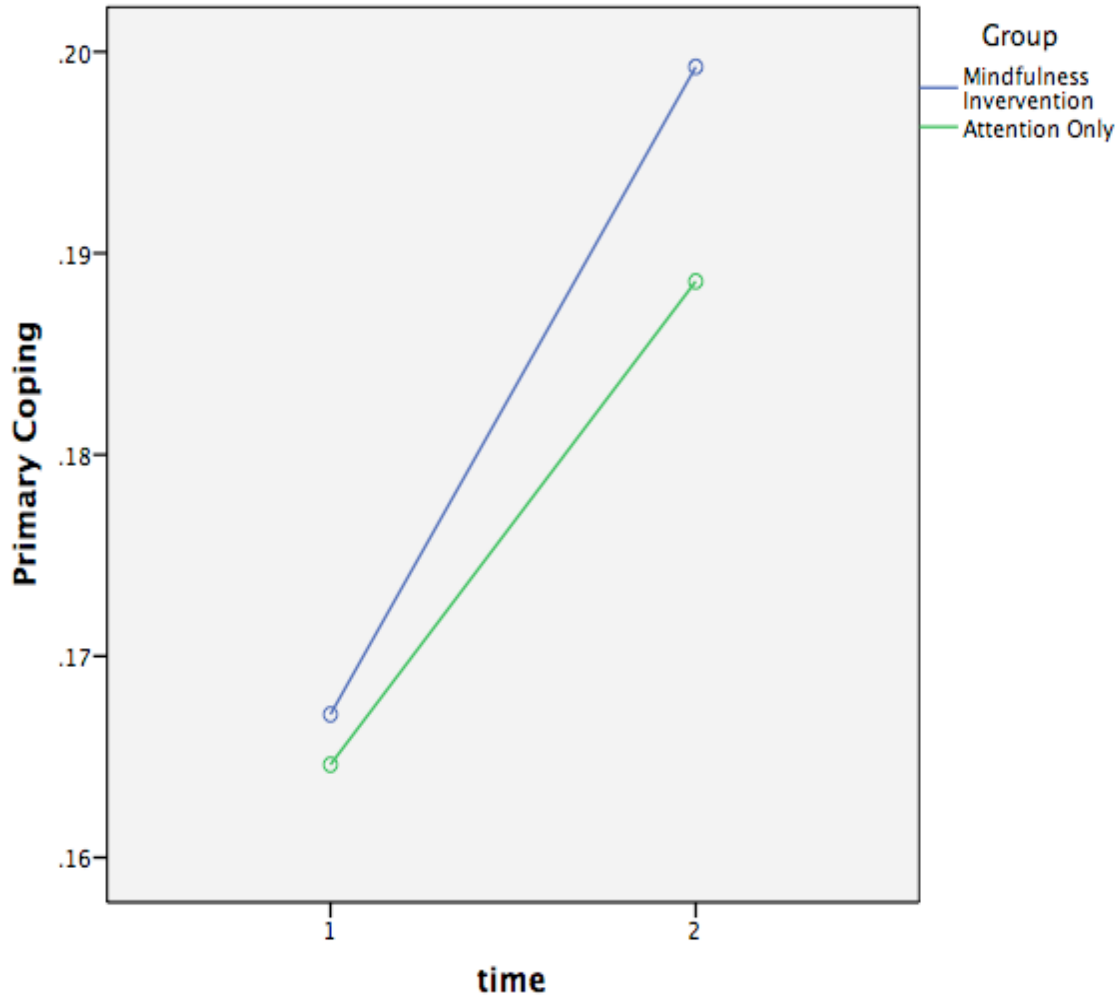
Table 4.3: *Results of a repeated measures Analysis of variance to examine the contributions of intervention group (mindfulness curriculum, attention only) and time (pre-intervention, post-intervention) on primary coping*

	Type III Sum of Squares	Df	Ms	F	p
Time	0.000	1	0.00	0.15	.903
GroupXTime	0.002	1	0.002	0.480	0.498
Error	0.62	17	0.004		
Group	0.002	1	0.002	1.506	0.236
Error	0.019	17	0.001		

There were no significant differences in changes over time in coping between the two groups. There also were no significant main effects of time ($p = .903$) or group ($p = .236$). Primary coping did not change over time and did not differ between the two groups. In general, primary coping tended to increase in the MC group and decrease in the attention-only group from before to after the interventions (see Table 4.3).

There were no significant changes in primary coping as measured by the RSQ from baseline to after the interventions in either group (Figure 4.1).

Figure 4.1: *Change in Mean Primary Coping Scores for Students in the Mindfulness Curriculum Intervention (N=10) and Students in the Attention-Only Intervention (N= 12) over 6 weeks*



Primary Coping: Scores on RSQ specific to Primary Coping

Time: 1=Baseline; 2= After 6 week Intervention(s)

At baseline the attention only group had a mean primary coping score= 0.165(SD 0.013) and the mindfulness curriculum group had a mean primary coping score= 0.167 (SD 0.011). At time 2, after the six week interventions the attention only and mindfulness curriculum groups mean primary coping scores were 0.189(SD 0.016) and 0.199

(SD= 0.014), respectively. Although not statistically significant, both groups did report an increase in mean primary coping score as measured by the RSQ.

Hypothesis 2

Analysis of the second hypothesis: *There will be an improvement in positive affect following the MC failed to reject the null hypothesis.* Analysis of variance with repeated measures was used to compare changes in positive affect from before to after the intervention in the MC and attention-only intervention groups. The ANOVA had a 2 level time (pre-post) within subjects factor and a 2 level intervention group between subjects factor. The result of the analysis revealed no significant interaction ($p = 0.273$) between group and time (see Table 4.4).

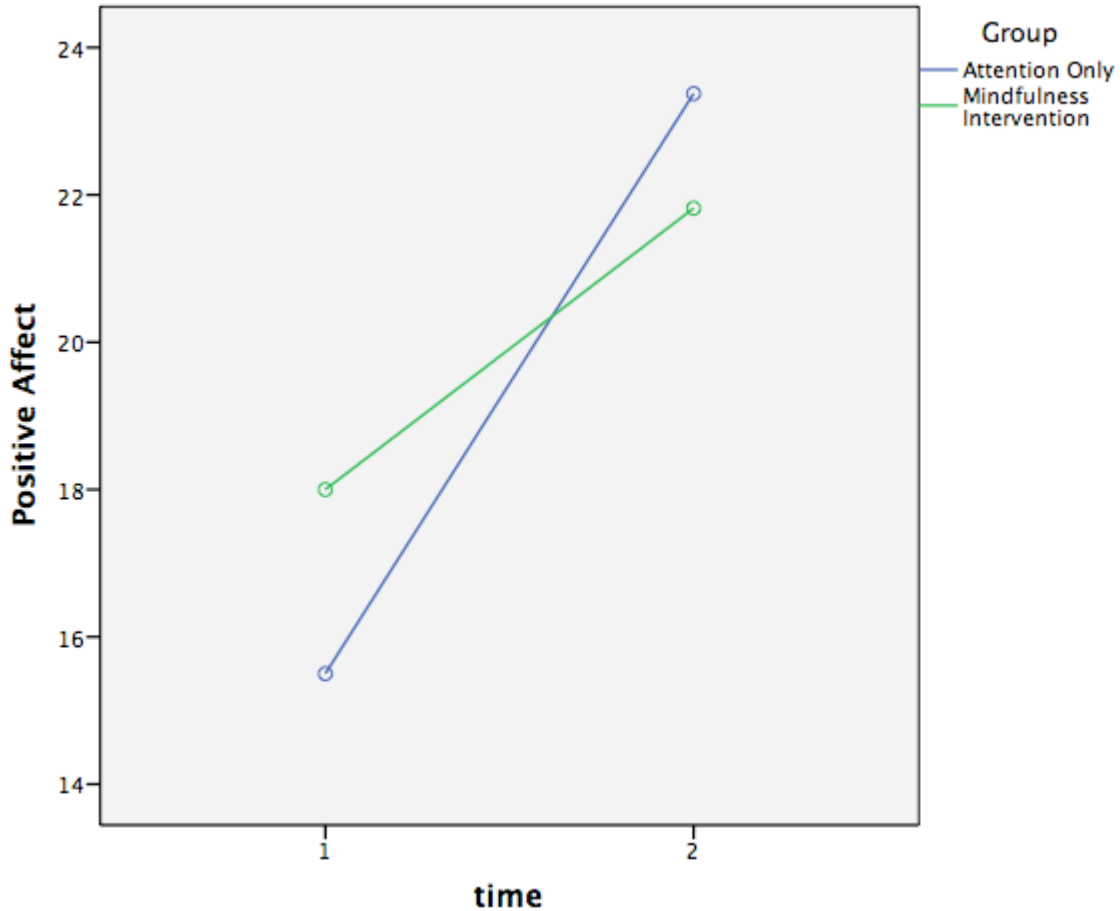
Table 4.4: *Results of a repeated measures Analysis of variance to examine the contributions of the intervention group (mindfulness curriculum, attention only) and time (pre-intervention, post-intervention) on positive affect*

	Type III Sum of Squares	DF	Ms	F	p
Time	316.639	1	316.639	10.675	0.005
GroupXTime	38.113	1	38.113	1.285	0.273
Error	504.256	17	29.662		
Group	1.03	1	1.03	0.09	0.768
Error	194.628	17	11.449		

There were no significant differences in changes over time in positive affect between the two groups. There was a significant main effects of time ($p = 0.005$) but not of group ($p = 0.768$). Positive affect changed over time but the change over time did not differ between the two groups (see Table 4.4).

There were mixed results in primary coping changes as measured by the 10 item PANAS-C from baseline to after the interventions in either group (Figure 4.2).

Figure 4.2: *Change in Mean Positive Affect Scores for Students in the Mindfulness Curriculum Intervention and Students in the Attention-Only Intervention over 6 weeks*



Positive Affect: Scores on 10 item PANAS-C specific to Positive Affect
Time: 1=Baseline; 2= After 6 week Intervention(s)

At baseline the attention only group had a mean positive affect score= 15.5(SD 2.24) and the mindfulness curriculum group had a mean positive affect score= 18(SD 1.91). At time 2, after the six week interventions the attention only and mindfulness curriculum groups positive affect mean scores were 23.4(SD 1.25) and 21.8(SD= 1.06), respectively. Both groups did report an increase in positive affect that was significant.

Hypothesis 3

The third hypothesis *There here will be an improvement in mindfulness following the MC intervention failed to reject the null hypothesis.* Analysis of variance with repeated measures was used to compare changes in MAAS from before to after the MC in the MC and attention-only intervention groups. The ANOVA had a 2 level time (pre-post) within subjects factor and a 2 level intervention group between subjects factor. The result of the analysis revealed no significant interaction ($p = .492$) between group and time (see Table 4.5).

Table 4.5: *Results of a repeated measures Analysis of variance to examine the contributions of the intervention group (mindfulness curriculum, attention only) and time (pre-intervention, post-intervention) on mindfulness*

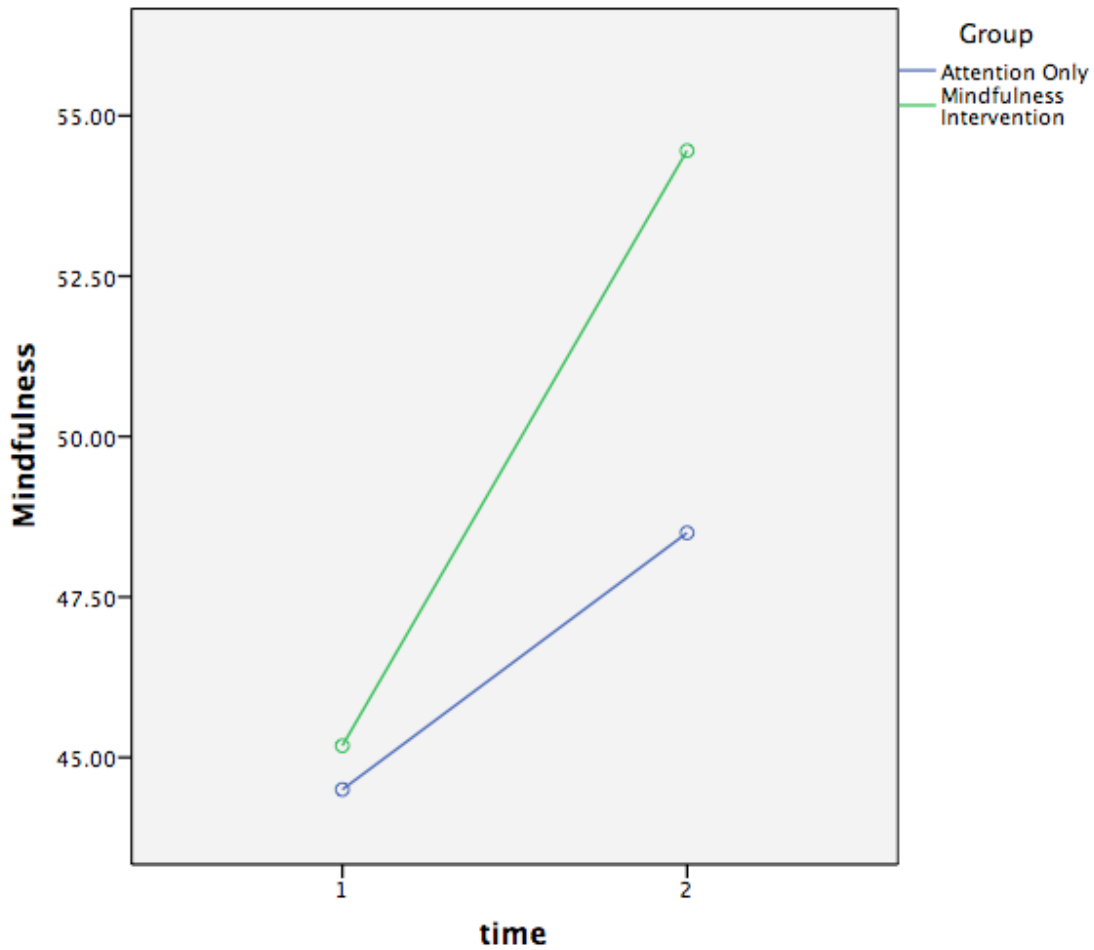
	Type III Sum of Squares	Df	Ms	F	p
Time	407.962	1	407.962	3.117	0.095
GroupXTime	64.383	1	64.383	0.492	0.493
Error	2225.091	17	130.888		
Group	50.995	1	50.995	0.447	0.513
Error	1937.636	17	113.979		

When main effects were examined, MAAS tended to change over time ($p = .095$).

Mindfulness tended to be greater after the interventions than before them. There was no significant difference in mindfulness between the two groups ($p = .513$) (see Table 4.5).

There were no significant changes in mindfulness as measured by the MAAS from baseline to after the interventions in either group (Figure 4.3).

Figure 4.3: *Change in Mean Mindfulness Scores for Students in the Mindfulness Curriculum Intervention (N=12) and Students in the Attention-Only Intervention (N= 10) over 6 weeks*



Mindfulness: Scores on MAAS
Time: 1=Baseline; 2= After 6 week Intervention(s)

At baseline the attention only group had a mean mindfulness score= 44.5(SD 3.94) and the mindfulness curriculum group had a mean primary coping score= 45.2 (SD 3.36). At time 2, after the six week interventions the attention only and mindfulness curriculum groups mean mindfulness scores were 48.5(SD 5.41) and 54.5 (SD= 4.62), respectively. Although not statistically significant, both groups did report an increase in mean mindfulness score as measured by the MASS with the mindfulness intervention group having a greater positive change in mindfulness score overall.

CHAPTER V
DISCUSSION OF FINDINGS, TREATMENT FIDELITY, STUDY
LIMITATIONS, CONCLUSIONS, IMPLICATIONS FOR NURSING,
RECOMMENDATIONS FOR FUTURE RESEARCH

Characteristics of the Study Sample

Summary of Statistical Results

Summary of Hypothesis 1

There will be an improvement in primary coping following the MC intervention failed to reject the null hypothesis. ANOVA with repeated measures was used to compare changes in primary coping from before to after the MC in the MC and attention-only intervention groups. Results of the analysis revealed no significant interaction between group and time. There were no significant differences in changes over time in coping between the two groups. There also were no significant main effects of time or group. Primary coping did not change over time and did not differ between the two groups. Primary coping increased in the MC group and decreased in the attention-only group from before to after the interventions. There were no significant changes in primary coping as measured by the RSQ from baseline to after the interventions in either group. Although not statistically significant, both groups did report an increase in mean primary coping score as measured by the RSQ.

Summary of Hypothesis 2

There will be an improvement in positive affect following the MC failed to reject the null hypothesis. ANOVA with repeated measures was used to compare changes in positive affect from before to after the intervention in the MC and attention-only groups. The analysis revealed no significant interaction between group and time. There were no significant differences in changes over time in positive affect between the two groups.

There was a significant main effects of time but not of group. Positive affect changed over time but the change over time did not differ between the two groups.

There were mixed results in primary coping changes as measured by the 10 item PANAS-C from baseline to after the interventions in either group. Both groups did report an increase in positive affect that was significant.

Summary of Hypothesis 3

There here will be an improvement in mindfulness following the MC intervention failed to reject the null hypothesis. ANOVA with repeated measures was used to compare changes in MAAS from before to after the MC in the MC and attention-only intervention groups. The analysis revealed no significant interaction between group and time. When main effects were examined, MAAS changed over time. Mindfulness tended to be greater after the interventions than before them. There was no significant difference in mindfulness between the two groups. There were no significant changes in mindfulness as measured by the MAAS from baseline to after the interventions in either group. Although not statistically significant, both groups did report an increase in mean mindfulness score as measured by the MASS with the mindfulness intervention group having a greater positive change in mindfulness score.

Discussion of Study Findings

Coping, Affect and Mindfulness

Treatment Fidelity

Methodological measures used to track and enhance the reliability and validity of behavioral interventions encompass treatment fidelity (Resnick, 2005). For this study, the mindfulness curriculum was previously tested to be reliable and valid and specifically

targeted adolescents. The attention only group was based on known standards, specific to adolescents. The mindfulness intervention group leader was well-versed and had training in MBSR and specific training from the author of the mindfulness curriculum, Learning 2 BREATHE. The interventionist for the attention only group was a licensed, practicing psych-mental health nurse practitioner and had a good understanding of developmentally appropriate content for students. A third trained interventionist well versed in mindfulness training and psychiatric health reviewed and approved scripts for each session of both intervention groups. Participants were isolated to one intervention group and within each group students received the same treatment delivery. The same group leaders stayed with each intervention group for the entirety of the sessions. The answers by participants to the interview and evaluation questions presented at the end of the intervention demonstrate that the intervention was received by students.

Limitations of the Study

There are limitations with the study. There is a risk for cross-contamination between the two intervention groups as students interact in classes, live in the same building and may discuss and compare the content of the classes. Optimally, intervention groups would have been comparable populations on different campuses.

Students may have been compelled to join the study for a variety of reasons. The desire to please teachers and staff at the school, as well as to please parents who wanted their child to participate may represent underlying coercion to participate. Adolescents wishing to avoid after-school sports or other electives may perceive the study as a time occupying alternative to less desirable activities. The time spent in the intervention

classes may have been a way for students to avoid school/dorm monitors and get more social time with friends.

The small sample size and length of the self-reported tools present various limitations. The study was conducted with at-risk, girls who were dwelling in Baltimore, Monday through Friday, at the time of the study. The results may not be generalizable to other at-risk adolescents in Maryland or the US. Importantly, the lack of significance in statistical analysis may be an outcome of the small sample size not reflective of actual study outcomes if done on a larger scale. Shorter, more concise tools that take less time to fill out and are easier to understand may work better with the population of 6th grade girls in this study.

The interventions were implemented in late May/early June of the school year which is also a limitation for this study. New sixth grade students had already been at school for many months and may have already acclimated to residential school life during the week. Providing the interventions earlier in the school year may have produced more positive results and differences between the intervention groups. By providing the interventions so late in the school year, students may be less focused on academics and learning new coping techniques as they are looking forward to getting out of school and planning their summer break. Changes within and between the groups that did not occur with a 6 week intervention may have had more time to develop if the interventions had been extended to 8 weeks or longer.

The intervention instructors may have contributed to limitations of study findings. The Mindfulness Curriculum instructor was educated about the concepts and practice of mindfulness during an 8-week course and attended a 2 day conference to receive

instruction on implementing the MC from its author. Lack of certification in mindfulness practice and instruction or the abbreviated mindfulness course may have contributed to the instructor having limited ability to demonstrate statistically significant changes in participants from before to after the intervention. Although the attention-only instructor had no formal instruction on mindfulness practice, her training as a Certified Psychiatric/Mental Health Nurse Practitioner may have naturally overlapped into her teaching content. This is possible even though there was a purposely separate curriculum for the attention-only group with mindfulness concepts and activities removed to the best of the researcher's abilities. Both instructors were outsiders to the community and the school.

Conclusion

The purpose of this study was to evaluate the effectiveness of a nurse led Mindfulness Curriculum (MC) as compared to an Attention Only (AO) intervention on coping, affect and mindfulness in at-risk adolescents.

There is a direct relationship between at-risk behaviors and poor outcomes for adolescents. Even after controlling for sex, race/ethnicity and grade level there is a negative association between higher academic achievement and health-risk behaviors. The associations do not indicate causation but highlight the need for active, quality research investigating the specific relationships between health-risk behaviors and poor outcomes in adolescents. Few studies have focused on coping, affect, and mindfulness in general and specific to disadvantaged adolescents.

The research study evaluated a mindfulness based intervention to reduce stress in adolescents using a quasi-experimental design with a pre-test, post-test and attentional comparison group that will parallel the MC group. Concepts measured were coping, positive affect, negative affect and mindfulness. Study participants were evaluated prior to the mindfulness intervention and the same measures were re-evaluated at the end of the 6 week intervention. There were no significant differences between the groups prior to implementing the interventions.

Definitions for variables of interest include the predictor variables; demographic (age, school grade, address and zip code) and outcome variables; coping, affect and mindfulness were presented. Measurement instruments were: the Response to Stress Questionnaire (RSQ) to measure coping, 10 Item Positive and Negative Affect Scale-Children's version (PANAS-C) to measure positive affect and the Mindful Attention Awareness Scale (MAAS) to measure mindfulness. All measures were completed before and after the 6 week interventions.

Baseline evaluation, including demographics, RSQ, PANAS-C & MAAS were gathered from both intervention groups before the 1st session of the mindfulness intervention (Time 1) for initial data. Following implementation of the 6-week L₂B curriculum and the attentional comparison group, the RSQ, the 10-Question PANAS-C and MAAS were re-administered to individuals in both intervention groups. Statistical analysis was performed using SPSS version 20.

A total of 23 participants assented and had parent or guardian consent to participate in the study. One participant dropped out of the study before the first session due to fear of the stigma associated with mental illness and the perception that the study

was for 'mentally ill' students. Remaining participants (n=22) were randomized by dorm to either an attention only group (n=10) or a mindfulness group (n=12). The participants were compared based on intervention group to which they were randomized, attention only or mindfulness group.

Results of the quantitative analysis showed no significant interaction between group and time for coping, positive affect or mindfulness. There were no significant differences in changes over time in primary coping, positive affect or mindfulness between the two groups. There also were no significant main effects of time or group for positive coping. There was a significant main effects of time but not of group for positive affect. Positive affect changed over time but the change over time did not differ between the two groups. When main effects for mindfulness were examined there was change over time. Mindfulness tended to be greater after the interventions than before them.

Primary coping did not change over time and did not differ between the two groups. Primary coping increased in the MC group and decreased in the attention-only group from before to after the interventions. There were no significant changes in primary coping as measured by the RSQ from baseline to after the interventions in either group. Although not statistically significant, both groups did report an increase in mean primary coping score as measured by the RSQ.

Positive affect changed over time but the change over time did not differ between the two groups. There were mixed results in primary coping changes as measured by the 10 item PANAS-C from baseline to after the interventions in either group. Both groups did report an increase in positive affect that was significant.

There were no significant changes in mindfulness as measured by the MAAS from baseline to after the interventions in either group. Although not statistically significant, both groups did report an increase in mean mindfulness score as measured by the MASS with the mindfulness intervention group having a greater positive change in mindfulness score.

Implications for Nursing Practice

Implications for nursing practice in response to study outcomes are relevant to future research and current practice. Ultimately, more research needs to be implemented to guide best practices in using mindfulness and other behavioral interventions with adolescents at risk for poor outcomes. In reflecting on study results, it may be that just spending time outside of a structured school setting with at-risk adolescent girls can provide positive results. The clinically significant piece of this study is that girls in the MC were able to learn, use and identify specific strategies such as breathing, listening and meditating to reduce stress. The girls also identified a common barrier to stress reduction: auditory distractions and lack of space. In the future, nurses and other health care providers can implement this knowledge into our clinical decision making to achieve best outcomes for these adolescents. Specifically, providing an opportunity in the inpatient and primary care setting for young adolescents to have quiet time, listen to music, etc. may provide benefit. As providers we need to pay attention to space and minimize distractions for the adolescents in our care.

Recommendations for Future Research

There are many recommendations for future research as a result of the current study. It is possible to reach unique populations if you are willing to recruit in the

community setting and provide interventions with minimal inconvenience for participants. Having an investigator or at least a team member on the research team that is imbedded within the community will build trust and promote participation in the study.

When working with at-risk adolescents from diverse backgrounds, especially in the school setting, it would be best to have a two-person team of instructor/school employee to run the intervention. The instructor will be able to provide consistent, approved content while the school employee provides consistent application of school policies and expectations for behavior that is not distracting to other participants. Future studies should employ longer recruitment periods to obtain larger numbers of participants in the study. Multi-site studies would improve generalizability of results.

Existing studies support mindfulness-based interventions when working with at-risk adolescents but a variety of settings (schools, community centers, etc.) should be compared. Researchers need to investigate the optimal length of the intervention and the timing of each individual session. Ideally a 12 or 18 week program may provide better retention of skills learned in mindfulness practice. Perhaps sessions should be shortened from 1.5 to 1 hour to accommodate the adolescent attention-span. Participants in the current study seemed to lose interest and become more easily distracted when classes went longer than 60 minutes. Regardless, mindfulness teaching is a potentially powerful tool that can benefit adolescents and their families and should be continued to be explored in future research.

Summary

The purpose of this study was to test the feasibility of a MC program in at-risk, adolescents, conduct program evaluation, and evaluate levels of coping, positive affect,

negative affect and mindfulness before and after participation in a six week MC program or an attention only comparison group. The overall proposed research methodology was presented. Research design and study population were articulated. Theoretical and operational definitions and instruments evaluating psychosocial variables were presented. Statistical methods and various data analyses for testing aims and assumptions were discussed.

APPENDIX A IRB APPROVAL



University of Maryland, Baltimore
Institutional Review Board (IRB)
Phone: (410) 706-5037
Fax: (410) 706-4189
Email: hrpo@som.umaryland.edu

APPROVAL OF RESEARCH NOTIFICATION

Date: March 24, 2014

To: Erika Friedmann
RE: HP-00058464
Type of Submission: Initial Review
Type of IRB Review: Expedited

**Approval for this project is valid from 3/24/2014 to
3/23/2015**

This is to certify that the University of Maryland, Baltimore (UMB) Institutional Review Board (IRB) approved the above referenced protocol entitled, "*Effect of a nurse led peer group with at-risk adolescents*".

The IRB has determined that this protocol qualifies for expedited review pursuant to Federal regulations 45 CFR 46.110, 21 CFR 56.110, & 38 CFR 16.110 category(ies):

(7) - Research on individual or group characteristics or behavior or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

The IRB made the following determinations regarding this submission:

- Subpart D Determination for research involving children: 45 CFR 46.404/21CFR 50.51.
- Written informed consent is required. Only the valid IRB-approved informed consent form(s) in CICERO can be used.

Below is a list of the documents attached to your application that have been approved:

Consent Form
Assent Form
Eligibility Checklist for HP-00058464 v2-4-2014-1391546916986
Statement about IRB
Supporting Literature.pdf
Flyer
SEED data.numbers
Child-Self-Report-RSQ-Peer-Stress.pdf
Mindful Attention Awareness ScaleQuestions.pages.zip
10 Item PANAS-C Form.pdf
Letter of Support

In conducting this research you are required to follow the requirements listed in the INVESTIGATOR MANUAL. Investigators are reminded that the IRB must be notified of any changes in the study. In addition, the PI is responsible for ensuring prompt reporting to the IRB of proposed changes in a research activity, and for ensuring that such changes in approved research, during the period for which IRB approval has already been given, may not

APPENDIX A (Cont.)

be initiated without IRB review and approval except when necessary to eliminate apparent immediate hazards to the subject (45 CFR 46.103(4)(iii)). The PI must also inform the IRB of any new and significant information that may impact a research participants' safety or willingness to continue in the study and any unanticipated problems involving risks to participants or others.

DHHS regulations at 45 CFR 46.109 (e) require that **continuing review** of research be conducted by the IRB at intervals appropriate to the degree of risk and **not less than once per year**. The regulations make **no provision for any grace period extending the conduct of the research beyond 3/23/2015**. You will receive continuing review email reminder notices prior to this date; however, it is your responsibility to submit your continuing review report in a timely manner to allow adequate time for substantive and meaningful IRB review and assure that this study is not conducted beyond **3/23/2015**. Investigators should submit continuing review reports in the electronic system at least six weeks prior to this date.

Research activity in which the VA Maryland Healthcare System (VAMHCS) is a recruitment site or in which VA resources (i.e., space, equipment, personnel, funding, data) are otherwise involved, must also be approved by the VAMHCS Research and Development Committee prior to initiation at the VAMHCS. Contact the VA Research Office at 410-605-7000 ext. 6568 for assistance.

The UMB IRB is organized and operated according to guidelines of the International Council on Harmonization, the United States Office for Human Research Protections and the United States Code of Federal Regulations and operates under Federal Wide Assurance No. FWA00007145.

If you have any questions about this review or questions, concerns, and/or suggestions regarding the Human Research Protection Program (HRPP), please do not hesitate to contact the Human Research Protections Office (HRPO) at (410) 706-5037 or HRPO@som.umaryland.edu.

APPENDIX B LETTER OF SUPPORT



The SEED School of Maryland

January 23, 2014

From: Dr. Harriette E. Wimms
Director of Student Support Services
The SEED School of Maryland
200 Font Hill Avenue
Baltimore, Maryland 21223

To: Kristen E. Rawlett, FNP-BC
Clinical Instructor, PhD Student
and Institutional Review Board
University of Maryland Baltimore
655 W. Lombard St. #675-A
Baltimore, MD 210201

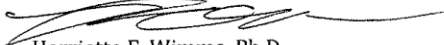
Dear University of Maryland Institutional Review Board,

The purpose of this letter is to grant Kristen Rawlett and Dr. Sue Thomas, Principal Investigator, at the University of Maryland Baltimore permission to conduct research at The SEED School of Maryland. The project titled, "Effect of a Mindfulness Based Stress Reduction (MBSR) Program on Coping, Affect and Mindfulness in a Sample of At-Risk Adolescents". The purpose of the study is to test the feasibility of a Mindfulness Based Stress Reduction (MBSR) program in at-risk, adolescents and to evaluate levels of coping, affect and mindfulness before and after the six session MBSR program. Eligible participants include all sixth grade girls at the SEED School of Maryland. Currently 47 girls are enrolled in the 6th grade. We think that these students will benefit from a mindfulness based stress reduction program.

The SEED School does not have an IRB and will rely on the University of Maryland Baltimore IRB for oversight of this study.

After review of the study proposal, I do hereby grant permission for Kristen E. Rawlett to conduct the research titled "Effect of a Mindfulness Based Stress Reduction (MBSR) Program on Coping, Affect and Mindfulness in a Sample of At-Risk Adolescents" at The SEED School of Maryland.

Sincerely,



Harriette E. Wimms, Ph.D.
Licensed Clinical Psychologist
Director of Student Support

200 Font Hill Avenue • Baltimore, Maryland 21223 • phone 410.843.9477 • www.seedschoolmd.org

APPENDIX E RSQ PEER STRESS

ID: _____
Date: _____

ADOLESCENT/CHILD'S SELF-REPORT RESPONSES TO STRESS – [PS]

This is a list of things about friends and other kids that children and teenagers sometimes find stressful or a problem to deal with. Please circle the number indicating how stressful the following things have been for you in the past 6 months.

	Not at All	A Little	Somewhat	Very
a. Being around kids who are rude	1	2	3	4
b. Not having as many friends as you want	1	2	3	4
c. Having someone stop being your friend	1	2	3	4
d. Being teased or hassled by other kids	1	2	3	4
e. Feeling pressured to do something	1	2	3	4
f. Fighting with other kids	1	2	3	4
g. Having problems with a friend	1	2	3	4
h. Being left out or rejected	1	2	3	4
i. Asking someone out and being turned down	1	2	3	4
j. Other: _____	1	2	3	4

Circle the number that shows how much control you generally think you have over these problems.

1 2 3 4
 None A little Some A lot

Below is a list of things that children and teenagers sometimes do, think, or feel when something stressful happens. Everyone deals with problems in their own way – some people do a lot of the things on this list or have a bunch of feelings, other people just do or think a few of these things.

Think of all the stressful parts of problems with other kids that you indicated above. For each item below, circle **one** number from 1 (not at all) to 4 (a lot) that shows **how much** you do or feel these things when you have problems with other kids like the ones you indicated above. Please let us know about everything you do, think, and feel, even if you don't think it helps make things better.

	How much do you do this?			
	Not at all	A little	Some	A lot
1. I try not to feel anything.	1	2	3	4
2. When dealing with the stress of problems with other kids, I feel sick to my stomach or get headaches.	1	2	3	4
3. I try to think of different ways to change or fix the situation. Write one plan you thought of: _____	1	2	3	4
4. When faced with the stress of problems with other kids, I don't feel anything at all, it's like I have no feelings.	1	2	3	4
5. I wish that I were stronger and less sensitive so that things would be different.	1	2	3	4
6. I keep remembering what happened with other kids or can't stop thinking about what might happen.	1	2	3	4

RSQ PEER STRESS (Cont.)

WHEN DEALING WITH THE STRESS OF PROBLEMS WITH OTHER KIDS:	How much do you do this?			
	Not at all	A little	Some	A lot
7. I let someone or something know how I feel. <i>(remember to circle a number.)</i> →	1	2	3	4
Check all you talked to:				
<input type="checkbox"/> Parent	<input type="checkbox"/> Friend	<input type="checkbox"/> Brother/Sister	<input type="checkbox"/> Pet	<input type="checkbox"/> Clergy Member
<input type="checkbox"/> Teacher	<input type="checkbox"/> God	<input type="checkbox"/> Stuffed Animal	<input type="checkbox"/> Other Family Member	<input type="checkbox"/> None of these
8. I decide I'm okay the way I am, even though I'm not perfect.	1	2	3	4
9. When I'm around other people I act like the problems with other kids never happened.	1	2	3	4
10. I just have to get away from everything when I am dealing with the stress of problems with other kids.	1	2	3	4
11. I deal with the stress of problems with other kids by wishing it would just go away, that everything would work itself out.	1	2	3	4
12. I get really jumpy when I am dealing with the stress of problems with other kids.	1	2	3	4
13. I realize that I just have to live with things the way they are.	1	2	3	4
14. When I am dealing with the stress of problems with other kids, I just can't be near anything that reminds me of the situation.	1	2	3	4
15. I try not to think about it, to forget all about it.	1	2	3	4
16. When I am dealing with the stress of problems with other kids, I really don't know what I feel.	1	2	3	4
17. I ask other people or things for help or for ideas about how to make things better. <i>(remember to circle a number.)</i> →	1	2	3	4
Check all you talked to:				
<input type="checkbox"/> Parent	<input type="checkbox"/> Friend	<input type="checkbox"/> Brother/Sister	<input type="checkbox"/> Pet	<input type="checkbox"/> Clergy Member
<input type="checkbox"/> Teacher	<input type="checkbox"/> God	<input type="checkbox"/> Stuffed Animal	<input type="checkbox"/> Other Family Member	<input type="checkbox"/> None of these
18. When I am trying to sleep, I can't stop thinking about the stressful aspects of problems with other kids or I have bad dreams about problems with other kids.	1	2	3	4
19. I tell myself that I can get through this, or that I will be okay or do better next time.	1	2	3	4
20. I let my feelings out. <i>(remember to circle a number.)</i> →	1	2	3	4
I do this by: (Check all that you did.)				
<input type="checkbox"/> Writing in my journal/diary	<input type="checkbox"/> Drawing/painting			
<input type="checkbox"/> Complaining to let off steam	<input type="checkbox"/> Being sarcastic/making fun			
<input type="checkbox"/> Listening to music	<input type="checkbox"/> Punching a pillow			
<input type="checkbox"/> Exercising	<input type="checkbox"/> Yelling			
<input type="checkbox"/> Crying	<input type="checkbox"/> None of these			
21. I get help from other people or things when I'm trying to figure out how to deal with my feelings. <i>(remember to circle a number.)</i> →	1	2	3	4
Check all that you went to:				
<input type="checkbox"/> Parent	<input type="checkbox"/> Friend	<input type="checkbox"/> Brother/Sister	<input type="checkbox"/> Pet	<input type="checkbox"/> Clergy Member
<input type="checkbox"/> Teacher	<input type="checkbox"/> God	<input type="checkbox"/> Stuffed Animal	<input type="checkbox"/> Other Family Member	<input type="checkbox"/> None of these
22. I just can't get myself to face the stress of problems with other kids.	1	2	3	4
23. I wish that someone would just come and take away the stressful aspects of problems with other kids.	1	2	3	4

RSQ PEER STRESS (Cont.)

You're half done. Before you keep working, look back at the first page so you remember the aspects of having problems with other kids that have been stressful for you lately. Remember to answer the questions below thinking about these things.

WHEN DEALING WITH THE STRESS OF PROBLEMS WITH OTHER KIDS:	How much do you do this?			
	Not at all	A little	Some	A lot
24. I do something to try to fix the stressful parts of problems with other kids. Write one thing you did: _____ _____	1	2	3	4
25. Thoughts about problems with other kids just pop into my head.	1	2	3	4
26. When I am dealing with problems with other kids, I feel it in my body. <i>(remember to circle a number.)</i> → Check all that happen: <input type="checkbox"/> My heart races <input type="checkbox"/> My breathing speeds up <input type="checkbox"/> None of these <input type="checkbox"/> I feel hot or sweaty <input type="checkbox"/> My muscles get tight	1	2	3	4
27. I try to stay away from people and things that make me feel upset or remind me of the stressful aspects of problems with other kids.	1	2	3	4
28. I don't feel like myself when I am dealing with the stress of problems with other kids, it's like I am far away from everything.	1	2	3	4
29. I just take things as they are; I go with the flow.	1	2	3	4
30. I think about happy things to take my mind off the stressful parts of problems with other kids or how I'm feeling .	1	2	3	4
31. When something stressful happens related to problems with other kids, I can't stop thinking about how I am feeling.	1	2	3	4
32. I get sympathy, understanding, or support from someone. <i>(remember to circle a number.)</i> → Check all you went to: <input type="checkbox"/> Parent <input type="checkbox"/> Friend <input type="checkbox"/> Brother/Sister <input type="checkbox"/> Pet <input type="checkbox"/> Clergy Member <input type="checkbox"/> Teacher <input type="checkbox"/> God <input type="checkbox"/> Stuffed Animal <input type="checkbox"/> Other Family Member <input type="checkbox"/> None of these	1	2	3	4
33. When something stressful happens related to problems with other kids, I can't always control what I do. <i>(remember to circle a number.)</i> → Check all that happen: <input type="checkbox"/> I can't stop eating <input type="checkbox"/> I can't stop talking <input type="checkbox"/> I do dangerous things <input type="checkbox"/> I have to keep fixing/checking things <input type="checkbox"/> None of these	1	2	3	4
34. I tell myself that things could be worse.	1	2	3	4
35. My mind just goes blank when something stressful happens related to problems with other kids, I can't think at all.	1	2	3	4
36. I tell myself that it doesn't matter, that it isn't a big deal.	1	2	3	4
37. When I am faced with the stressful parts of problems with other kids, right away I feel really: <i>(remember to circle a number.)</i> → Check all that you feel: <input type="checkbox"/> Angry <input type="checkbox"/> Sad <input type="checkbox"/> None of these <input type="checkbox"/> Worried/anxious <input type="checkbox"/> Scared	1	2	3	4
38. It's really hard for me to concentrate or pay attention when something stressful happens related to problems with other kids.	1	2	3	4
39. I think about the things I'm learning from the problems with other kids, or something good that will come from it.	1	2	3	4

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RSQ PEER STRESS (Cont.)

WHEN DEALING WITH THE STRESS OF PROBLEMS WITH OTHER KIDS:	How much do you do this?			
	Not at all	A little	Some	A lot
40. After something stressful happens related to problems with other kids, I can't stop thinking about what I did or said.	1	2	3	4
41. When stressful parts of problems with other kids happen, I say to myself, "This isn't real."	1	2	3	4
42. When I'm dealing with the stressful parts of problems with other kids, I end up just lying around or sleeping a lot.	1	2	3	4
43. I keep my mind off stressful parts of problems with other kids by: (remember to circle a number.) →	1	2	3	4
Check all that you do:				
<input type="checkbox"/> Exercising <input type="checkbox"/> Seeing friends <input type="checkbox"/> Watching TV <input type="checkbox"/> Playing video games <input type="checkbox"/> Doing a hobby <input type="checkbox"/> Listening to music <input type="checkbox"/> None of these				
44. When something stressful happens related to problems with other kids, I get upset by things that don't usually bother me.	1	2	3	4
45. I do something to calm myself down when I'm dealing with the stress of problems with other kids. (remember to circle a number.) →	1	2	3	4
Check all that you do:				
<input type="checkbox"/> Take deep breaths <input type="checkbox"/> Pray <input type="checkbox"/> Walk <input type="checkbox"/> Listen to music <input type="checkbox"/> Take a break <input type="checkbox"/> Meditate <input type="checkbox"/> None of these				
46. I just freeze when I am dealing with stressful parts of problems with other kids, I can't do anything.	1	2	3	4
47. When stressful things happen related to problems with other kids I sometimes act without thinking.	1	2	3	4
48. I keep my feelings under control when I have to, then let them out when they won't make things worse.	1	2	3	4
49. When something stressful happens related to problems with other kids, I can't seem to get around to doing things I'm supposed to do.	1	2	3	4
50. I tell myself that everything will be all right.	1	2	3	4
51. When something stressful happens related to problems with other kids, I can't stop thinking about why this is happening.	1	2	3	4
52. I think of ways to laugh about it so that it won't seem so bad.	1	2	3	4
53. My thoughts start racing when I am faced with the stressful parts of problems with other kids.	1	2	3	4
54. I imagine something really fun or exciting happening in my life.	1	2	3	4
55. When something stressful happens related to problems with other kids, I can get so upset that I can't remember what happened or what I did.	1	2	3	4
56. I try to believe that it never happened.	1	2	3	4
57. When I am dealing with the stress of problems with other kids, sometimes I can't control what I do or say.	1	2	3	4

APPENDIX F
10 ITEM PANAS – C

10 Item PANAS-C

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way during the past few weeks.

Feeling or emotion	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Sad	1	2	3	4	5
Happy	1	2	3	4	5
Scared	1	2	3	4	5
Miserable	1	2	3	4	5
Cheerful	1	2	3	4	5
Proud	1	2	3	4	5
Afraid	1	2	3	4	5
Joyful	1	2	3	4	5
Mad	1	2	3	4	5
Lively	1	2	3	4	5

APPENDIX G

MINDFULL ATTENTION AWARENESS SCALE QUESTIONS

Mindful Attention Awareness Scale Questions

1. I could be experiencing some emotion and not be conscious of it until some time later
2. I break or spill things because of carelessness, not paying attention, or thinking of something else
3. I find it difficult to stay focused on what's happening in the present
4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way
5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention
6. I forget a person's name almost as soon as I've been told it for the first time
7. It seems I am "running on automatic," without much awareness of what I'm doing
8. I rush through activities without being really attentive to them
9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there
10. I do jobs or tasks automatically, without being aware of what I'm doing
11. I find myself listening to someone with one ear, doing something else at the same time
12. I go places on 'automatic pilot' and then wonder why I went there
13. I find myself preoccupied with the future or the past
14. I find myself doing things without paying attention
15. I snack without being aware that I'm eating.

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